

The Gambia catfish demersal gillnet fishery pre-assessment

Marine Stewardship Council

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Final Report

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Submitted by

The logo for MRAG, consisting of the letters 'MRAG' in a bold, blue, sans-serif font. A stylized blue wave graphic is integrated into the letter 'A'.

For



The Gambia catfish demersal gillnet fishery

Pre-Assessment Report

Conformity Assessment Body (CAB)	MRAG Ltd
Fishery client	Marine Stewardship Council
Assessment Type	Pre-assessment
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1 Contents

1	Contents.....	3
2	Glossary.....	5
3	Executive summary.....	6
4	Report details.....	8
	4.1 Aims and constraints of the pre-assessment.....	8
	4.2 Version details.....	8
5	Unit(s) of Assessment.....	8
	5.1 Unit(s) of Assessment.....	8
6	Traceability.....	9
	6.1 Traceability within the fishery.....	9
7	Pre-assessment results.....	10
	7.1 Pre-assessment results overview.....	10
	7.1.1 Overview.....	10
	7.1.2 Recommendations.....	10
	7.2 Summary of potential conditions by Principle.....	11
	7.3 Summary of Performance Indicator level scores.....	11
	7.4 Principle 1.....	16
	7.4.1 Principle 1 background.....	16
	7.4.2 Catch profiles.....	20
	7.4.3 Total Allowable Catch (TAC) and catch data.....	21
	7.4.4 Principle 1 Performance Indicator scores and rationales.....	22
	PI 1.1.1 – Stock status.....	22
	PI 1.1.2 – Stock rebuilding.....	25
	PI 1.2.1 – Harvest strategy.....	26
	PI 1.2.2 – Harvest control rules and tools.....	29
	PI 1.2.3 – Information and monitoring.....	31
	PI 1.2.4 – Assessment of stock status.....	34
	7.5 Principle 2.....	36
	7.5.1 Principle 2 background.....	36
	7.5.2 Principle 2 Performance Indicator scores and rationales.....	39
	PI 2.1.1 – Primary species outcome.....	39
	PI 2.1.2 – Primary species management strategy.....	41
	PI 2.1.3 – Primary species information.....	43
	PI 2.2.1 – Secondary species outcome.....	45
	PI 2.2.2 – Secondary species management strategy.....	49
	PI 2.2.3 – Secondary species information.....	52
	PI 2.3.1 – ETP species outcome.....	54
	PI 2.3.2 – ETP species management strategy.....	57
	PI 2.3.3 – ETP species information.....	60
	PI 2.4.1 – Habitats outcome.....	62
	PI 2.4.2 – Habitats management strategy.....	64

PI 2.4.3 – Habitats information	66
PI 2.5.1 – Ecosystem outcome	68
PI 2.5.2 – Ecosystem management strategy	70
PI 2.5.3 – Ecosystem information	72
7.6 Principle 3	74
7.6.1 Principle 3 background.....	74
7.6.2 Principle 3 Performance Indicator scores and rationales.....	76
PI 3.1.1 – Legal and/or customary framework.....	76
PI 3.1.2 – Consultation, roles and responsibilities.....	79
PI 3.1.3 – Long term objectives	82
PI 3.2.1 – Fishery-specific objectives	83
PI 3.2.2 – Decision-making processes	84
PI 3.2.3 – Compliance and enforcement	86
PI 3.2.4 – Monitoring and management performance evaluation.....	88
PI 2.6.3 –Appendices.....	89
7.7 Assessment information.....	89
7.7.1 Small-scale fisheries	89
7.8 Evaluation processes and techniques	90
7.8.1 Site visits	90
7.8.2 Recommendations for stakeholder participation in full assessment	90
7.9 Risk-Based Framework outputs –.....	91
7.9.1 Productivity Susceptibility Analysis (PSA).....	91
8 References.....	99
9 Template information and copyright.....	102

2 Glossary

ALDFG	Abandoned, Lost, Discarded Fishing Gear
ATLAFCO	Ministerial Conference on Fisheries Cooperation Among African States Bordering the Atlantic Ocean
CAB	Conformity Assessment Body
CAS	Catch Assessment Survey
CCLME	Canary Current Large Marine Ecosystem
CCRF	Code of Conduct for Responsible Fisheries
CECAF	Fishery Committee for the Eastern Central Atlantic
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CPUE	Catch Per Unit Effort
CRC	Coastal Resources Centre
CSA	Consequence Spatial Analysis
DPWM	Department of Parks and Wildlife Management
ECOWAS	Economic Community of West African States
EEZ	Exclusive Economic Zone
ETP	Endangered, Threatened or Protected species
FAO	Food and Agricultural Organisation of the United Nations
FIP	Fishery Improvement Project
FSQA	Food Safety and Quality Authority
GAMFIDA	Gambia Artisanal Fisheries Development Agency
GGGI	The Global Ghost Gear Initiative
GMA	Gambia Maritime Administration
GRT	Gross Registered Tons
HCR	Harvest Control Rules
IUCN	International Union for Conservation of Nature
IUU	Illegal, Unreported and Unregulated fishing
LACOMS	Landing Site Committees
LCCA	length-converted catch curve analysis
LEK	Local Ecological Knowledge
LME	Large Marine Ecosystem
MCS	Monitoring, Control and Surveillance
MOHSW	Ministry of Health and Social Welfare
MOTIE	Ministry of Trade, Industry, Regional Integration and Employment
MOU	Memorandum of understanding
MSC	Marine Stewardship Council
MSE	Management Strategy Evaluation
MSY	Maximum Sustainable Yield
NAAFO	National Association of Artisanal Fisheries Operators
NASCOM	National Sole fishery Co-management Committee
NEA	National Environment Agency
NGO	Non-Governmental Organisation
PCM	Post Capture Mortality
PESCAO	Improved regional fisheries governance in western Africa
PRCM	Regional Partnership for Coastal and Marine Conservation
PRI	Point where recruitment would be impaired
PSA	Productivity Susceptibility Analysis
PSMA	Port State Measures Agreement
RAMPAO	Regional Network of Marine Protected Areas in West Africa
RBF	Risk Based Framework
SRFC	Sub-Regional Fisheries Commission
SSBPR	Spawning Stock Biomass Per Recruitment
TAC	Total Allowable Catch
TAGFC	Association of Gambian Fishing
UNCLOS	United Nations Convention on the Law of the Sea
UNEP	United Nations Environment Programme
UNFSA	United Nations Fish Stock Agreement
USA	United States of America
VME	Vulnerable Marine Ecosystem
VMS	Vessel Monitoring System
WARMER	West African Marine Ecoregion
WWF	World Wildlife Fund for Nature
YPR	Yield Per Recruitment

3 Executive summary

MRAG Ltd were commissioned by the MSC to undertake a range of pre-assessments in West Africa, analysing the stock status, impacts on the ecosystem and strength of management structures. The focus of this pre-assessment is on the rough head sea catfish (*Arius laticutatus*) caught by demersal gillnets. The stock is shared across The Gambian and Senegalese EEZs and is covered by the sole and catfish management plan. The main management competences include the Department of Fisheries and the National Sole Fisheries Co-Management Committee (NASCOM).

Due to the COVID-19 pandemic this pre-assessment was undertaken remotely without an opportunity to conduct a site visit. Therefore, scores and rationale are based on information provided by the client, stakeholder interviews and other literature available online. Interviews were conducted with a variety of stakeholders including:

- The Department of Fisheries
- The National Environment Agency
- RAMPAO
- Greenpeace Africa
- TRY Oyster Woman's Association
- Department of Parks and Wildlife Management
- University of Gambia
- NASCOM

The following provides an overview of the scoring and rationale for each of the three principles.

Principle 1

There is insufficient information to effectively score the stock status and instead a PSA was used. The result of the PSA analysis suggests P11.1.1 will fail to meet SG80, this is due primarily to the lack of information and uncertainty surrounding the susceptibility of the fishery to the target species. Also, no regional stock assessment appropriate for the transboundary nature of the stock has been successfully completed by the CECAF demersal Working Group. A suite of technical measures and seasonal closures are included within the Fishery Co-Management Plan for The Gambia Sole Complex, which also retains catfish. Combined these management measures are deemed sufficient to form a harvest strategy that is likely to work. However, there remains uncertainty whether the harvest strategy can be considered to be 'responsive to the state of the stock'.

Principle 2

Catch data was provided for the demersal gillnet fishery by the Department of Fisheries in The Gambia. The data provided indicated that there were no main primary species and only Atlantic horse mackerel (*Trachurus trachurus*) was thought to be a minor primary species. CECAF assessments suggest that in 2019 the Atlantic horse mackerel stock was operating within the limits of sustainability but was fully exploited. Five species were identified as secondary main species and a PSA was conducted due to the limited availability of data. The results of the PSA indicate high risk for these five species, although there were gaps in the data that could account for this.

ETP species potentially affected by this fishery include various species of cetacean and four species of marine turtle. Not much is known about the population of these species or the level of interaction with this UoA but they are known to be impacted by gillnets. While protected by various legislation in The Gambia, monitoring and enforcement appears to be limited.

As this fishery uses gear that comes into contact with the sea floor, habitat impacts need to be considered. As the preferred habitat for catfish are muddy and sandy bottoms, impact by gillnets that lead to serious or irreversible harm are thought to be unlikely as they are not sensitive habitats. However, information was not adequate for this fishery to determine actual impacts on the habitat. The removal of catfish from the system is likely to be the biggest ecosystem impact but their removal is managed and the artisanal nature of the fishery may suggest a limited impact as well as the small proportion of catches taken by demersal gillnets (over 80% of catfish catches are by longline).

Principle 3

There is a good basis for governance in The Gambia that should be capable of delivering sustainable fisheries however, there are potentially issues with effectiveness due to financial constraints. There is also limited regional cooperation which is important due to the shared nature of many stocks in the region. Roles and responsibility are well defined within the country and while management is based on consultation with communities, resource users, government agencies and local authorities there was some evidence of a lack of transparency and not all decisions were made in conjunction with stakeholder input.

The catfish fishery is managed through The Gambian Sole Complex which is a co-management plan adopted in 2012. Using the 2012 Sole fishery management plan there are clear general objectives laid out which are consistent with

Principles of 1 and 2 of the MSC. However, there are issues regarding transparency of the management system and decision-making processes. There is also minimal MCS occurring which is a concern due to high rates of illegal fishing across West Africa.

4 Report details

4.1 Aims and constraints of the pre-assessment

The aim of the pre-assessment to assess the performance of the catfish fishery to identify what improvements may need to be made to reach the level of a pass against the MSC standard. The MSC standard is considered the gold standard of sustainability in fisheries globally, and a pass against the standard allows the fishery to be considered sustainable at that point in time. The MSC standard can also be used as a tool on which to structure improvements to data and fishery management.

The focus of this pre-assessment is on the rough head sea catfish (*Arius laticutatus*) caught by demersal gillnets. The stock is shared across The Gambian and Senegalese EEZs and is covered by the sole and catfish management plan. The main management competences include the Department of Fisheries and the National Sole Fisheries Co-Management Committee (NASCOM).

Upon investigation of this fishery it was determined that there are in fact, three species of catfish caught. This includes *Arius heudelot* (Ngunja or smooth head sea catfish), *Arius laticutatus* (black kong or rough head sea catfish) and *Arius parkii* (white kong). The fishery data does not define the different species. The CECAF demersal stock assessment (2017) also considers them together when analysing CPUE and describes them as one management unit. The RBF focuses on *Arius laticutatus* but there is currently not enough species-specific catch information to consider *Arius laticutatus* separately to the other catfish species when looking at CPUE trends, therefore all are considered together for some aspects of P1. In consequence, the result of assessing the fishery as a complex is to use the precautionary approach and to use the lowest performing scores to drive the final result and conclusions.

Due to the current COVID-19 pandemic, site visits were not possible as originally planned. Therefore, all information was gathered by either remote interview or data available online.

This pre-assessment does not attempt to duplicate a full assessment against the MSC Fisheries Standard. A full assessment involves a group of assessment team members and public consultation stages that are not included in a pre-assessment. A pre-assessment provides a provisional assessment based on a limited set of information provided by the client.

4.2 Version details

Table 1 – Fisheries program documents versions

Document	Version number
MSC Fisheries Certification Process	Version 2.2
MSC Fisheries Standard	Version 2.01
MSC General Certification Requirements	Version 2.3
MSC Pre-Assessment Reporting Template	Version 3.1

5 Unit(s) of Assessment

5.1 Unit(s) of Assessment

Marine catfish are part of the mixed demersal fishery in the Gambian coastal region. The fishery targets high-value species such as sole, and also catches catfish, among many other species. The sole-targeted fishery is the same as the catfish fishery, and has undergone pre-assessment before first in 2007 and then in 2015.

The fishery consists of a fleet of artisanal pirogues (8-15 m) fishing with monofilament gillnets which are set on the seabed. The nets are 80 - 3000 m long and are 2 m high from the seabed if set with sufficient floatation. Tides, currents and insufficient floatation may push the nets flatter on the seabed. They are hung loosely along the headrope and catch fish through entanglement. As such, they are not very selective.

This fishery is eligible for participation in the MSC certification programme and assessment as it is within the scope of the MSC Fishery Certification Requirement, as per the following determinations:

- The target species are eligible;
- Fishing operations do not use poisons or explosives;
- The fishery is not conducted under a controversial unilateral exemption to an international agreement;
- The client has not been successfully prosecuted for a forced labour violation in the last two years;
- The fishery is not subject of controversy and/or dispute; and
- The fishery is not an enhanced fishery

Table 2 – Unit(s) of Assessment (UoA)

UoA 1	Description
Species	Rough head sea catfish (<i>Arius laticutatus</i>) Ngunja or smooth head sea catfish (<i>Arius heudelot</i>) White kong (<i>Arius parkii</i>)
Stock	The Gambia and Senegal EEZs
Geographical area	The Gambia and Senegal EEZs
Harvest method / gear	Demersal gillnet
Client group	Gambian artisanal fleet
Other eligible fishers	Senegalese fishers due to reciprocal fisheries agreement
Justification for choosing the Unit of Assessment	Pre-determined by client

6 Traceability

6.1 Traceability within the fishery

Catfish are landed at coastal landings sites and are consumed either fresh or smoked. Processed marine catfish are transported and marketed up country and some are exported to the USA and Europe for African populations (Gibril *et al.*, 2012). The stock is thought to be shared between The Gambian and Senegalese EEZ's and so precaution would be needed to ensure that the fish landed were from the correct UoA. For the sole fishery, which is thought to be the same as the catfish fishery, there are reports of illicit trans-border trade between The Gambia and Senegal and may pose an indication of risk for this fishery (CRC, 2014).

In 1982, the Senegal-Gambia Agreement on Maritime Fisheries was first signed and is reviewed every two years. However, the last review was in 2010. The agreement allows fishermen to fish in the other state's waters under the same conditions as its own nationals. Artisanal fishermen of either state operating in the Gambia or Senegal are required to land catches in the country in which they are based. Therefore, catfish caught in Senegal could be landed in The Gambia, creating risk in traceability.

Table 3 – Traceability within the fishery

Factor	Description
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<p>Will the fishery use gears that are not part of the Unit of Certification (UoC)?</p> <p>If Yes, please describe:</p> <ul style="list-style-type: none"> - If this may occur on the same trip, on the same vessels, or during the same season; - How any risks are mitigated. 	<p>It is unclear whether alternative gear types might be used within the UoC and further investigation is required.</p>
<p>Will vessels in the UoC also fish outside the UoC geographic area?</p> <p>If Yes, please describe:</p> <ul style="list-style-type: none"> - If this may occur on the same trip; - How any risks are mitigated. 	<p>Vessels are allowed to fish catfish within Senegalese waters which increases the risk of substitution or mixing. It is unclear if there are any mitigation measures in place to reduce this risk but this would be necessary to ensure a transparent supply chain.</p>
<p>Do the fishery client members ever handle certified and non-certified products during any of the activities covered by the fishery certificate? This refers to both at-sea activities and on-land activities.</p> <ul style="list-style-type: none"> - Transport - Storage - Processing - Landing - Auction <p>If Yes, please describe how any risks are mitigated.</p>	<p>There is insufficient information to currently assess this.</p>
<p>Does transshipment occur within the fishery?</p> <p>If Yes, please describe:</p> <ul style="list-style-type: none"> - If transshipment takes place at-sea, in port, or both; - If the transshipment vessel may handle product from outside the UoC; - How any risks are mitigated. 	<p>No- this is an artisanal coastal fishery and so transshipment is highly unlikely.</p>
<p>Are there any other risks of mixing or substitution between certified and non-certified fish?</p> <p>If Yes, please describe how any risks are mitigated.</p>	<p>-</p>

7 Pre-assessment results

7.1 Pre-assessment results overview

7.1.1 Overview

A Risk Based Framework (RBF) was conducted for Principle 1 as there was no stock assessment available (see Section 7.9). The result of the PSA analysis suggests P1.1.1 will fail to meet SG80, this is due primarily to the lack of information and uncertainty surrounding the susceptibility of the fishery to the target species. Therefore, this will likely fail P1.

Catch data indicated the presence of main and minor bycatch species however, a PSA was required for secondary species due to limited data available (see Section 7.9). The results of the PSA indicate high risk for the secondary main species but this was largely due to a lack of information to be able to conduct the PSA. The environmental impacts of the UoA must also be considered due to the nature of the gear. While habitat and ecosystem impacts are thought to be limited, P2 is likely to fail due to limited information and monitoring in regards to impacts.

Management measures are in place for this fishery through a Co-Management Plan and decision making is a participatory process. However, enforcement and monitoring are low due to a lack of funding and capacity. This means that this fishery is likely to fail P3.

7.1.2 Recommendations

Following this pre-assessment, the following recommendations are suggested:

- In general, more information is required to accurately score this fishery and it would benefit from a site visit to gain further insight into the operations of the fishery.
- P1 should be revisited when further stakeholder information is available to inform the PSA under PI1.1.1.
- Creating a mechanism to limit fishing effort – for example restricting artisanal licencing.
- Create a mechanism to control fishing effort from other countries – for example all artisanal vessels must have inshore Vessel Monitoring System.
- Further data collection on elasmobranch, cetacean and turtle bycatch is required as well as on habitat impacts of the fishery.
- Consider undertaking a pre-assessment for the longline fishery as this accounts for most catches of catfish in The Gambia.

7.2 Summary of potential conditions by Principle

Table 4 – Summary of Performance Indicator level scores

Principle of the Fisheries Standard	Number of PIs with draft scoring ranges <60
Principle 1 – Stock status	3
Principle 2 – Minimising environmental impacts	8
Principle 3 – Effective management	3

7.3 Summary of Performance Indicator level scores

Table 5 – Summary of Performance Indicator level scores

Performance Indicator	Draft scoring range	Data deficient?
1.1.1 – Stock status	<60	Yes
Rationale or key points		
Overall, there is insufficient information to effectively score each scoring issue. Instead, a PSA has been used under the RBF, although this also lacks key sources of information with regards to the level of susceptibility across the regional distribution of this transboundary management unit.		
1.1.2 – Stock rebuilding	NA	NA
Rationale or key points		
As the RBF was used to score PI1.1.1 this PI is not scored.		
1.2.1 – Harvest Strategy	60 – 79	Yes
Rationale or key points		
The suite of technical measures and seasonal closures are included within the Fishery Co-Management Plan for The Gambia Sole Complex, which also retains catfish. Combined these managements measures are deemed sufficient to form a harvest strategy that is likely to work. However, there remains uncertainty whether the harvest strategy can be considered to be ‘responsive to the state of the stock’ and the lack of evidence for regional collaboration with Senegal indicates the harvest strategy is not necessarily ‘working together’ to meet SG80.		
1.2.2 – Harvest control rules and tools	60 – 79	Yes

Rationale or key points		
Overall, there are a suite of measures in the Fishery Co-Management Plan for The Gambia Sole Complex sufficient to vary fishing mortality to prevent the stock from reaching the point of recruitment impairment to meet SG60. It remains unclear whether the HCRs can be effective without routine information on the status of the resource.		
1.2.3 – Information and monitoring	60 – 79	No
Rationale or key points		
A wide range of information is collected from the mixed demersal gillnet fishery in the Gambia. The national CAS provides fisheries statistics that can be used to monitor the relative abundance (CPUE) of the stock and inputs to stock assessment models. Uncertainty in the quality of national information and quantity of regional data from neighbouring Senegal prevent the fishery meeting SG80.		
1.2.4 – Assessment of stock status	≥80	Yes
Rationale or key points		
The RBF was used to score PI1.1.1 and therefore a default score of 80 shall be awarded to this PI.		
2.1.1 – Primary Outcome	≥80	No
Rationale or key points		
There are not thought to be any main primary species in this UoA.		
2.1.2 – Primary Management	≥80	No
Rationale or key points		
There are no main primary species in this UoA and so will meet SG80. In addition, the harvest strategy for Atlantic horse mackerel (minor primary species) is the same for the other small pelagic species e.g. spatial zonation and catch limits are proposed.		
2.1.3 – Primary Information	≥80	No
Rationale or key points		
There are no main primary species in this UoA. Stock assessments are conducted for Atlantic horse mackerel however, the fishery statistics do not differentiate between species of horse mackerel (<i>T.trachurus</i> or <i>T.trecae</i>).		
2.2.1 – Secondary Outcome	<60	Yes
Rationale or key points		
Five main secondary species were identified in this UoA. A PSA was required for all main secondary species in this UoA as there are insufficient data available to assess stock status. However, there are also limited data both in terms of productivity for all five species and susceptibility specific to this UoA. Therefore, where information was missing the highest risk score was attributed.		
2.2.2 – Secondary Management	<60	Yes
Rationale or key points		

There are management measures in place for the target species which may indirectly have an impact on secondary species such as mesh size restrictions and spatial zoning. However, there is insufficient information available to ensure that the measures will not hinder the secondary species.		
2.2.3 – Secondary Information	<60	Yes
Rationale or key points		
There was insufficient information available to estimate the productivity and susceptibility for the main secondary species and therefore is unlikely to meet SG60 .		
2.3.1 – ETP Outcome	<60	Yes
Rationale or key points		
ETP species such as cetaceans and turtles are known to be impacted by gillnets, although evidence suggests this is more attributed to drifting gillnets. As there is little information available for the impact of this UoA on turtle and cetacean species a PSA was conducted for green turtle (the most abundant in The Gambia) and humpbacked dolphins as they are thought to be particularly vulnerable to gillnet fisheries. Due to the limited information available to score the susceptibility aspect of this pre-assessment both green turtle and humpbacked dolphin are unlikely to meet SG60 .		
2.3.2 – ETP Management	<60	No
Rationale or key points		
Turtle and cetacean species are protected under National legislation and there was anecdotal evidence of training provided to fishers. However, monitoring of interactions is minimal in this fishery and there is insufficient data collected to determine if management measures are working. Enforcement of measures are also thought to be hampered by lack of resources, low institutional capacity and logistical barriers		
2.3.3 – ETP Information	<60	Yes
Rationale or key points		
There is insufficient data collected to determine the impacts of this UoA of ETP species. The necessary information to conduct a PSA was also not available.		
2.4.1 – Habitats Outcome	60 – 79	Yes
Rationale or key points		
The majority of benthic impacts will occur during retrieval of the gear as the nets and leadlines are more likely to snag the bottom structures or exposed sedentary benthos. As the preferred habitat for catfish are muddy and sandy bottoms, impact by gillnets that lead to serious or irreversible harm are thought to be unlikely as they are not sensitive habitats. However, habitat maps of this UoA could not be provided for this pre-assessment and therefore an RBF is likely to be needed.		
2.4.2 – Habitats Management	<60	No
Rationale or key points		
As most fishing will occur over sandy and muddy habitats it is likely that a partial strategy is not needed for this UoA but there are areas of seagrass and coral reefs present and several MPA's that are in the coastal areas. Stakeholder consultation (2020) has highlighted that MPAs are not well respected in Gambia, and that the Gambian ministries tasked with enforcing protected areas, the DoF and the DPWM, are not in a good position to be able to enforce the areas well.		
2.4.3 – Habitats Information	<60	Yes

Rationale or key points		
While the types of habitat are well defined in The Gambia there was no specific data available on the location or status of coral reefs provided by stakeholders and no habitat maps. Also, no information was provided on the footprint and spatial overlap of this fishery on surrounding habitat.		
2.5.1 – Ecosystems Outcome	60 – 79	No
Rationale or key points		
A model of the Senegambian ecosystem found that most of consumption in the region is associated with coastal pelagics and zooplankton. This may indicate that the removal of demersal species, such as catfish will have limited impact on the key elements of the ecosystem. The artisanal nature of the fishery may also suggest a limited impact as well as the small proportion of catches taken by demersal gillnets (over 80% of catfish catches are by longline). However, precaution is needed due to the poor status of the catfish stock.		
2.5.2 – Ecosystems Management	60 – 79	No
Rationale or key points		
The removal of catfish from the ecosystem is managed through spatial and technical measures such as closed zones and mesh size restrictions which will help to limit impacts on key ecosystems. As the demersal gillnet catfish fishery is a small proportion of the total catch of species these measures are likely to be sufficient. There is however, anecdotal evidence that mesh size restrictions are not complied with, while zonation is somewhat complied with but there are some encroachments. Monitoring and patrol of fisheries within The Gambia is also minimal and so there is insufficient evidence to suggest that measures are being implemented successfully		
2.5.3 – Ecosystems Information	60 – 79	Yes
Rationale or key points		
As no recent stock assessments have been undertaken for catfish this is unlikely to meet SG80 and there is little information available on the direct impacts of this UoA on habitats and ETP species. However, there is some information available on the ecosystem as a complete characterisation of the ecosystem has been undertaken and catch data provided.		
3.1.1 – Legal and customary framework	60-79	No
Rationale or key points		
There is a good basis for governance in The Gambia that should be capable of delivering sustainable fisheries however, there are potentially issues with effectiveness due to financial constraints. There is also limited regional cooperation across West Africa which is required due to the shared nature of several stocks. Although there are some national mechanisms in place in regards to disputes again there appears to be no dispute mechanism at the regional level		
3.1.2 – Consultation, roles and responsibilities	60 – 79	No
Rationale or key points		
Roles and responsibilities appear to be clearly defined and stakeholder consultation indicated that management is based on consultation with communities, resources users, government agencies and local authorities. However, stakeholder consultation also indicated that decision making is not always entirely transparent and some decision are made without consultation.		
3.1.3 – Long term objectives	Partial 80	No
Rationale or key points		

Long term objectives are explicit through the 2007 Fisheries Act which make reference to the precautionary and ecosystem-based approach. However, stakeholder consultation suggested that a stronger regional approach to fisheries management is needed due to the shared nature of many stocks and the agreements in place allowing other countries to fish within Gambian waters.

3.2.1 – Fishery specific objectives

60 – 79

No

Rationale or key points

The fishery co-management plan for The Gambia Sole Complex was signed in 2012 but in 2013 the plan became a multispecies management plan and was adapted to include catfish (CRC. 2014). Using the 2012 Sole fishery management plan there are clear general objectives laid out which are consistent with the Principles 1 and 2 of the MSC. Although there are general objectives in place, this is not supported by quantitative targets for catfish, such as a target reference point

3.2.2 – Decision making processes

<60

No

Rationale or key points

There is no information in relation to catfish available and stakeholder consultation (2020) indicated that there are currently no management discussions concerning catfish.

3.2.3 – Compliance and enforcement

<60

No

Rationale or key points

There is generally thought to be a lack of monitoring in these fisheries due to inadequate funding and enforcement is limited. Illegal fishing is also known to be high in West Africa and this is a result of ineffective MCS by the DoF, the Gambian Navy and the lack of auto surveillance by fishers.

3.2.4 – Management performance evaluation

<60

No

Rationale or key points

There is some evidence that the management plan is evaluated, for example the decision to increase mesh size and change into a multi-species management plan. While the plan is occasionally reviewed it is unclear whether this includes management for catfish and consultation (2020) indicated that management discussions on catfish have ceased.

7.4 Principle 1

7.4.1 Principle 1 background

Biology and ecology

West African *Arius* spp. are a demersal species found on the mud bottoms in both brackish and marine waters down to about 70 m (Schneider 1990; Gabis *et al.* 2012). Ranging from Senegal to Angola, they are mainly an estuarine species, and tend to move towards shallower inshore waters to reproduce, which reportedly occurs in Gambia between April and July (Gabril *et al.* 2012). This is similar to reports from Senegal, where spawning of *A. latiscutatus* have been observed between March and July in the Delta Saloum, corresponding to the end of the cold season and the start of the hot season when the daylight hours are at maximum and the water temperature increases to more than 25°C (Diop *et al.* 2017). Similarly in Guinea, the gonadosomatic index for *A. latiscutatus* showed it to have a single breeding season between March and May, whereas for *A. gigas* this was extended to July (Koivogui *et al.* 2020).

The fish have been observed to spawn during the months May to September. During spawning, data from nearby Senegal show around 22 ± 10 large eggs (16-17 mm diameter; Daget 2003) are retained orally to incubate (Daget 2003; Diop *et al.* 2017), which after fertilization, are kept in the mouths of the males until hatching (FAO 2020). This is slightly lower than other studies in the region (Barham *et al.* 2011), which is thought to be due to larger fish size.

Arius spp. feed on zoobenthos such as polychaetes as well as zooplankton and detritus (Longhurst 1957; Diouf 1996; Vreven and De Vos, 2007). The female will reduce its food intake before spawning while the male will abstain from food during incubation (FAO 2020). They can grow up a maximum of 70 cm (total length), equivalent to approximately 20-30 years old (Conand *et al.* 1995), with median length at first maturity dependent on sex (Conand *et al.* 1995). In Senegal, this was 37.5 cm for males and 41.9 cm for females (Diop *et al.* 2017), whereas these were both higher than those reported in Guinea (30 cm, Domain *et al.* 1999; 27 cm to 28 cm, Sidibé 2003). These observed differences are likely to be partly due to the use of total length to estimate L_{m50} in this study whereas the fork length was used for the other studies in Guinea.

Limited information exists on the migration patterns of catfish in Gambia and surrounding areas. According to Gabril *et al.* (2012) catfish are thought to migrate between Senegal and Gambia, which might depend on one or more environmental conditions.

Stock status

Generally, there remains an issue in mixed fisheries to identify species that are reported in groups, this combined with insufficient scientific observer programmes in place for industrial fleets compounds the regional fisheries management challenges. Reporting to species-level is also a problem for some coastal and artisanal fisheries (FAO 2020).

Due to the nature of reporting, *A. latiscutatus* are grouped together under all other marine catfish species. Available information indicates that *Arius* spp. of marine catfish are distributed on the continental shelf from The Gambia to Senegal. Catfishes are considered as a single stock, which are also assessed as a single management unit by CECAF Working Group (FAO 2020). According to latest information from CECAF Demersal Working Group, the status of *Arius* spp. remains unknown.

Information on catches, effort and CPUE are able to show general trends in the productivity of the stock. Catfishes are landed by the industrial and artisanal fleets in Senegal and The Gambia, as target species or bycatches. Abundance indices (catch per unit effort; kg/day) are calculated for two dominant fishing segments in Senegal: the ice trawlers (PIS GLA) and the freezer trawlers (PIS CON) (Figure 1). This show trends similar to those of total catches of Senegalese ice trawlers between 1990 and 1999 and those of Senegalese freezer trawlers between 2000 and 2016. The highest CPUEs were observed during the 1990s, with a peak in 1998. Since this time, catch rates in Senegal have remained comparatively low.

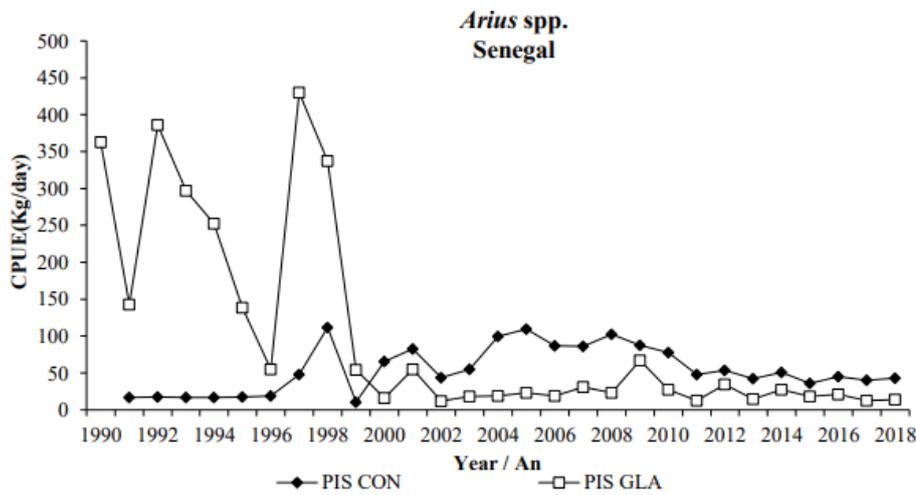


Figure 1: CPUE (kg/days at sea) of the main fleets targeting *Arius* spp. in Senegal (FAO 2020).

Within the Gambian industrial fishery, catch rates have fluctuated between 2006 to 2016, varying from 20 to 50 kg/fishing day (Figure 2). Due to the moratorium on industrial fishing there was zero CPUE in 2015 and 2016. A sharp increase of the CPUE was observed immediately following the moratorium, increasing from 15 kg/fishing day in 2014 to 45 kg/fishing day in 2017. This was followed by slight decline in 2018 to 40 kg/fishing day. The CPUE of the artisanal fishing fleet indicated a sharp increase from 2016 to 2017 and then showed a mild increase in 2018 with an annual average of 69 kg/fishing day.

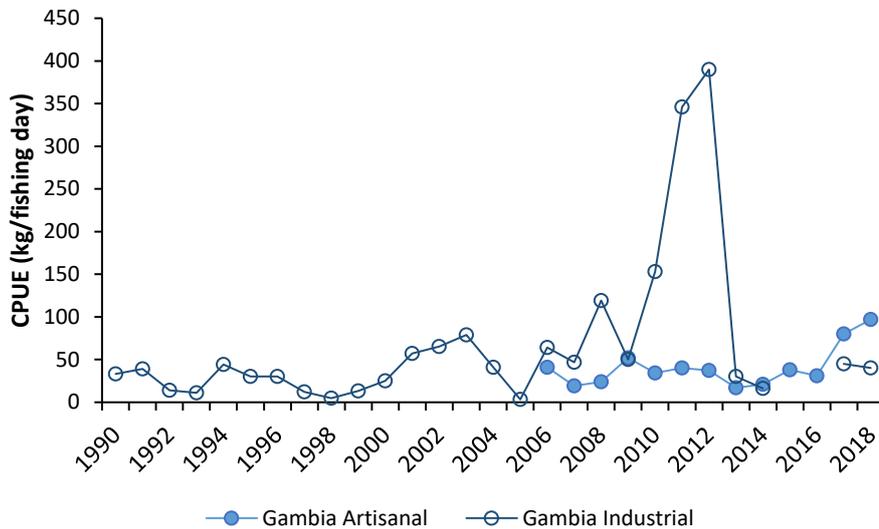


Figure 2: CPUE (kg/days at sea) of the main fleets targeting *Arius* spp. in Gambia (data source: FAO 2020). [Note high CPUE in 2010 – 2012 may be due to spurious catch data].

No information is available from research surveys to support the trends identified in the data from Senegal and the Gambia.

In addition to the above information, Castro et al. (2013) have used a length-converted catch curve analysis (LCCA) in an attempt to estimate the status of the stock based on the best available estimate of fishing mortality at that time. The results from this preliminary assessment suggest that both recruitment ($F_{current}/F_{30\%}$) and growth ($F_{current}/F_{max}$) overfishing was likely occurring on the stock in 2013 and it was recommended to reduce fishing mortality at this time. High catches reported since 2013 (cf. Figure 5), coupled with a decline in catch rates since early 1990s indicate that the stock is likely to be remain overexploited. No limit reference points are available to determine if the stock has declined below point of recruitment impairment.

Table 6: Stock status of *Arius* spp. in relation to LCCA reference points (adapted from Castro et al. 2013).

Calculated F_{2013}	F/F_{max}	$F/F_{30\%}$
0.45	1.67	1.73

The YPR results presented by Castro et al. (2013) are not compatible with MSY and therefore not appropriate for use in determining status with respect to MSC requirements. Under these circumstances, the fishery is considered data deficient and a PSA approach should be used under the MSC RBF.

Harvest strategy

The *Arius* spp. fishery is part of the artisanal mixed demersal gillnet fishery, which includes sole. The harvest strategy for *Arius* spp. therefore falls under the similar management measures and harvest strategy as the sole gillnet fishery.

The National Sole Co-Management Committee (NASCOM) and its associated Community Based Sole Committees (LACOMS), were both established under the umbrella of Ba Nafaa in 2011. Through the Community Fisheries Centre Management Committees fishers have exclusive use rights to sole and *Arius* spp. fisheries within the sole fisheries zone (from the Atlantic shoreline and shorelines adjacent to the estuarine areas of the Gambia River to 9 nautical miles offshore) and are responsible for their local management. The National Association of Artisanal Fisheries Operators (NAAFO), the Gambia Artisanal Fisheries Development Association (GAMFIDA) and The Association of Gambian Fishing Companies (TAGFC) have stakeholder representation within NASCOM.

The Fishery Co-Management Plan for The Gambia Sole Complex grants NASCOM exclusive use rights to the fishing of sole (including *Arius* spp.), within a 121,245 ha zone and specifies a seasonal closure for all fishing within 1 nautical mile (nm) of the coastline from 1st May through to 31st October (spawning period). The plan also includes a minimum mesh size (previously 80 mm, increased to 92 mm as of December 2013), and a prohibition on the use of drift nets in the Gambia River. Unlike sole, the plan does not include a minimum size for *Arius* spp. While the mesh size has been raised to 92 mm (see MOU 16 Dec 2013), an 80 mm mesh is likely to remain in use as the appropriate net mesh is as yet unavailable.

In addition to mesh size a closed area has been established from 1st May to 31st October, as a zone up to 1 nautical mile from the shore along the coast from Kartong on the Senegal border in the South to Denton Bridge, just south of Banjul. The closed area was introduced in 2013 and is being enforced. Limited information exists on the effect of the closed area. There is a general limit on access to the fishery through traditional use rights and number of suitable vessels. However, there is no formal vessel registry and there are no effort limits. Fishing effort can be estimated using landing site sampling and a frame survey (DoFish, 2006). There are no catch limits. The Fisheries Act 2007, section 35(1) states that a local fishing vessel, including a motorized or nonmotorized canoe, shall not be used for fishing without having on board a local fishing vessel licence issued by the Director, with the approval of the Secretary of State. However, enforcement on the number and size of vessels in this joint fishery with Senegalese fishers remains an ongoing issue (Ceesay et al., 2015).

Unlike sole, there has been no regular assessment of *Arius* spp., with CEEFAC indicating there is insufficient data to conduct an assessment to evaluate exploitation rates (FAO 2020). As an indirect consequence of management of the sole fishery, management has sought to reduce exploitation rates by implementing a seasonal closed area and mesh size regulation. There is an annual review of management measures by NASCOM. This review has resulted in a recommendation to increase the mesh size to 92 mm (which has already been implemented) and discussions on increasing the 1 nm zone to 2 nm.

The management system considers that the stock is shared between Gambia and Senegal. A workshop was conducted in 2011 on co-management initiatives on fisheries issues of importance to Senegal and The Gambia and to promote cooperative arrangements for fisheries science, technology and management. Of the workshop's final recommendations and action plan, the following were most relevant to the sole fishery harvest strategy:

- Establishment of a bilateral committee and annual workshop.
- Include fisher representatives in the national delegations in future meetings on the bilateral fishing agreement between The Gambia and Senegal.
- Harmonise policies, regulations, between countries and combat IUU fishing. This recognises that fishers migrate between the two countries. Harmonisation should take account of technical measures, seasonal closed areas and MPAs.
- Joint data collection and research, recognising that the stock is most likely shared.

Harvest control rule

Given the transboundary nature of the shared stock, the harvest strategy and harvest control rule need to include fisheries from both The Gambia and Senegal. To date, there is little or no evidence to indicate this occurs, and the lack of regional data to support the development of routine stock assessments serves to illustrate this (FAO 2020).

Within The Gambia, there are a number of controls being implemented which have the objective of improving the status of the resource and reduce risks to the *Arius* spp. gillnet fishery. These include implementation of a one-nautical mile area from the shore, which is closed for 6 months of the year since 2013. This closure may have improved the size of fish caught. These controls, together with a limit of overall fishing effort (e.g. limited entry), should be able to limit the exploitation rate to a target level, which forms part of the harvest control rule. This level of exploitation still needs to be well defined in relation to MSY and limited entry needs to be implemented. Further to this, lack of a minimum size limit or routine sampling may prevent quantifying the effects, and information may not be available and in any case has not been used to determine whether controls have improved selectivity or reduced fishing mortality, or both. Equally, without limited entry it might be argued that tools being used are not fully effective.

It can be argued that a generally understood, rather than well-defined, HCR is in place that is expected to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached. This is demonstrated by recent management action in terms of a seasonal closure and to implement larger mesh size for gillnets.

Stock assessment

Landings of *Arius* spp. in The Gambia are reported as part of the mixed demersal gillnet fishery that target a range of species including sole and catfish. The *Arius* spp. catfish group consists of a number of species, including: *Arius latiscutatus*, *Arius heudolotii*, *Arius gambiensis* and *Arius mercatoris* and are distributed across the continental shelf from The Gambia to Senegal. Catfishes are thus considered to be a single stock and the CECAF Working Group currently looks to assess this stock as a single management unit.

To date, an assessment of the status of *Arius* spp. is very difficult, because the stocks are made up of different species whose abundance is very variable according to the seasons and each year (FAO 2020). The lack of available data in each country does not allow for assessments of this management unit to be made. Coupled with the lack of a stock assessment is the development of biological reference points to determine a target (e.g. SSB_{MSY} or F_{MSY}) and limit reference point (e.g. SSB_{lim} or F_{lim}) to prevent the stock falling below the point or recruitment impairment. The current management advice from the Working Group in 2019 is to restrict fishing mortality such that total catches do not exceed the average of recent years (i.e. 7,600 tonnes) (FAO 2020).

A preliminary assessment of *Arius latiscutatus* using YPR model was developed by Castro *et al.* (2013). This provided reference points to help determine if recruitment and growth overfishing might be occurring (Figure 3). The assessment model used does not indicate the status of the stock in relation to either target or limit reference points, however.

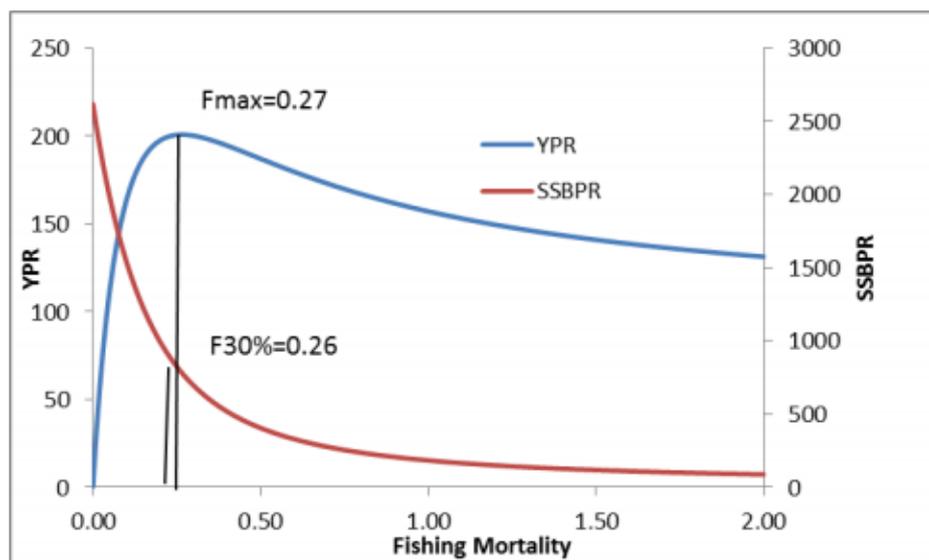


Figure 3: Estimation of YPR and SSBPR for *Arius* spp. in Gambia (Castro *et al.* 2013)

The results recommended “immediate action to reduce fishing mortality of the catfish species”. To this end, the closed season/area from May-October is expected to protect the animals during their spawning season and the increased mesh size in the gillnet to 92 mm will increase the mean size of animal captured. To date, limited or no information is available to determine if these measures have been effective.

Further to this, it was recommended that the National Sole Fishery Co-Management Committee (NASCOM) should carefully monitor this species and be prepared for further action in the future to continue protecting them

7.4.2 Catch profiles

Landings data for *Arius* spp. in both Senegal and The Gambia are presented between 1990 to 2018 in Figure 4 below. The reported data show major fluctuations in landings in Senegal during the period this period, with a peak observed in 2005 (over 12,500 tonnes).

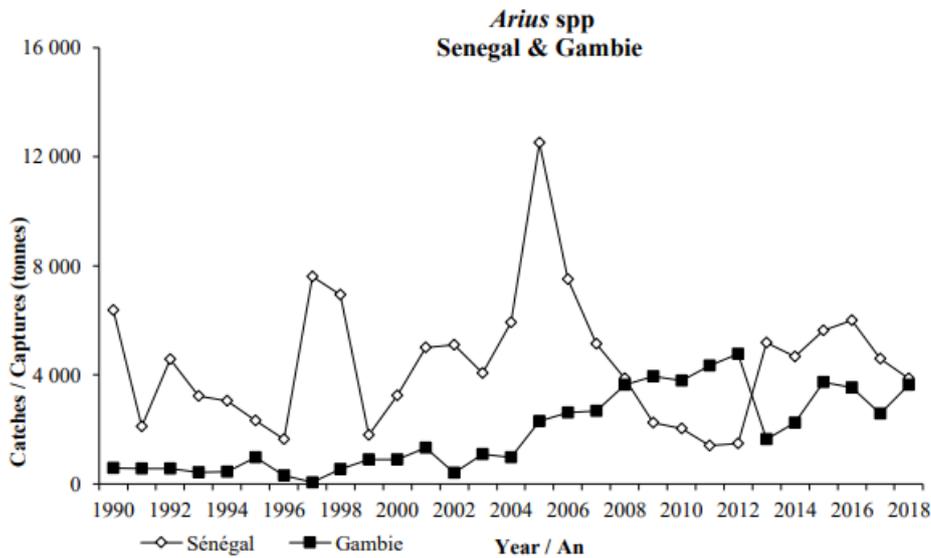


Figure 4: Total catches of *Arius* spp. in Senegal and Gambia (tonnes) between 1990 and 2018 (FAO 2020).

Reported landings in The Gambia have shown a broad increase since early 1990s, reaching on average around 2,000 tonnes over the last five years. In 2015 and 2016 there were zero catches of catfish by the Gambian industrial fleet due to a moratorium in industrial fishing (Figure 5). It remains unclear why the industrial sector reported landings to CECAF were so high 2009 and 2012. In contrast, reported landings by The Gambian Department of Fisheries (Castro *et al.* 2013) indicate higher artisanal catches during this period, indicating that industrial and artisanal landings have been switched during the CECAF meetings and reported trends in catches and CPUE should be viewed with caution during this period.

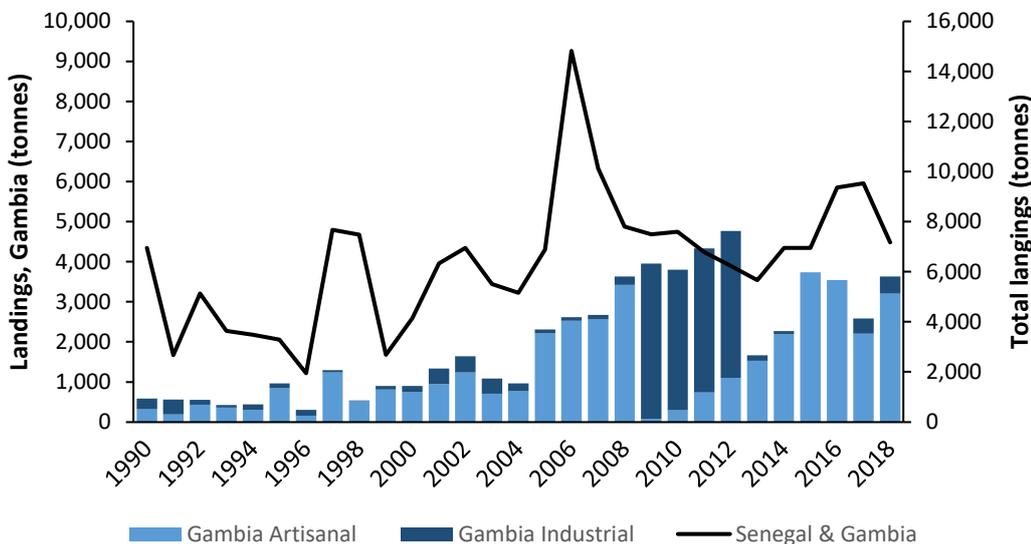


Figure 5: Total landings (tonnes) in Gambia artisanal and industrial sectors with total from Senegal and Gambia (data source: FAO 2020). [Note industrial landings 2009 – 2012 subject to review].

7.4.3 Total Allowable Catch (TAC) and catch data

There is no TAC set in this fishery, at a national level, nor a regional level.

Table 7 – Total Allowable Catch (TAC) and catch data

TAC	Year	NA	Amount	NA
UoA share of TAC	Year	NA	Amount	NA
UoA share of total TAC	Year	NA	Amount	NA
Total green weight catch by UoC	Year (most recent)	NA	Amount	NA
Total green weight catch by UoC	Year (second most recent)	NA	Amount	NA

7.4.4 Principle 1 Performance Indicator scores and rationales

PI 1.1.1 – Stock status

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue		SG 60	SG 80	SG 100
a	Stock status relative to recruitment impairment			
	Guide post	It is likely that the stock is above the point where recruitment would be impaired (PRI).	It is highly likely that the stock is above the PRI.	There is a high degree of certainty that the stock is above the PRI.
	Met?	N/A	N/A	N/A
Rationale				

There are currently three *Arius* species which are considered under this UoA: rough head sea catfish (*Arius laticutatus*); Ngunja or smooth head sea catfish (*Arius heudelot*), and white kong (*Arius parkii*). These are considered to form a single *Arius* spp. management unit on the continental shelf in both The Gambia and Senegal. None of these species are Low Trophic Level Species.

While historical data for landings indicate the management unit has not collapsed, and therefore might be at or below the point of recruitment impairment, no assessment of the *Arius* spp. has been conducted. Further to this, the stock status cannot be determined in relation to biological reference points, either from analytical stock assessment or using empirical approaches. In consequence, the RBF was used to score PI1.1.1 for *A. laticutatus* (see section 7.9). This was done following stakeholder consultation, but not in a specific RBF stakeholder workshop. The results are based on the knowledge the assessor have gained during speaking with the stakeholders, and assumptions thereafter. There is high uncertainty associated with these results.

The most vulnerable subcomponent for catfish (*Arius laticutatus*) is likely to be population size or reproductive capacity. The 2013 preliminary stock assessment concluded that catfish was experiencing growth and recruitment overfishing. Stakeholders have indicated that there is much less catfish being caught now than before, so the team have selected population size as the most vulnerable subcomponent.

Consequence Analysis (CA) scoring of subcomponents: A stock assessment was conducted in 2013 by the University of Rhode Island and Gambia Government BaNaFaa project. 2013 is outdated for the current project, but we can use the assessment to indicate that at that time that the stock was considered to be overfished and experiencing growth and recruitment overfishing. The assessment recommended an immediate reduction in fishing mortality. Since then, CECAF, through the Nansen program have done a regional assessment of demersal stocks in West Africa, in 2017. They were not able to conduct a stock assessment for catfish but did use data from industrial fleets to calculate CPUE, which has been declining from a high 2012. The assessment considers three species of catfish as one stock and one management unit. In Gambia specifically, CPUE has been variable between 2006 and 2016 (see figure below). CECAF recommend that the average fishing mortality of the last three years should not be exceeded.

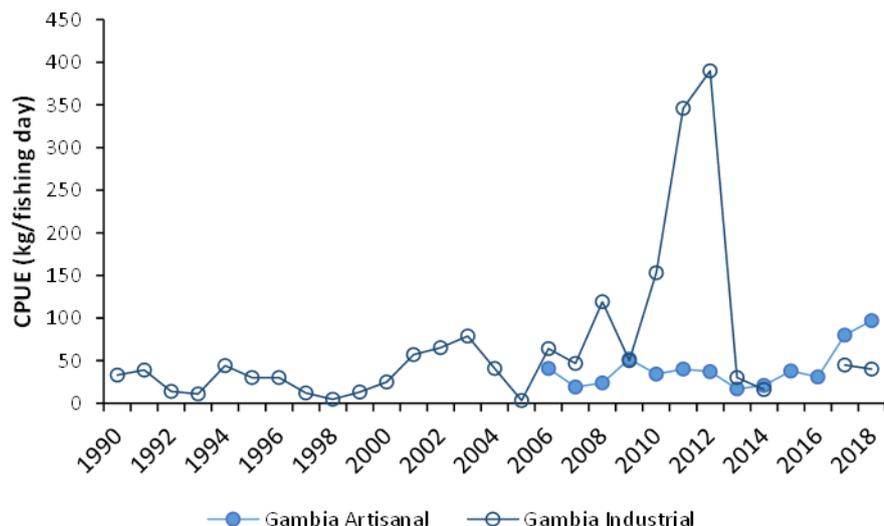


Figure 6 CPUE (kg/fishing day) for artisanal and industrial fisheries targeting *Arius* spp. (adapted from FAO 2020).

Catfish are relatively long-lived with slow growth rate and low fecundity, as well as this, they are buccal brooders (males mouth brood), which is a large parental investment. These life history characteristics make them vulnerable to over-exploitation. Information to populate the PSA was obtained from a number of sources outlined in section 7.4.1 above.

With respect to the susceptibility of the fishery and aerial overlap of the fishery with the stock: the species is found from Senegal to Angola and out to Cape Verde. There is no information on whether that is one stock or multiple. Assuming there is genetic flow throughout the entire range, the aerial overlap of the Gambian artisanal fishery in Gambian inshore waters, would be less than 10% of the range of the species. However, the CECAF stock assessment said that catfish are found in Senegal and Gambia, and that is the stock and management unit, in which case, catfish would be fished throughout its range. Stakeholder consultation indicated that the same species of catfish are found from Mauritania down to Liberia, in which case, the Gambia fishery would be roughly 10-30%. It is likely that catfish is fished throughout its range, and the nature of the RBF is to be precautionary in the lack of evidence. Therefore to be precautionary, the high risk category has been selected instead of the low risk category.

The results from the PSA found the fishery to be high risk and therefore it would score <60. The result is sensitive to one change in score category, so for example, if the aerial overlap is determined to be 10-30% rather than >30%, then the fishery would be medium risk and would score 60-79. It is recommended to gather information such as this to reduce the precautionarily in the scoring.

Stock status in relation to achievement of Maximum Sustainable Yield (MSY)				
b	Guide post		The stock is at or fluctuating around a level consistent with MSY.	There is a high degree of certainty that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.
	Met?		N/A	N/A
Rationale				

There is currently no target reference point to determine the status of the stock. In consequence a PSA has been completed for *A. lasticutatus* (see section 7.9.1). Lack of information on the susceptibility of the stock indicates the stock to be of high risk and score <60.

References

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Stock status relative to reference points

	Type of reference point	Value of reference point	Current stock status relative to reference point
Reference point used in scoring stock relative to PRI (SIa)	Unknown	Unknown	Unknown
Reference point used in scoring stock relative to MSY (SIb)	Unknown	Unknown	Unknown

Overall Performance Indicator (PI) Rationale

Overall, there is insufficient information to effectively score each scoring issue. Instead a PSA has been used, although this also lacks key sources of information with regards to the level of susceptibility across the regional distribution of this transboundary management unit. It is recommended that a regional PSA workshop be held for stakeholders in The Gambia and Senegal to review productivity scores and garner new information on the level of susceptibility. A preliminary PSA was scored for *A. lasticutatus* (3.77), which indicates the management unit is likely to score <60 without further information.

Draft scoring range	<60
Information gap indicator	More information sought
Data-deficient? (Risk-Based Framework needed)	Yes

PI 1.1.2 – Stock rebuilding

PI 1.1.2		Where the stock is reduced, there is evidence of stock rebuilding within a specified timeframe		
Scoring Issue		SG 60	SG 80	SG 100
a	Rebuilding timeframes			
	Guide post	A rebuilding timeframe is specified for the stock that is the shorter of 20 years or 2 times its generation time . For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.		The shortest practicable rebuilding timeframe is specified which does not exceed one generation time for the stock.
	Met?	NA		NA
Rationale				

As the RBF was used to score PI1.1.1 this PI is not scored.

b	Rebuilding evaluation			
	Guide post	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within the specified timeframe.	There is evidence that the rebuilding strategies are rebuilding stocks, or it is likely based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe .	There is strong evidence that the rebuilding strategies are rebuilding stocks, or it is highly likely based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe .
	Met?	NA	NA	NA
Rationale				

As the RBF was used to score PI1.1.1 this PI is not scored.

References

None.

Overall Performance Indicator (PI) Rationale

Draft scoring range

NA

Information gap indicator

More information sought

PI 1.2.1 – Harvest strategy

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Scoring Issue		SG 60	SG 80	SG 100
a	Harvest strategy design			
	Guide post	The harvest strategy is expected to achieve stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in PI 1.1.1 SG80.
	Met?	Yes	No	No
Rationale				

The mixed demersal gillnet fishery in The Gambia targets a number of species, including catfish (*Arius* spp.) and sole. A number of management measures are in place that form part of a harvest strategy. For example, the Fishery Co-Management Plan for The Gambia Sole Complex grants NASCOM exclusive use rights to the fishing of sole (including *Arius* spp.), within a 121,245 ha zone, including a seasonal closure for all fishing within 1 nautical mile (nm) of the coastline from 1st May through to 31st October (spawning period). Further to this there is a minimum mesh size (92 mm) and a prohibition on the use of drift nets in the Gambia River. Unlike sole, however, there is no minimum landing size limit (cm) for *Arius* spp.

There is currently limited information available on the effectiveness of the seasonal closed area. Further to this whilst there is a general limit on access to the fishery through traditional use rights and number of suitable vessels, there is no formal vessel registry and there are no effort limits. A lack of enforcement on the number and size of vessels for both Gambian and Senegalese fishermen will need to be addressed (Ceesay et al., 2015), probably through joint vessel registration and fishermen licensing agreements.

The current harvest strategy appears to recognise that the stock is shared with Senegal and is taking steps for harmonized management. However, this is as yet incomplete, and the Senegalese part of the harvest strategy is not presented. The unit of assessment would need to cover the Senegalese fishery.

The suite of management measures that form part of a national harvest strategy are expected to achieve stock management objectives, sufficient to meet SG60, although there is no supporting evidence to suggest the status of *Arius* spp. management unit is maintained at target reference points. Further to this, given the status of the management unit is unknown, the harvest strategy cannot be considered to be 'responsive to the state of the stock' and the lack of evidence for regional collaboration with Senegal indicates the harvest strategy is not necessarily 'working together' to meet SG80.

b	Harvest strategy evaluation			
	Guide post	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	Met?	Yes	No	No
Rationale				

The suite of management measures available within the Fishery Co-Management Plan for The Gambia Sole Complex are based on sound principles, such as closed areas/seasons, gear mesh and limits to fishing access, although it excludes a minimum landing size for *Arius* spp. Overall, the components of the national harvest strategy are likely to

work sufficient to meet SG60. However, without further evidence on the status of the *Arius* spp. management unit, it is more difficult to determine if the harvest strategy has been successful in achieving its objectives sufficient to meet SG80.

c	Harvest strategy monitoring			
	Guide post	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Met?	Yes		
Rationale				

A range of monitoring occurs within the mixed demersal gillnet fishery that is expected to determine if the elements in the harvest strategy are working. For example landing statistics are routinely monitored by DoF, and there is a semi-regular demersal fishery survey for the region, conducted by CECAF. These data are used to monitor trends in CPUE for various species groups.

d	Harvest strategy review			
	Guide post			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			No
Rationale				

There is no evidence of a regular formal review process sufficient to meet SG100.

e	Shark finning			
	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	NA	NA	NA
Rationale				

The target species group is not a shark. This scoring issue is not scored.

f	Review of alternative measures			
	Guide post	There has been a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock, and they are implemented, as appropriate.
	Met?	NA	NA	NA
Rationale				

The mixed demersal gillnet fishery does not catch unwanted species. This scoring issue is not scored.

References

Belhabib, D., Greer, K. and Pauly, D., 2018. Trends in industrial and artisanal catch per effort in West African fisheries. *Conservation Letters*, 11(1), p.e12360.

Overall Performance Indicator (PI) Rationale

The suite of technical measures and seasonal closures are included within the Fishery Co-Management Plan for The Gambia Sole Complex, which also retains catfish. Combined, these managements measures are deemed sufficient to form a harvest strategy that is likely to work. However, there remains uncertainty whether the harvest strategy can be considered to be 'responsive to the state of the stock' and the lack of evidence for regional collaboration with Senegal indicates the harvest strategy is not necessarily 'working together' to meet SG80.

Draft scoring range

60-79

Information gap indicator

More information sought

PI 1.2.2 – Harvest control rules and tools

PI 1.2.2		There are well defined and effective harvest control rules (HCRs) in place		
Scoring Issue		SG 60	SG 80	SG 100
a	HCRs design and application			
	Guide post	Generally understood HCRs are in place or available that are expected to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached.	Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	The HCRs are expected to keep the stock fluctuating at or above a target level consistent with MSY, or another more appropriate level taking into account the ecological role of the stock, most of the time.
	Met?	Yes	No	No
Rationale				

A lack of enforcement of a licencing system (number and size of vessels) occurs within the fishery. Fishery Access agreements with Senegal and Mauritania further increases the fishing effort. There is no control on effort creep up in terms of vessel capacity. As well as the number of vessels that come from third countries, according to fishery stakeholders, Gambian artisanal vessels tend to be between 10 and 15 m, whereas Senegalese vessels that travel into Gambian waters tend to be larger, around 25 m.

It is well documented that an artisanal licencing system is to be introduced at some point. The EU have recently commenced a new project in West Africa, the PESCAO project, which is working on improving fisheries governance. The Gambian Department of Fisheries is actively participating in this project. Part of the project work will apparently be registering the artisanal vessels. However, a licencing system that can control the size of fleet is some way beyond registering the vessels, especially to the Senegalese Access Agreement.

A closed season of the whole demersal fishery from 1st May to 31st October within 1 nm of the shore is supposed to protect the catfish during their spawning season. However, this closed season is a blanket ban for all demersal species, and is not necessarily specific to the breeding season of catfish. Indeed, Diop et al, 2017 studied *Arius lasticutatus* in Senegal and discovered that the breeding season was March to July. So, the closed season does cover over half of the breeding season of catfish. Spatial and technical measures that are currently used to control fishing mortality (Sidibeh, 2020):

- The spatial management involves a 1 nm around the coast no-take zone between May - November annually
- 1 nm zone around the coast dedicated to the artisanal fleet (increased from 0.5 nm in 2013)
- Vessels of 250 Gross Registered Tons (GRT) or less are allowed to fish between 9-12 nm
- Trawling is banned in the River Gambia
- Gillnets are banned within 2 nm of Dog Island and Fort James Island in the River Gambia
- Beach seines are banned in all waters.
- Gillnet mesh size increased from 80 mm to 92 mm in 2013. The size at maturity for catfish is 375 – 448mm.

The suite of management measures within the harvest strategy are generally understood to control fishing effort and may be used as a tool to reduce fishing mortality (catches) if and when the status of the stock approaches the point of recruitment impairment sufficient to meet SG60. Further to this, the passive reduction of fishing vessels in the shrimp fishery demonstrates that control rules can be implemented by DoF to reduce capacity, where required.

There is no evidence to demonstrate that the harvest control rules are well defined and in place to keep the stock fluctuating around the target reference point sufficient to meet SG80.

b	HCRs robustness to uncertainty		
	Guide post		The HCRs are likely to be robust to the main uncertainties.

				of the stock, and there is evidence that the HCRs are robust to the main uncertainties.
	Met?		No	No

Rationale

The main uncertainties in the fishery have not been clearly identified. It is therefore difficult to determine whether the HCRs are likely to be robust to these to meet SG80 and above.

C	HCRs evaluation			
	Guide post	There is some evidence that tools used or available to implement HCRs are appropriate and effective in controlling exploitation.	Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.	Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the HCRs.
	Met?	Yes	No	No

Rationale

Spatial closures such as the inshore region has shown to increase the average size of capture of some fish species and increase the survivorship of juveniles. In addition, a temporal six-month closure around part or all of the spawning season is known to protect vulnerable adults (1st June to 31st November).

A closed season of the whole demersal fishery from 1st May to 31st October within 1 nm of the shore is therefore likely to be appropriate and effective in controlling exploitation on the stock to meet SG60. There is currently no supporting evidence to demonstrate the tools are appropriate and effective to meet SG80 and above.

References

Diop, K., Diouf, K., Ndione, M.D., Diadhio, H.D., Thiaw, M., Ndiaye, P. and Jouffre, D., 2017. Study comparing the reproductive traits of the catfish, *Arius latiscutatus* (Günther, 1864) inside and outside the bamboung marine protected area, Saloum Delta, Senegal. *Reproduction*, 7, p.0.

DoF, 2012. Department of Fisheries Gambia. Fishery Co-Management Plan For The Gambia Sole Complex. https://www.crc.uri.edu/download/Sole_Plan_Jan_2012_508_Signatures1.pdf

Sidibeh 2020. Department of Fisheries Gambia. PESCAO Component 1: Technical Assistance to ECOWAS for Improved Regional Fisheries Governance in Western Africa. Activity 1.1 Improve understanding of regional fisheries issues at ECOWAS

Overall Performance Indicator (PI) Rationale

Overall there are a suite of measures in the Fishery Co-Management Plan for The Gambia Sole Complex sufficient to vary fishing mortality to prevent the stock from reaching the point of recruitment impairment to meet SG60. It remains unclear whether the HCRs can be effective without routine information on the status of the resource.

Draft scoring range	60-79
Information gap indicator	More information sought

PI 1.2.3 – Information and monitoring

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue		SG 60	SG 80	SG 100
a	Range of information			
	Guide post	Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data are available to support the harvest strategy.	A comprehensive range of information (on stock structure, stock productivity, fleet composition, stock abundance, UoA removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
	Met?	Yes	No	No
Rationale				

A range of information and data are collected to monitor the status of the fishery in the Gambia sufficient to meet SG60. For example, fleet or Frame Surveys have been conducted in 1997, 2006 and 2016, which show fishing effort over time in the artisanal sector. The Frame Survey also notes nationality of fishers, and therefore captures migrant fishermen living in Gambia, but does not capture the effort migrating into Gambian waters on a daily basis, but landing in other countries such as Senegal and Guinea Bissau. There is, however, conflicting messages about the level of fishing effort. The Frame Surveys indicate that artisanal vessel numbers and fishers have decreased between the 2006 and 2016 surveys, but Belhabib *et al.* (2018) concluded that artisanal fishing effort in West Africa regionally has increased, and specifically in Gambia artisanal fishing vessel capacity has increased.

Belhabib *et al.* (2018) described Gambia's fisheries statistics as 'good' but 'dubious and sometimes 'outdated'. The paper has reconstructed domestic catches, including subsistence, recreational and IUU, as well as industrial and artisanal, and concluded that catches from the Gambian EEZ are 2.5 times the level reported to the FAO. This suggests the data is not deemed sufficient to meet SG80.

Some biological information, such as length-weight data of catfish in the river Gambia estuary, has been established (Ecoutin, 2005). Other biological data collection, such as length and maturity measurements do not appear to be collected on a routine basis to determine the selectivity of the gear, for example. This coupled with catch and effort data appear to constrain CECAF stock assessment of *Arius* spp, which prevents the fishery meeting SG80.

In addition to the above data collection, Local Ecological Knowledge (LEK) has been gathered in the absence of quantitative data, to elucidate where catfish are caught, where they might be spawning and their migration patterns (e.g. Gibril *et al.* 2012).

While there is a range of information and data collected, there it is not considered to be entirely sufficient or robust to support the harvest strategy. For these reasons, the fishery is unlikely to meet SG80.

b	Monitoring			
	Guide post	Stock abundance and UoA removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and UoA removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule , and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.	All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.

	Met?	Yes	No	No
Rationale				

Currently, DoF collect basic fisheries statistics using the Catch Assessment Survey (CAS) from 10 out of the 11 landing sites on the coast, and some of the inland landing sites up the River Gambia as well. This information can be used to monitor trends in species composition within the mixed fishery, as well as trends in relative abundance, such as catch-per-unit-effort. While there may be questions over the quality of the data, they would be sufficient to monitor stock abundance and UoA removals sufficient to meet SG60.

Concerns have been expressed over the quality (accuracy) of the data by Belhabib *et al.* (2018), which currently prevent the fishery meeting SG80 or higher.

Comprehensiveness of information				
C	Guide post		There is good information on all other fishery removals from the stock.	
	Met?		No	
Rationale				

The *Arius* spp. extend beyond the areas of national jurisdiction in Gambia into Senegalese waters, forming a transboundary stock. As such, fisheries statistics are required from Senegal to management the stock, including CECAF regional stock assessments (FAO 2020). To date, stock assessments have not been successful on regional data, which suggests that further improvements in the quality and quantity of data might be required, and /or data might be unreported.

Catfish mortality through lost or abandoned fishing gear (ghost fishing) may also be significant. The Global Ghost Gear Initiative (GGGI) compiles a database of ALDFG, the entries to this database are through beach survey teams, NGOs, commercial fishers and fishery observers. There are three entries in Senegal (none for Gambia), all of which were classed as 'nets'. The database was new in 2017 and relies on people reporting their ghost gear encounters, a lack of data should not be assumed to be a lack of ghost gear in that area.

To date, the level of unreported catch and incidental mortality has not been fully quantified. Further to this, given the importance of regional catches from Senegal, there is uncertainty whether sufficient information is available from all other fishery removals from the stock to meet SG80.

References

- Belhabib, D., et al., Fisheries catch under-reporting in The Gambia, Liberia and Namibia and the three large marine ecosystems which they represent. *Environmental Development* (2015), <http://dx.doi.org/10.1016/j.envdev.2015.08.004i>
- Belhabib, D., Greer, K. and Pauly, D., 2018. Trends in industrial and artisanal catch per effort in West African fisheries. *Conservation Letters*, 11(1), p.e12360.
- Ecoutin, J.M., Albaret, J.J., Trape, S., 2005. Length–weight relationships for fish populations of a relatively undisturbed tropical estuary: The Gambia. *Fisheries Research* 72, 347–351. <https://doi.org/10.1016/j.fishres.2004.10.007>
- GGGI (undated) GGGI Risk assessment. https://static1.squarespace.com/static/5b987b8689c172e29293593f/t/5bb64b39e4966bd7989ebeb0/1538673468483/wap_gear_bp_framework_part_1_mm_lk-2017.10.23-web.pdf
- Gibril, G., Drammeh, O. and L. Kelpsaite. 2012. The Use of Local Knowledge – Application to the Management of the Catfish Fishery in the Gambia. *Gambia-Senegal Sustainable Fisheries Project (USAID/BaNafaa)*. 23 pp.

Overall Performance Indicator (PI) Rationale

A wide range of information is collected from the mixed demersal gillnet fishery in the Gambia. The national CAS provides fisheries statistics that can be used to monitor the relative abundance (CPUE) of the stock and inputs to stock assessment models. Uncertainty in the quality of national information and quantity of regional data from neighbouring Senegal prevent the fishery meeting SG80.

Draft scoring range	60-79
Information gap indicator	More information sought
Data-deficient? (Risk-Based Framework needed)	No

PI 1.2.4 – Assessment of stock status

PI 1.2.4		There is an adequate assessment of the stock status		
Scoring Issue		SG 60	SG 80	SG 100
a	Appropriateness of assessment to stock under consideration			
	Guide post		The assessment is appropriate for the stock and for the harvest control rule.	The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA.
	Met?		NA	NA
Rationale				

As highlighted in Table PF1 of MSC Fisheries Certification Process v2.2, where RBF used to score PI1.1.1 so default score given.

b	Assessment approach			
	Guide post	The assessment estimates stock status relative to generic reference points appropriate to the species category.	The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.	
	Met?	NA	NA	
Rationale				

c	Uncertainty in the assessment			
	Guide post	The assessment identifies major sources of uncertainty.	The assessment takes uncertainty into account.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.
	Met?	NA	NA	NA
Rationale				

d	Evaluation of assessment			
	Guide post			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?			NA
Rationale				

e	Peer review of assessment			
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	Guide post		The assessment of stock status is subject to peer review.	The assessment has been internally and externally peer reviewed.
	Met?		NA	NA

Rationale

References

Overall Performance Indicator (PI) Rationale

Draft scoring range	≥80
Information gap indicator	More information sought

7.5 Principle 2

7.5.1 Principle 2 background

Catch data was provided by the Department of Fisheries (DoF) for this pre-assessment in two forms: a comprehensive summary of all artisanal catch, including elasmobranchs but without gear type, and; detailed catch information including gear type without elasmobranch, cephalopods and other invertebrates. Table 8 provides the overview of data provided for the demersal gillnet fishery, excluding elasmobranch, cephalopods and other invertebrates.

Table 8: Catch data for demersal gillnet fishery for 2016 (excluding elasmobranch, cephalopods and other invertebrates)

Common name	Scientific name	Catch (kg) in 2016	Percentage of total catch
Rough head sea catfish	<i>Arius latiscutatus</i>	2,304,690	38.38
Cassava Croaker	<i>Pseudotolithus senegalensis</i>	1,178,773	19.63
Sompat Grunt	<i>Pomadasyus jubelini</i>	565,797	9.42
Bobo Croaker	<i>Pseudotolithus elongatus</i>	560,824	9.34
Lesser African Threadfins	<i>Galeoides decadactylus</i>	540,530	9.00
Giant African threadfins	<i>Polydactylus quadrifilis</i>	214,503	3.57
Rubberlip Grunt	<i>Plectorhynchus meditaraneus</i>	183,769	3.06
Atlantic Horse Mackerel	<i>Trachurus trachurus</i>	178,478	2.97
African Red Snapper	<i>Lutjanus agennes</i>	123,529	2.06
Dusky Grouper	<i>Epinephelus marginatus</i>	97,406	1.62
Long Neck Croaker	<i>Pseudotolithus typus</i>	42,261	0.70
White Grouper	<i>Epinephelus aeneus</i>	11,508	0.19
Golden Grouper	Unknown	1,238	0.02
Royal Threadfin	<i>Pentanemus quinquarius</i>	1,394	0.02
Gorean Snapper	<i>Lutjanus goreensis</i>	508	0.01
Total		6,005,208	100

From the data provided there does not appear to have been any catches of either black/tiger sole (*Synaptura cadenati*) or red sole (*Cynoglossus senegalensis*) in 2019, which seems unusual as the demersal fishery is known to catch this species. It is unclear whether this is due to an error in the data or perhaps there just were no catches of sole that year.

Table 9 provides an overview of catch data for elasmobranchs across the entire Gambian artisanal fishery. These data are not disaggregated by gear type and therefore it is unclear if they are caught by this UoA. Under a precautionary approach, the assessment team considered that all elasmobranchs were caught by the demersal gillnet to determine what the impacts of this fishery could be.

Table 9: Catches of elasmobranchs by all Gambian artisanal fisheries

Common name	Scientific name	Catch (kg) in 2019	Percentage of total catch
White skate	<i>Raja alba</i>	142.44	2.20
Milk shark	<i>Rhizoprionodon acutus</i>	66.44	1.02
Blacktip shark	<i>Carcharhinus limbatus</i>	58.75	0.91
Lowfin gulper shark	<i>Centrophorus lusitanicus</i>	46.31	0.71
White spotted guitarfish	<i>Rhinobatos albomaculatus</i>	38.56	0.59
Lsuitanian cownose ray	<i>Rhinoptera marginata</i>	34.21	0.53
Gulper shark	<i>Centrophorus granulosus</i>	32.47	0.50
Daisy stingray	<i>Dasyatis marginata</i>	15.88	0.24
Scallop hammerhead	<i>Shyrna lewini</i>	13.45	0.21
Brown ray	<i>Raja miraletus</i>	10.62	0.16
Great hammerhead	<i>Shyrna mokarran</i>	9.96	0.15
Marbled stingray	-	6.76	0.10
Blackchin guitarfish	<i>Rhinobatos cemiculus</i>	3.06	0.05
Nurse shark	<i>Ginglymostoma cirratum</i>	0.34	0.01

The catch data provided by the DoF indicated catches of blackchin guitarfish (*Rhinobatos cemiculus*) which is Critically Endangered under the IUCN Red List and is included in Appendix II of CITES. Though the catches of this

species are thought to be small (0.05% of all artisanal catches) this species is important to note as it has thought to have undergone an 80% decline over the last 45 years (Kyne & Jabado. 2019). As the catch data for elasmobranchs is not disaggregated by gear it is not certain whether this species is caught by demersal bottom gillnets but they do occur in muddy and sandy substrates and so should be further investigated.

From the catch data provided the following species were designated as either primary, secondary or ETP species and the catch proportions used to determine whether they are main or minor. As noted above as catches of elasmobranchs was not disaggregated by gear type, the total artisanal elasmobranch catch was assumed to be all demersal gillnet catch. Under this approach the catch percentage for *Raja Alba* (white skate) is over 2% and therefore would be considered a main species. We cannot be sure that this catch is attributed to demersal gillnet but it is plausible as skates are demersal fish and so are precautionarily included.

Table 10 – Scoring elements

Component	Scoring elements	Designation	Data-deficient
Primary	Atlantic Horse Mackerel	Minor	No
Secondary	Long Neck Croaker	Minor	Yes
Secondary	Cassava Croaker	Main	Yes
Secondary	Bobo Croaker	Main	Yes
Secondary	Rubberlip Grunt	Minor	Yes
Secondary	Sompat Grunt	Main	Yes
Secondary	Gorean Snapper	Minor	Yes
Secondary	African Red Snapper	Minor	Yes
Secondary	White Grouper	Minor	Yes
Secondary	Dusky Grouper	Minor	Yes
Secondary	Golden Grouper	Minor	Yes
Secondary	Royal Threadfin	Minor	Yes
Secondary	Giant African threadfins	Minor	Yes
Secondary	Lesser African Threadfins	Main	Yes
Secondary	White skate	Main	Yes

From the catch data provided by the DoF, interaction with specific ETP species cannot be determined. Therefore, information was gathered from available literature and stakeholder consultation on species that are likely to be impacted. ETP species potentially affected by this fishery are humpbacked dolphins (*Sousa teuszii*) and bottlenose dolphins (*Tursiops truncatus*). Warebeek (2016) described that there is dolphin bycatch in The Gambia from gillnets set for bonga, catfish and ladyfish, although the source of this information is not clear. Other cetacean species that could be important to note in The Gambia are short-beaked common dolphin (*Delphinus delphis*), longbeaked common dolphin (*Delphinus capensis*), Clymene dolphin (*Stenella clymene*), harbour porpoise (*Phocoena phocoena*) and Bryde's whale (*Balaenoptera brydei*) (Lee *et al.*, 2009). The sole co-management plan (Ministry of Fisheries,

Water Resources and National Assembly Matters, 2012) also mentions short finned pilot whale (*Globicephala macrorhynchus*).

Four marine turtle species are known to occur in Gambian waters (green, hawksbill, leatherback and olive ridley), with green turtles being the most abundant (Lee, 2009). Research indicates a high incidence of turtle bycatch in gillnet fisheries (e.g. WWF-WARMER, 2003 cited in Lee *et al.*, 2009) but it is unclear if this includes both drifting and demersal nets. This is the same for cetaceans as bycatch is predominately thought to occur from drifting gillnets but the degree of impact from demersal gillnets is less known.

In the Gambia, all turtle species are protected under the Wildlife Conservation Act 1977, and the Biodiversity/Wildlife Policy and Regulation of 1999 and 2003. The Gambia is a signatory to the Abidjan Memorandum in 1999, which provides a basis for conservation of turtles along the African Atlantic coast, and a regional conservation plan has been created. Turtle fishing is prohibited in Gambia, although turtle is considered as a delicacy by part of the population (ECOLAS, 2000) and is sold at some of the markets. Cetaceans are also protected under the Wildlife and Conservation Act and The Gambia is signatory to the Convention on Migratory Species, which covers some dolphin species. Despite protection for ETP species being in place information on interactions with turtles and dolphins is unknown and stakeholder consultation (Stakeholder Consultation, 2020) indicated that interaction of fisheries with dolphins is not monitored.

There is dynamite fishing that is prevalent in West Africa (Stakeholder consultation, 2020). It is not specific to the gillnet fishery but it is important to mention because it is part of the artisanal sector and is not part of a targeted fishery, so could easily be overlooked under the MSC standard. Any improvement work should include working on this damaging fishing technique as it is part of the artisanal fishery in general.

The Gambia is located in the West African Marine Ecoregion (WARMER) that spans the coast of Mauritania, Senegal, The Gambia, Cape Verde, Guinea Bissau, and Guinea. The region is characterised by rich biodiversity and various critical habitats such as sea grass, coral reefs, mangroves ecosystem and endangered species. This is largely due to the Canary Current Large Marine Ecosystem, which is a highly productive cold-water upwelling system. The upwelling occurs in Mauritania and Northern Senegal around November, and moves south. Gambia benefits from the upwelling in March/April. Due to the importance of the marine and coastal region in West Africa, the Regional Partnership for Coastal and Marine Conservation (PRCM) was set up which is a coalition of actors in support of coastal and marine conservation along the West African coastline covering Cape Verde, Gambia, Guinea Conakry, Guinea-Bissau, Mauritania, Senegal and Sierra Leone. In 2007, the Regional Network of MPA's in West Africa (RAMPAO) was launched with a mission to '*ensure, within the West African marine ecoregion that encompasses Cape Verde, the Gambia, Guinea Bissau, Guinea, Mauritania, Senegal and Sierra Leone, the maintaining of a coherent set of critical habitats necessary for the dynamic functioning of the ecological processes essential to the regeneration of the natural resources and the conservation of biodiversity for the benefit of societies.*'

The nature of the gear used in this fishery means it comes into contact with the seafloor and is often anchored or weighted to the bottom. This could indicate some impacts to habitats within the UoA. However, catfish inhabit sandy and muddy bottoms and therefore the majority of fishing is likely to occur over these types of dynamic habitats. A study by Grieve *et al.* (2014) attempted to determine the impact of gillnets and used expert judgement to suggest that the anchors are likely to have a penetration depth of 2 mm which will have minor habitat impacts whereas the leadline penetration is thought to be negligible. This may indicate the habitat impacts are unlikely in this UoA but for this assessment habitat maps were not provided, and nor was a fishing footprint. This information is required to properly assess the potential habitat impacts of this fishery and where vessels may overlap with VMEs.

A model was applied to the Senegambian ecosystem based on the trophic relationships and flows between functional groups (Samb & Mendy, 2004) and the Gambian continental shelf ecosystem was modelled in 1986, 1992 and 1995 (Mendy, 2004). Studies in the region found that consumption is largely associated with coastal pelagics and zooplankton. This suggests that the removal of demersal species, such as catfish will have limited impact on the key elements of the ecosystem. The artisanal nature of the fishery also suggests a limited impact as well as the small proportion of catches taken by demersal gillnets (over 80% of catfish catches are by longline).

7.5.2 Principle 2 Performance Indicator scores and rationales

PI 2.1.1 – Primary species outcome

PI 2.1.1		The UoA aims to maintain primary species above the point where recruitment would be impaired (PRI) and does not hinder recovery of primary species if they are below the PRI		
Scoring Issue		SG 60	SG 80	SG 100
a	Main primary species stock status			
	Guide post	Main primary species are likely to be above the PRI. OR If the species is below the PRI, the UoA has measures in place that are expected to ensure that the UoA does not hinder recovery and rebuilding.	Main primary species are highly likely to be above the PRI. OR If the species is below the PRI, there is either evidence of recovery or a demonstrably effective strategy in place between all MSC UoAs which categorise this species as main , to ensure that they collectively do not hinder recovery and rebuilding.	There is a high degree of certainty that main primary species are above the PRI and are fluctuating around a level consistent with MSY.
	Met?	Yes	Yes	Yes
Rationale				

There are not thought to be any main primary species in this UoA. This therefore scores **SG100**.

b	Minor primary species stock status			
	Guide post			Minor primary species are highly likely to be above the PRI. OR If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species.
	Met?			No
Rationale				

In 2018, CECAF indicated that the Atlantic horse mackerel (*Trachurus trachurus*) was overexploited but this improved in 2019 to become 'fully exploited'. This suggests that the fishery in 2019 was operating within the limits of sustainability but given the multi-specific nature of these fisheries the Working Group recommended not to exceed the 2018 catch level. Given the results from recent assessments and WG advice, we remain precautionary and consider there is a lack of strong evidence that it is 'highly likely' to be above the PRI. As such this is unlikely to meet SG100.

References

FAO, 2018. Status summary for small pelagic stocks in the Northern Area of the Eastern Central Atlantic – CECAF. Scientific Sub-Committee, Eighth Session. Available at <http://www.fao.org/fi/static-media/MeetingDocuments/CECAF/CECAF-SSC8/2e.pdf> [Accessed 09/10/2020]

FAO, 2020. *Report of the FAO Working Group on the Assessment of Small Pelagic Fish off Northwest Africa. Casablanca, Morocco, 8–13 July 2019. Rapport du Groupe de travail de la FAO sur l'évaluation des petits pélagiques au large de l'Afrique nord-occidentale. Casablanca, Maroc, 8-13 juillet 2019.* FAO Fisheries and Aquaculture Report/FAO Rapport sur les pêches et l'aquaculture. Rome. Available at <http://www.fao.org/3/cb0490en/CB0490EN.pdf> [Accessed 12/10/2020]

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI
Data-deficient? (Risk-Based Framework needed)	No

PI 2.1.2 – Primary species management strategy

PI 2.1.2		There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are measures in place for the UoA, if necessary, that are expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are likely to be above the PRI.	There is a partial strategy in place for the UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the PRI.	There is a strategy in place for the UoA for managing main and minor primary species.
	Met?	Yes	Yes	Yes
Rationale				

There are no main primary species in this UoA and so will meet SG80. In addition, the harvest strategy for Atlantic horse mackerel (minor primary species) is the same for the other small pelagic species e.g., spatial zonation and catch limits are proposed. Therefore, SG100 is likely to be met.

b	Management strategy evaluation			
	Guide post	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.
	Met?	Yes	Yes	No
Rationale				

There are no main primary species in this UoA. A stock assessment is undertaken for Atlantic horse mackerel (minor primary species) which indicates that the harvest strategy is working to a greater extent to maintain the population and levels above the point of recruitment impairment (FAO, 2020). This is sufficient to meet SG80. However, the harvest strategy for Atlantic horse mackerel has not been fully tested using management strategy evaluation (MSE) to support a high level of confidence that it will continue to work subject to different levels of uncertainty. The UoA is unlikely to meet SG100.

The most recent assessment indicated that the status of the stock has improved but as it is considered fully exploited, catch should not exceed the 2018 level. In regards to CECAF, fully exploited indicates that the fishery operates within the limits of sustainability.

This is therefore likely to meet **SG80**.

c	Management strategy implementation			
	Guide post		There is some evidence that the measures/partial strategy is being implemented successfully .	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its overall objective as set out in scoring issue (a) .

Met?	Yes	No
Rationale		

There are no main primary species in this UoA. The most recent stock assessment for Atlantic horse mackerel (minor primary species) provides some evidence that the harvest strategy has been successful at maintaining the population above the point of impairment to meet **SG80**. However, there is no clear evidence available to the assessment team to demonstrate clearly that elements of the strategy (e.g. catch limits and spatial zonation) are monitored and adhered to sufficient to meet SG100.

d	Shark finning			
	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	NA	NA	NA
Rationale				

No primary species are sharks and therefore this is not scored.

e	Review of alternative measures			
	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all primary species, and they are implemented, as appropriate.
	Met?	NA	NA	NA
Rationale				

As all catches within in this fishery are retained, this is N/A.

References

FAO. 2020. *Report of the FAO Working Group on the Assessment of Small Pelagic Fish off Northwest Africa. Casablanca, Morocco, 8–13 July 2019. Rapport du Groupe de travail de la FAO sur l'évaluation des petits pélagiques au large de l'Afrique nord-occidentale. Casablanca, Maroc, 8-13 juillet 2019.* FAO Fisheries and Aquaculture Report/FAO Rapport sur les pêches et l'aquaculture. Rome. Available at <http://www.fao.org/3/cb0490en/CB0490EN.pdf> [Accessed 12/10/2020]

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

PI 2.1.3 – Primary species information

PI 2.1.3		Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impact on main primary species			
	Guide post	Qualitative information is adequate to estimate the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main primary species.	Some quantitative information is available and is adequate to assess the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for main primary species.	Quantitative information is available and is adequate to assess with a high degree of certainty the impact of the UoA on main primary species with respect to status.
	Met?	Yes	Yes	Yes
Rationale				

There are no main primary species in this UoA. This therefore scores **SG100**.

b	Information adequacy for assessment of impact on minor primary species			
	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.
	Met?			No
Rationale				

Atlantic horse mackerel (*Trachurus trachurus*) is listed in the catch data, but according to the stock assessment, fishery statistics do not differentiate between species of horse mackerel (*T.trachurus* or *T.trecae*). Within national fisheries statistics, there is some uncertainty about which species catches refer to. Given it is uncertain if the limited quantitative data is adequate to estimate the impact of the UoA, this is likely to prevent it from scoring SG100.

c	Information adequacy for management strategy			
	Guide post	Information is adequate to support measures to manage main primary species.	Information is adequate to support a partial strategy to manage main primary species.	Information is adequate to support a strategy to manage all primary species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	Yes	Yes	No
Rationale				

There are no main primary species in this UoA. This is likely to meet **SG80**. Due to issues surrounding species identification for horse mackerel as mentioned above this unlikely to meet SG100.

References

FAO. 2020. *Report of the FAO Working Group on the Assessment of Small Pelagic Fish off Northwest Africa. Casablanca, Morocco, 8–13 July 2019. Rapport du Groupe de travail de la FAO sur l'évaluation des petits pélagiques au large de l'Afrique nord-occidentale. Casablanca, Maroc, 8-13 juillet 2019.* FAO Fisheries and Aquaculture Report/FAO Rapport sur les pêches et l'aquaculture. Rome. Available at <http://www.fao.org/3/cb0490en/CB0490EN.pdf> [Accessed 12/10/2020]

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

PI 2.2.1 – Secondary species outcome

PI 2.2.1		The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit		
Scoring Issue		SG 60	SG 80	SG 100
a	Main secondary species stock status			
	Guide post	Main secondary species are likely to be above biologically based limits. OR If below biologically based limits, there are measures in place expected to ensure that the UoA does not hinder recovery and rebuilding.	Main secondary species are highly likely to be above biologically based limits. OR If below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding. AND Where catches of a main secondary species outside of biological limits are considerable , there is either evidence of recovery or a, demonstrably effective strategy in place between those MSC UoAs that have considerable catches of the species , to ensure that they collectively do not hinder recovery and rebuilding.	There is a high degree of certainty that main secondary species are above biologically based limits.
	Met?	No	No	No
Rationale				

From the catch data provided there are five main secondary species in this assessment:

- Cassava Croaker (*Pseudotolithus senegalensis*)
- Bobo Croaker (*Pseudotolithus elongatus*)
- Sompat Grunt (*Pomadasyus jubelini*)
- Lesser African Threadfins (*Galeoides decadactylus*)
- White skate (*Raja alba*)

CECAF (CECAF, 2018) provided an overview of demersal stocks which included croaker species (*Pseudotolithus* spp.). An upward trend in catches in The Gambia is noted although they are not thought to be an important species group for the demersal fleet. In terms of effort, the Gambian artisanal fishery, and artisanal fleet, decreased until 2016. No data was available from research groups and no data on length frequencies or on other biological parameters (growth, reproduction, feeding, etc of *Pseudotolithus* spp.) was provided to the working group. As a result, no assessment was undertaken and the various species of croaker were not split in the catches.

The catch data provided does not include sole species, which are likely to also be main, and are 5.2% of the total artisanal catch (all gears). This is unusual as this fishery targets both species and therefore indicates that there may be some issues with the data provided. Data for elasmobranchs was not disaggregated and therefore it could not be determined what the level of interaction is within this UoA. If the total artisanal elasmobranch catch was assumed to be all demersal gillnet catch, the catch percentage for *Raja Alba* (white skate) is over 2% and therefore would be considered a main species. We cannot be sure that this catch is attributed to demersal gillnet but it is plausible as skates are demersal fish and so are included under the precautionary approach.

A PSA is required for all main secondary species in this UoA as there are insufficient data available to assess stock status. However, there are also limited data both in terms of productivity for all five species and susceptibility specific to this UoA. Therefore, where information was missing the highest risk score was attributed. The table below provides

an indication of the data we were able to obtain from online sources. It is important to note that not all data obtained was specifically for the stocks found within the Gambia. Where necessary information for the species found in other areas was used or information at the genus level. This adds higher risk to the assessment.

Table 11 Productivity information for main secondary species

Secondary Species	Age at Maturity	Max. Age	Fecundity	Max. Size	Size at Maturity	Reproductive Strategy	Trophic Level
Cassava Croaker	No info	Over 20 years (Olyere & Blay, 2020)	78,612- 140,966 eggs (Sylla <i>et al.</i> , 2016)	114 cm	35 cm	Broadcast spawner	3.8 ± 0.71
Sompat Grunt	No info	No info	9,085 to 37,926 eggs (Abugui, 2018)	60 cm	13.1 cm	Broadcast spawner	3.3 ± 0.50
Bobo Croaker	No info	No info	No info	47 cm	19.1 cm	Broadcast spawner	4.1 ± 0.70
Lesser African Threadfin	No info	No info	No info	50 cm	11.6cm	Broadcast spawner	3.6 ± 0.50
White skate	No info	35 years (Kadri <i>et al.</i> , 2014)	55-156 per year	230 cm	No info	Demersal egg layer	4.4 ± 0.83

*where a source is not referenced, this information comes from Fishbase. Reproductive strategy has been determined based on knowledge on the species rather than country-specific information.

Table 12 Susceptibility information for main secondary species

Secondary Species	Areal overlap	Encounterability:	Selectivity of gear type:	Post-capture mortality (PCM):
Cassava Croaker	Unknown	Unknown but likely to be scored as high risk as a demersal species	Unknown but likely to be scored as high risk as mesh size is 92 mm size at maturity is 35 cm	Unknown
Sompat Grunt	Unknown	Unknown but likely to be scored as high risk as a demersal species	Unknown but likely to be scored as high risk as mesh size is 92 mm size at maturity is 13.1 cm	Unknown
Bobo Croaker	Unknown	Unknown but likely to be scored as high risk as a demersal species	Unknown but likely to be scored as high risk as mesh size is 92 mm size at maturity is 19.1 cm	Unknown
Lesser African Threadfin	Unknown	Unknown but likely to be scored as high risk as a demersal species	Unknown but likely to be scored as high risk as mesh size is 92 mm size at maturity is 11.6 cm	Unknown
White skate	Unknown	Unknown but likely to be scored as high risk as a demersal species	Unknown but likely to be scored as high risk as skates and rays have large wings even at a young age that can get caught.	Unknown

As a result, no species will currently meet **SG60** (see Section 7.9).

A previous MSC pre-assessment on the sole fishery in The Gambia (Ministry of Fisheries, Water Resources and National Assembly Matters, 2012), which is regarded as the same as this fishery, concluded that there was a medium risk of the fishery causing overexploitation to other retained species. In particular, croaker species were at medium risk as well as rays.

Minor secondary species stock status				
b	Guide post			Minor secondary species are highly likely to be above biologically based limits. OR If below biologically based limits', there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species
	Met?			No
Rationale				

From the catch data provided the following species were identified as secondary minor:

- Gorean Snapper
- African Red Snapper
- White Grouper
- Dusky Grouper
- Golden Grouper
- Royal Threadfin
- Giant African threadfins
- Long Neck Croaker
- Rubberlip Grunt

There is currently insufficient information to score these species and a PSA is likely to be needed. However, for this assessment there is lack of information on susceptibility to score this section. This is therefore unlikely to meet **SG100**.

References

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Pseudotolithus senegalensis (Cassava croaker) Available at: <https://www.fishbase.in/summary/432> [Accessed 12/10/2020]

Pomadasys jubelini (Sompat grunt) Available at <https://www.fishbase.se/summary/4708> [Accessed 12/10/2020]

Glaeoides decadactylus (Lesser African threadfin) Available at <https://www.fishbase.se/summary/341> [Accessed 12/10/2020]

Rostroraja alba (White skate) Available at <https://www.fishbase.de/summary/Rostroraja-alba.html> [Accessed 12/10/2020]

Draft scoring range	<60
Information gap indicator	More information sought
Data-deficient? (Risk-Based Framework needed)	Yes

PI 2.2.2 – Secondary species management strategy

PI 2.2.2	There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch		
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Scoring Issue	SG 60	SG 80	SG 100
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Management strategy in place				
a	Guide post	There are measures in place, if necessary, which are expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a partial strategy in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a strategy in place for the UoA for managing main and minor secondary species.
	Met?	No	No	No

Rationale

There are management measures in place for the target species which may indirectly have an impact on secondary species such as mesh size restrictions and spatial zoning. The BaNafaa project also conducted an experiment on hanging ratio of the gillnets in The Gambian sole and catfish fishery to test whether it affected selectivity in catch composition and size of fish. The experiment included sompat grunt in the catches but the numbers were too low to be analysed. The control net used was the style of net hanging that is currently used, where the net is hung very loosely and the net fishes mainly by entanglement. This increase catches but decreases selectivity of the gear (Gabis *et al.* 2012).

Another study by Gabis *et al.* (2013) compared catch of 84 mm and 92 mm bottom gillnets and found that the larger mesh resulted in significantly larger sompat grunt and Lesser African threadfin but not difference in cassava croaker. This could indicate that management measures are unlikely to hinder some of the species as the fishery now promotes use of 92 mm mesh. However, there is too little information available to ensure that the measures will not hinder the secondary species and therefore this is not likely to meet **SG60**.

Management strategy evaluation				
b	Guide post	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.
	Met?	No	No	No

Rationale

This is unlikely to meet **SG60** due to inadequate information available on the secondary species.

Management strategy implementation				
c	Guide post		There is some evidence that the measures/partial strategy is being implemented successfully .	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) .
	Met?		No	No

Rationale

This is unlikely to meet **SG80** due to inadequate information available on the secondary species.

d	Shark finning			
	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	Yes	No	No
Rationale				

Shark finning is known to occur along the West African coast, but there is little detail as to which fisheries it is occurring in (ECOLAS, 2000). Lee *et al.*, (2009) details that sharks are landed as bycatch and used for the shark fin trade. The catch data for the total artisanal catch (no detail on gear type) did show some bycatch of elasmobranchs in the artisanal fishery.

Artisanal fish processors described to the assessment team how there is very little fish being landed currently, and it has been described to the team that everything caught is landed. Given this anecdotal evidence, and the known issues with food security in West Africa, it seems unlikely that shark fins would be landed while their bodies were wasted. It is therefore not likely that shark finning would occur in the artisanal fishery. This is likely to meet **SG60** in the absence of data.

e	Review of alternative measures to minimise mortality of unwanted catch			
	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main secondary species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main secondary species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all secondary species, and they are implemented, as appropriate.
	Met?	N/A	N/A	N/A
Rationale				

There have been studies on the effectiveness of hanging ratio on selectivity and catch comparisons on mesh sizes in the sole and catfish fishery (Gabis *et al.*, 2013; Gabis *et al.*, 2012) however as all catches within in this fishery are retained, this is N/A.

References

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Draft scoring range	<60
Information gap indicator	More information sought

PI 2.2.3 – Secondary species information

PI 2.2.3		Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts on main secondary species			
	Guide post	Qualitative information is adequate to estimate the impact of the UoA on the main secondary species with respect to status. OR If RBF is used to score PI 2.2.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species.	Some quantitative information is available and adequate to assess the impact of the UoA on main secondary species with respect to status. OR If RBF is used to score PI 2.2.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.	Quantitative information is available and adequate to assess with a high degree of certainty the impact of the UoA on main secondary species with respect to status.
	Met?	No	No	No
Rationale				

There was insufficient information available to estimate the productivity and susceptibility for the main secondary species and therefore is unlikely to meet **SG60**.

b	Information adequacy for assessment of impacts on minor secondary species			
	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
	Met?			No
Rationale				

There is insufficient information for this to score SG100.

c	Information adequacy for management strategy			
	Guide post	Information is adequate to support measures to manage main secondary species.	Information is adequate to support a partial strategy to manage main secondary species.	Information is adequate to support a strategy to manage all secondary species, and evaluate with a high degree of certainty whether the strategy is achieving its objective .
	Met?	No	No	No
Rationale				

There was insufficient information available to estimate if the measures are working to manage main or minor secondary species and therefore is unlikely to meet **SG60**.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	<60
Information gap indicator	More information sought

PI 2.3.1 – ETP species outcome

PI 2.3.1		The UoA meets national and international requirements for the protection of ETP species The UoA does not hinder recovery of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
a	Effects of the UoA on population/stock within national or international limits, where applicable			
	Guide post	Where national and/or international requirements set limits for ETP species, the effects of the UoA on the population/ stock are known and likely to be within these limits.	Where national and/or international requirements set limits for ETP species, the combined effects of the MSC UoAs on the population /stock are known and highly likely to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a high degree of certainty that the combined effects of the MSC UoAs are within these limits.
	Met?	NA	NA	NA
Rationale				

This is N/A

b	Direct effects			
	Guide post	Known direct effects of the UoA are likely to not hinder recovery of ETP species.	Direct effects of the UoA are highly likely to not hinder recovery of ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species.
	Met?	No	No	No
Rationale				

Four marine turtle species are known to occur in Gambian waters (green, hawksbill, leatherback and olive ridley), with green turtles being the most abundant (Lee *et al.*, 2009). Not much is known about the status of turtle populations in the Gambia (Barnett *et al.*, 2003) and little information was provided in regards to interactions with this fishery but anecdotal evidence detailed in ECOLAS, 2000, and also gathered through stakeholder consultation for this assessment, found that nesting turtles have decreased significantly. Research also indicates a high incidence of turtle bycatch in gillnet fisheries (e.g. WWF-WARMER, 2003 cited in Lee *et al.*, 2009).

Other ETP species potentially affected by this fishery are humpbacked dolphins (*Sousa teuszii*) and bottlenose dolphins (*Tursiops truncatus*). The Atlantic humpback dolphin depends on nearshore habitat and therefore this greatly increases their susceptibility to anthropogenic threats and may overlap with this UoA (Brownell *et al.* 2019). *Sousa spp.* in particular are thought to be affected by gillnet fisheries in the coastal and riverine habitats (Brownell *et al.*, 2019). Bottlenose dolphins are found from Western Sahara down to Guinea, including a semi-resident population of around 120 in the River Gambia and Gambian coastal waters (Warebeek, 2016). They feed nearshore in shallow water as well as offshore (Warebeek, 2016). The ECOLAS (2000) report describes that the status of the humpbacked dolphin has been questioned, but does not give any further detail. It also states that bottlenose dolphins are quite common, although from anecdotal evidence, they are seen less in the river Gambia than in the past. There is no formal assessment of population status, due to lack of information, the most that can be summarised is that fewer dolphins being landed may be demonstrating an apparent population decline. Warebeek (2016) described that there is dolphin bycatch in Gambia from gillnets set for bonga, catfish and ladyfish, although the source of this information is not clear. The bycatch however is mainly from drifting gillnets rather than bottom set nets. Stakeholder consultation (2020) indicated that dolphin bycatch used to be a big problem in The Gambia, especially around the southern end of the coastline. However, due to training and enforcement on bycatch measures this has reduced in recent years although some incidences still do happen.

Other cetacean species that could be important to note in The Gambia are short-beaked common dolphin (*Delphinus delphis*), longbeaked common dolphin (*Delphinus capensis*), Clymene dolphin (*Stenella clymene*), harbour porpoise (*Phocoena phocoena*) and Bryde's whale (*Balaenoptera brydei*) (Lee *et al.*, 2009). The Sole co-management plan (Ministry of Fisheries, Water Resources and National Assembly Matters, 2012) also mentions short finned pilot whale (*Globicephala macrorhynchus*). It is unclear the interaction of these species with demersal gillnets and again could be more of an issue with drifting gillnets.

A previous study demonstrated that the sole fishing gear has no interaction with turtles and dolphins while another indicated some interaction with dolphins but that they are generally released alive (Leeney *et al.*, 2007 & Hawkes *et al.*, 2007 cited in Ministry of Fisheries, Water Resources and National Assembly Matters, 2012). As there is little information available for the impact of this UoA on turtle and cetacean species a PSA was conducted for green turtle (the most abundant in The Gambia) and humpbacked dolphins as they are thought to be particularly vulnerable to gillnet fisheries. This gives an indication of the level of risk to ETP species (see Section 7.9).

Although not considered here, as mentioned previously it would be important to understand the interaction of this UoA with Blackchin guitarfish (*Rhinobatos cemiculus*) as it has thought to have undergone an 80% decline over the last 45 years (Kyne & Jabado. 2019).

Due to the limited information available to score the susceptibility aspect of this pre-assessment both green turtle and humpbacked dolphin are unlikely to meet **SG60**.

Indirect effects				
C	Guide post		Indirect effects have been considered for the UoA and are thought to be highly likely to not create unacceptable impacts.	There is a high degree of confidence that there are no significant detrimental indirect effects of the UoA on ETP species.
	Met?		No	No

Rationale

There may be an issue with ghost fishing in this UoA as nets are known to be washed up on shore. However, there was very little evidence of this, and therefore warrants further investigation. Grieve *et al.* (2014) state that lost gillnets can provide new surface for organisms to settle and niches for fish and crabs which can become entangled but the extent to which it occurs is related to several factors such as water depth, light levels and water movements.

This is unlikely to meet **SG80**.

References

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Van Waerebeek, K., Ofori-Danson, P.K., Debrah, J., Collins, T., Djiba, A. and Samba Ould Bilal, A., 2016. On the status of the common bottlenose dolphin *Tursiops truncatus* in western Africa, with emphasis on fisheries interactions, 1947-2015. Document SC/66b/SM19 presented to the Scientific Committee of the International Whaling Commission, Bled, Slovenia.

Draft scoring range	<60
Information gap indicator	More information sought
Data-deficient? (Risk-Based Framework needed)	Yes

PI 2.3.2 – ETP species management strategy

PI 2.3.2	<p>The UoA has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> - meet national and international requirements; - ensure the UoA does not hinder recovery of ETP species. <p>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species</p>			
	Scoring Issue	SG 60	SG 80	SG 100
a	Management strategy in place (national and international requirements)			
	Guide post	There are measures in place that minimise the UoA-related mortality of ETP species, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a comprehensive strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to achieve above national and international requirements for the protection of ETP species.
	Met?	NA	NA	NA
Rationale				

N/A

b	Management strategy in place (alternative)			
	Guide post	There are measures in place that are expected to ensure the UoA does not hinder the recovery of ETP species.	There is a strategy in place that is expected to ensure the UoA does not hinder the recovery of ETP species.	There is a comprehensive strategy in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species.
	Met?	Yes	Yes	No
Rationale				

In the Gambia, all turtle species are protected under the Wildlife Conservation Act 1977, and the Biodiversity/Wildlife Policy and Regulation of 1999 and 2003. The Gambia is a signatory to the Abidjan Memorandum in 1999, which provides a basis for conservation of turtles along the African Atlantic coast, and a regional conservation plan has been created. The Department of Parks and Wildlife Management are the lead agency for implementation of national wildlife legislation (Barnett *et al.*, 2003). Although turtle fishing is prohibited in Gambia, it is also considered as a delicacy by part of the population (ECOLAS, 2000) and is sold at some of the markets. It seems from the ECOLAS report that if it is declared as accidental bycatch, they will not be prosecuted for landing it. Stakeholder consultation indicated that if a turtle is caught accidentally, it will be processed on-board, landed just as the meat and, if sold, it would not be sold on the open market.

Cetaceans are also protected under the Wildlife and Conservation Act and The Gambia is signatory to the Convention on Migratory Species, which covers some dolphin species. Stakeholder consultation also indicated there has been training and enforcement which has resulted in a decline in accidental dolphin captures but monitoring of this has subsided in recent years.

This is likely to meet **SG80** as there is a strategy in place to ensure that the UoA does not hinder ETP species however, monitoring is minimal and interactions with cetaceans and turtles are known to occur which prevents it from scoring SG100 as the strategy is not considered comprehensive.

c	Management strategy evaluation
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	Guide post	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is an objective basis for confidence that the measures/strategy will work, based on information directly about the fishery and/or the species involved.	The strategy/comprehensive strategy is mainly based on information directly about the fishery and/or species involved, and a quantitative analysis supports high confidence that the strategy will work.
	Met?	No	No	No

Rationale

Stakeholder consultation (2020) indicated that accidental catch of dolphin has declined due to training and enforcement but little data are collected. This is supported by Leeney *et al.*, (2015) who states that marine mammal bycatch is not monitored in West Africa and the conservation status of most cetacean populations is unknown. There are also insufficient data collected on turtles to determine whether the measures are likely to work and therefore this is unlikely to meet **SG60**.

	Management strategy implementation			
d	Guide post		There is some evidence that the measures/strategy is being implemented successfully.	There is clear evidence that the strategy/comprehensive strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) or (b) .
	Met?		No	No

Rationale

Lee *et al.*, (2009) concludes that enforcement of regulations and implementation of policies is hampered by lack of resources, low institutional capacity and logistical barriers. The Department of Parks and Wildlife (DPWM) described that the institutions tasked with environmental management work too independently of each other, and have a lack of resources and personnel (Lee *et al.*, 2009). Stakeholder consultation (2020) also indicated that although surveys were previously conducted on dolphin interaction this stopped in 2010 due to funding limitations.

This is therefore unlikely to meet **SG80**.

	Review of alternative measures to minimize mortality of ETP species			
e	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.
	Met?	No	No	No

Rationale

There appears to be no review of alternative measures and a lack of monitoring of ETP interaction was cited by several stakeholders due to limited funding.

This is unlikely to meet **SG60**.

References

Barnett, L.K., Emms, C., Jallow, A., Cham, A.M., Mortimer, J.A., 2004. The distribution and conservation status of marine turtles in The Gambia, West Africa: a first assessment. *Oryx* 38, 203–208. <https://doi.org/10.1017/S0030605304000353>

ECOLAS (2000) Trade Gateway Project Environmental Impact Assessment Study. Draft Final Report, ECOLAS, Antwerp, Belgium.

Lee. V., Tobey. J., Castro. K., Crawford. B., Ibrahima. M., Drammeh. O. & Vaidyanathan. T. 2009. Marine Biodiversity Assets and Threats Assessment, Gambia-Senegal Sustainable Fisheries Project, *Coastal Resources Center*, University of Rhode Island. pp 50

Leeney.R., Dia. I. & Dia. M. 2015. Food, Pharmacy, Friend? Bycatch, Direct Take and Consumption of Dolphins in West Africa. *Human Ecology*. DOI:10.1007/S10745-015-9727-3

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	<60
Information gap indicator	More information sought

PI 2.3.3 – ETP species information

PI 2.3.3	Relevant information is collected to support the management of UoA impacts on ETP species, including: <ul style="list-style-type: none"> - Information for the development of the management strategy; - Information to assess the effectiveness of the management strategy; and - Information to determine the outcome status of ETP species 			
Scoring Issue	SG 60	SG 80	SG 100	
a	Information adequacy for assessment of impacts			
	Guide post	Qualitative information is adequate to estimate the UoA related mortality on ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for ETP species.	Some quantitative information is adequate to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for ETP species.	Quantitative information is available to assess with a high degree of certainty the magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status of ETP species.
	Met?	No	No	No
Rationale				

Information on turtle nesting site numbers is lacking, although there is a report stating that the DPWM and the National Environment Agency were planning to start a voluntary data collection project to gather nesting site data from fishermen and volunteers, in 2000. Stakeholder consultation (2020) could not confirm this. In addition, information on turtle habitat and population dynamics is thought to be incomplete (Lee *et al.*, 2009). No information was provided on magnitude of catch of turtle by this UoA.

Stakeholder consultation (2020) indicated that the level of dolphin interaction is not currently monitored, although consultation with other stakeholders suggested that incidences are now less common. Warebeek (2016) conducted a study reviewing publications, reports and un-published data on fishery interactions with bottlenose dolphins. In The Gambia the data collected are now fairly outdated (1951, 2000) and confirmed that there is little information available on the status of the common bottlenose dolphin in western Africa. A study by Weir *et al.*, (2011) on the Atlantic humpback dolphin also indicated that the lack of monitoring effort prevents an assessment of the scale of dolphin bycatch in most West African states. There is also no information on the population status for bottlenose or humpback dolphin, except the IUCN status.

There is also insufficient information on susceptibility specific to this UoA and is therefore unlikely to meet **SG60**.

b	Information adequacy for management strategy			
	Guide post	Information is adequate to support measures to manage the impacts on ETP species.	Information is adequate to measure trends and support a strategy to manage impacts on ETP species.	Information is adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives.
	Met?	No	No	No
Rationale				

Consultation with stakeholders suggests that there is little information currently collected to manage the impacts on both dolphins and turtles. This is also supported by reports and research undertaken across West Africa. This is therefore unlikely to meet **SG60**.

References

Lee, V., Tobey, J., Castro, K., Crawford, B., Ibrahima, M., Drammeh, O. & Vaidyanathan, T. 2009. Marine Biodiversity Assets and Threats Assessment, Gambia-Senegal Sustainable Fisheries Project, *Coastal Resources Center*, University of Rhode Island. pp 50

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Van Waerebeek, K., Ofori-Danson, P.K., Debrah, J., Collins, T., Djiba, A. and Samba Ould Bilal, A., 2016. On the status of the common bottlenose dolphin *Tursiops truncatus* in western Africa, with emphasis on fisheries interactions, 1947-2015. Document SC/66b/SM19 presented to the Scientific Committee of the International Whaling Commission, Bled, Slovenia.

Weir, C., Van Waerebeek, K., Jefferson, T. & Collins, T. 2011. West Africa's Atlantic humpback dolphin (*Sousa teuszii*): endemic, enigmatic and soon Endangered? *African Zoology*. 46(1): 1–17

Draft scoring range	<60
Information gap indicator	More information sought

PI 2.4.1 – Habitats outcome

PI 2.4.1		The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates		
Scoring Issue		SG 60	SG 80	SG 100
a	Commonly encountered habitat status			
	Guide post	The UoA is unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.
	Met?	Yes	No	No
Rationale				

Set gillnets are anchored or weighted to the bottom and are relatively stationary. The majority of benthic impacts will occur during retrieval of the gear as the nets and leadlines are more likely to snag the bottom structures or exposed sedentary benthos (Grieve *et al.* 2014). When moved the nets risk removing organisms from the sea bottom or overturning cobbles and small boulders to which organisms may be attached. Although the penetration depth of a gillnet is unknown, Grieve *et al.* (2014) use expert judgement to suggest that the anchors are likely to have a penetration depth of 2 mm which will have minor habitat impacts whereas the leadline penetration is thought to have negligible impacts. It is important to note that this was not based on information specific to this UoA.

As the preferred habitat for catfish are muddy and sandy bottoms, impact by gillnets that lead to serious or irreversible harm are thought to be unlikely as they are not sensitive habitats. However, habitat maps of this UoA could not be provided for this pre-assessment and therefore an RBF is likely to be needed. In order to conduct this a workshop is required with a variety of stakeholders which is not possible at the pre-assessment stage.

This is likely to at least meet **SG60** (possibly even **SG80**) but more data is needed to support this.

b	VME habitat status			
	Guide post	The UoA is unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.
	Met?	Yes	No	No
Rationale				

Coral reefs and seagrass are located within The Gambia but seagrass areas are mostly un-mapped and un-protected, with the exception of seagrass beds around Bijol Island, which are included in the Bijol Island Reserve¹. Impacts of gillnets may be less plausible to seagrass habitats compared to the damage caused to branched biogenic structures such as coral and sponges (Shester & Micheli, 2011). Stakeholder consultation (2020) indicated there are some reefs in The Gambia but these are minimal. There are also 5 MPAs with The Gambia with another two planned. Again, there is insufficient information to determine the full impact on these habitats as a fishing footprint was not provided, or any habitat maps but fishing for catfish will mainly occur over muddy habitats.

Precautionarily this is likely to meet **SG60** but further information is required.

c	Minor habitat status
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¹ <http://resiliensea.org/pilot-projects/gambia/pilotsitebijolisland/>

	Guide post			There is evidence that the UoA is highly unlikely to reduce structure and function of the minor habitats to a point where there would be serious or irreversible harm.
	Met?			No
Rationale				

There is insufficient information for this to score **SG100**.

References

Grieve, C., Brady, DC. & Polet H .2014. Best practices for managing, measuring and mitigating the benthic impacts of fishing – Part 1. *Marine Stewardship Council Science Series 2*: 18 – 88.

Shester, G. G., & Micheli, F. 2011. Conservation challenges for small-scale fisheries: Bycatch and habitat impacts of traps and gillnets. *Biological Conservation*, 144(5), 1673-1681.

Draft scoring range	60-79
Information gap indicator	More information sought
Data-deficient? (Risk-Based Framework needed)	Possibly

PI 2.4.2 – Habitats management strategy

PI 2.4.2		There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a strategy in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.
	Met?	Yes	No	No
Rationale				

As most fishing will occur over sandy and muddy habitats it is likely that a partial strategy is not needed for this UoA but there are areas of seagrass and coral reefs present and several MPA's that are in the coastal areas. No fishing footprint was provided for this fishery or habitat maps to be able to determine potential overlap of this fishery on VMEs. Stakeholder consultation (2020) indicated that seagrass is mainly located in sheltered areas and so not fished much. Due to the nature of the fishing area this might meet **SG60** but more information specific to this fishery is needed.

b	Management strategy evaluation			
	Guide post	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).	There is some objective basis for confidence that the measures/partial strategy will work, based on information directly about the UoA and/or habitats involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or habitats involved.
	Met?	Yes	No	No
Rationale				

This is likely to meet **SG60** due to the habitat type which is targeted and the minimal penetration depth of gillnets. Further information directly from this fishery is required to score higher.

c	Management strategy implementation			
	Guide post		There is some quantitative evidence that the measures/partial strategy is being implemented successfully.	There is clear quantitative evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).
	Met?		No	No
Rationale				

Due to a lack of data specific to this fishery this is unlikely to meet **SG80**. Information such as habitat mapping, VMS tracking or observer reports are required.

d	Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs			
	Guide post	There is qualitative evidence that the UoA complies with its	There is some quantitative evidence that the UoA complies with both its	There is clear quantitative evidence that the UoA complies with both its

		management requirements to protect VMEs.	management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.	management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.
	Met?	No	No	No
Rationale				

Stakeholder consultation (2020) has highlighted that MPAs are not well respected in Gambia, and that the Gambian ministries tasked with enforcing protected areas, the DoF and the DPWM, are not in a good position to be able to enforce the areas well. Consultation also suggested that there are impacts from neighbouring countries using prohibited gear in MPAs. This is therefore unlikely to meet **SG60**.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	<60
Information gap indicator	More information sought

PI 2.4.3 – Habitats information

PI 2.4.3		Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guide post	<p>The types and distribution of the main habitats are broadly understood.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA: Qualitative information is adequate to estimate the types and distribution of the main habitats.</p>	<p>The nature, distribution and vulnerability of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA: Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.</p>	<p>The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.</p>
	Met?	Yes	No	No
Rationale				

The types of habitat of The Gambia are well defined in the National Status Report Coastal and Marine Environment Gambia (UNEP, undated) as well as through other projects such as the Integrated Coastal Area and Marine Biodiversity Project which ended in 2008. There was no specific data available on the location or status of coral reefs provided by stakeholders and no habitat maps. This is also difficult to score if a CSA is required at this stage. This is likely to meet **SG60** but more specific information is required to score higher.

b	Information adequacy for assessment of impacts			
	Guide post	<p>Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA: Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.</p>	<p>Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA: Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.</p>	<p>The physical impacts of the gear on all habitats have been quantified fully.</p>
	Met?	No	No	No
Rationale				

No information was provided on the footprint and spatial overlap of this fishery on surrounding habitats. This is therefore unlikely to meet **SG60**.

C	Monitoring			
	Guide post		Adequate information continues to be collected to detect any increase in risk to the main habitats.	Changes in all habitat distributions over time are measured.
	Met?		No	No
Rationale				

There does not appear to be ongoing monitoring of the fishery footprint and therefore this is unlikely to meet **SG80**.

References

UNEP. Undated. National Status Report Coastal and Marine Environment Gambia. Available at <https://wedocs.unep.org/bitstream/handle/20.500.11822/10420/National%20Status%20Report%20Coastal%20and%20Marine%20Environment%20Gambia.pdf?sequence=1&isAllowed=y> [Accessed 30/09/2020].

Draft scoring range	<60
Information gap indicator	More information sought

PI 2.5.1 – Ecosystem outcome

PI 2.5.1		The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	Ecosystem status			
	Guide post	The UoA is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is evidence that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
	Met?	Yes	No	No
Rationale				

A model of the Gambian continental shelf ecosystem was first conducted in 1986, it was then re-run with updated data on the same model, in 1992 and 1995 (Mendy, 2004). Fisheries were analysed taking trophic interactions into account and the model includes both artisanal and industrial fisheries and included 23 functional groups

The ecosystem models conducted between 1986 and 1995 concluded that changes in the diets of predators was limited in that period. However, it would be a large assumption to assume that diets had not changed significantly in the 25 years since the last ecosystem modelling. There are some citations of a biodiversity assessment conducted by the University of Rhode Island, although this assessment cannot be publicly found online.

A model was applied to the Senegambian ecosystem based on the trophic relationships and flows between functional groups (Samb & Mendy, 2004). This study found that most of consumption in the region is associated with coastal pelagics and zooplankton. This may indicate that the removal of demersal species, such as catfish will have limited impact on the key elements of the ecosystem. The artisanal nature of the fishery may also suggest a limited impact as well as the small proportion of catches taken by demersal gillnets (over 80% of catfish catches are by longline).

One area which may require further investigation is the impact on elasmobranchs. The data provided for this pre-assessment were not disaggregated by gear and therefore the impact of demersal gillnets on shark and ray species is unknown.

This is likely to at least meet **SG60** due to the predicted stock status of catfish but further information is needed to score higher.

References

Mendy, A.N. 2004. A trophic model of the Gambian continental shelf in 1986, p. 81-88. *In*: Palomares, M.L.D., Pauly, D. (eds.) West African marine ecosystems: models and fisheries impacts. Fisheries Centre Research Reports 12(7). Fisheries Centre, UBC, Vancouver.

Mendy, A.N. 2004. Addendum: the Gambian continental shelf in 1992 and 1995, p. 89-94. *In*: Palomares, M.L.D., Pauly, D. (eds.) West African marine ecosystems: models and fisheries impacts. Fisheries Centre Research Reports 12(7). Fisheries Centre, UBC, Vancouver.

Samb, B., Mendy, A.N. 2004. Dynamics réseau of the l'écosystème Senegambian Ecosystem Food Web in 1990, p. 57-70. *In*: Palomares, M.L.D., Pauly, D. (eds.) West African marine ecosystems: models and fisheries impacts. Fisheries Centre Research Reports 12(7). Fisheries Centre, UBC, Vancouver.

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	60-79
Information gap indicator	More information sought
Data-deficient? (Risk-Based Framework needed)	No

PI 2.5.2 – Ecosystem management strategy

PI 2.5.2		There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are measures in place, if necessary which take into account the potential impacts of the UoA on key elements of the ecosystem.	There is a partial strategy in place, if necessary, which takes into account available information and is expected to restrain impacts of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	There is a strategy that consists of a plan , in place which contains measures to address all main impacts of the UoA on the ecosystem, and at least some of these measures are in place.
	Met?	Yes	No	No
Rationale				

The removal of catfish from the ecosystem is managed through spatial and technical measures such as closed zones and mesh size restrictions which will help to limit impacts on key ecosystems. Fishing within wetland areas, a lot of which are protected, is regulated by the Fishing and Wildlife Acts and there is a network of protected areas within The Gambia and across West Africa. In The Gambia protected areas are the responsibility of the Department of Parks and Wildlife Management (DPWM) who are mandated to protect them and ensure certain harmful practices are not conducted.

This is therefore likely to meet **SG60** as issues with the stock status suggests that this is unlikely to score higher.

b	Management strategy evaluation			
	Guide post	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar UoAs/ ecosystems).	There is some objective basis for confidence that the measures/ partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved.	Testing supports high confidence that the partial strategy/ strategy will work, based on information directly about the UoA and/or ecosystem involved.
	Met?	Yes	No	No
Rationale				

As the demersal gillnet catfish fishery is a small proportion of the total catch of species these measures are likely to be sufficient. This is therefore likely to meet **SG60**, as there was no information available directly related to this UoA.

c	Management strategy implementation			
	Guide post		There is some evidence that the measures/partial strategy is being implemented successfully .	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) .
	Met?		No	No
Rationale				

Although the measures such as gear size restrictions are in place anecdotal evidence through stakeholder consultation suggests that mesh size is not being complied with, while zonation is somewhat complied with but there are some encroachments. Monitoring and patrol of fisheries within The Gambia is also minimal and so there is

insufficient evidence to suggest that measures are being implemented successfully. This is supported by the state of the stock which is overexploited.

This is unlikely to meet **SG80**.

References

Mendy, A.N. 2004. A trophic model of the Gambian continental shelf in 1986, p. 81-88. *In*: Palomares, M.L.D., Pauly, D. (eds.) West African marine ecosystems: models and fisheries impacts. Fisheries Centre Research Reports 12(7). Fisheries Centre, UBC, Vancouver.

Mendy, A.N. 2004. Addendum: the Gambian continental shelf in 1992 and 1995, p. 89-94. *In*: Palomares, M.L.D., Pauly, D. (eds.) West African marine ecosystems: models and fisheries impacts. Fisheries Centre Research Reports 12(7). Fisheries Centre, UBC, Vancouver.

Draft scoring range

60-79

Information gap indicator

More information sought

PI 2.5.3 – Ecosystem information

PI 2.5.3		There is adequate knowledge of the impacts of the UoA on the ecosystem		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guide post	Information is adequate to identify the key elements of the ecosystem.	Information is adequate to broadly understand the key elements of the ecosystem.	
	Met?	Yes	Yes	

Rationale

The coast off The Gambia is part of the Canary Current Large Marine Ecosystem (CCLME) which is an eastern boundary upwelling system. A complete characterisation of this system was undertaken by a collaboration of 54 scientists from 25 institutions².

This is therefore likely to meet **SG80**.

b	Investigation of UoA impacts			
	Guide post	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but have not been investigated in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and some have been investigated in detail .	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and have been investigated in detail .
	Met?	Yes	No	No

Rationale

The DoF provided catch data for this fishery however, there are currently no stock assessments undertaken for catfish and as a result an RBF has been used. There is also insufficient information on the impact of this fishery on ETP species and habitats. This therefore might meet **SG60** but without stock status information for catfish and other species this will unlikely score higher.

c	Understanding of component functions			
	Guide post		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are known .	The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the ecosystem are understood .
	Met?		Yes	No

Rationale

This is likely to meet **SG80** as there is general biological information available on catfish, primary and secondary species as well as ETP species in the area and the West African ecoregion has been studied. This might not meet SG100 as the impacts of this UoA on all these factors is unclear.

d	Information relevance			
	Guide post		Adequate information is available on the impacts of	Adequate information is available on the impacts of

² <https://en.unesco.org/news/oceanographic-and-biological-features-canary-current-large-marine-ecosystem>

			the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.	the UoA on the components and elements to allow the main consequences for the ecosystem to be inferred.
	Met?		No	No

Rationale

As no recent stock assessments have been undertaken for catfish this is unlikely to meet **SG80** and there is little information available on the direct impacts of this UoA on habitats and ETP species. The demersal gillnet fishery however, is only thought to take about 20% of catfish catches and therefore the impacts are likely to be less compared to the longline fishery.

e	Monitoring			
	Guide post		Adequate data continue to be collected to detect any increase in risk level.	Information is adequate to support the development of strategies to manage ecosystem impacts.
	Met?		No	No

Rationale

This is unlikely to meet **SG80** as there is little to no monitoring occurring for the target, primary, secondary and ETP species and no direct information on habitat impacts.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	60-79
Information gap indicator	More information sought

7.6 Principle 3

7.6.1 Principle 3 background

At the international level, The Gambia is party to many conventions including United Nations Convention on the Law of the Sea (UNCLOS), United Nations Fish Stock Agreement (UNFSA), Code of Conduct for Responsible Fisheries (CCRF) and Port State Measures Agreement (PSMA.) The Gambia was also one of the founding members of the Economic Community of West African States (ECOWAS) and Sub-Region Fisheries Commission (SRFC). It is a member of FAO, CEEAC and Ministerial Conference on Fisheries Cooperation Among African States Bordering the Atlantic Ocean (ATLAFCO) and is a signatory of the Convention on Biodiversity and the International Union for the Conservation of Nature, amongst others.

At the regional level, the Sub-Regional Fisheries Commission is an inter-governmental fisheries cooperation consisting of seven members across west Africa: Cabo Verde, The Gambia, Guinea, Guinea-Bissau, Mauritania, Senegal and Sierra Leone. Its purpose is to harmonise the national policies of its Members on the preservation, conservation and exploitation of fisheries resources and strengthen cooperation.

At the national level, policy implementation and management of fisheries in The Gambia is the responsibility of the Department of Fisheries (DoF), which lies within the Ministry of Fisheries, Water Resources and National Assembly Matters (Tobey et al. 2009) (See Figure 2). The policy, legal and management framework is provided for by the Fisheries and Aquaculture Policy (2018 prepared with FAO support), 2007 Fisheries Act, 2008 Fisheries Regulations, Fisheries Strategy (drafted and also prepared with FAO support), and Fisheries Management Plans for oyster and cockle and for sole and catfish. The aim of the Act is “to provide for the conservation, management, sustainable utilisation and development of fisheries and aquaculture in the fisheries waters and in the territory of The Gambia”. The act describes the administrative responsibilities for the sector, basic structures, its scope, rights and responsibilities of its staff and designated committees, licensing arrangements for fishing and aquaculture and prohibitions amongst other things (Ministry of Environment, Climate Change and Natural Resources, undated). The main management measures include fishing zones for different sizes of vessels, fishing gear restrictions, minimum landing sizes of fish, and two artisanal sector management plans for sole, and cockles/oysters. However, there are no limits on the number of vessels or fishing licenses/authorisations in either the artisanal or industrial sectors (MacFayden et al., 2018).

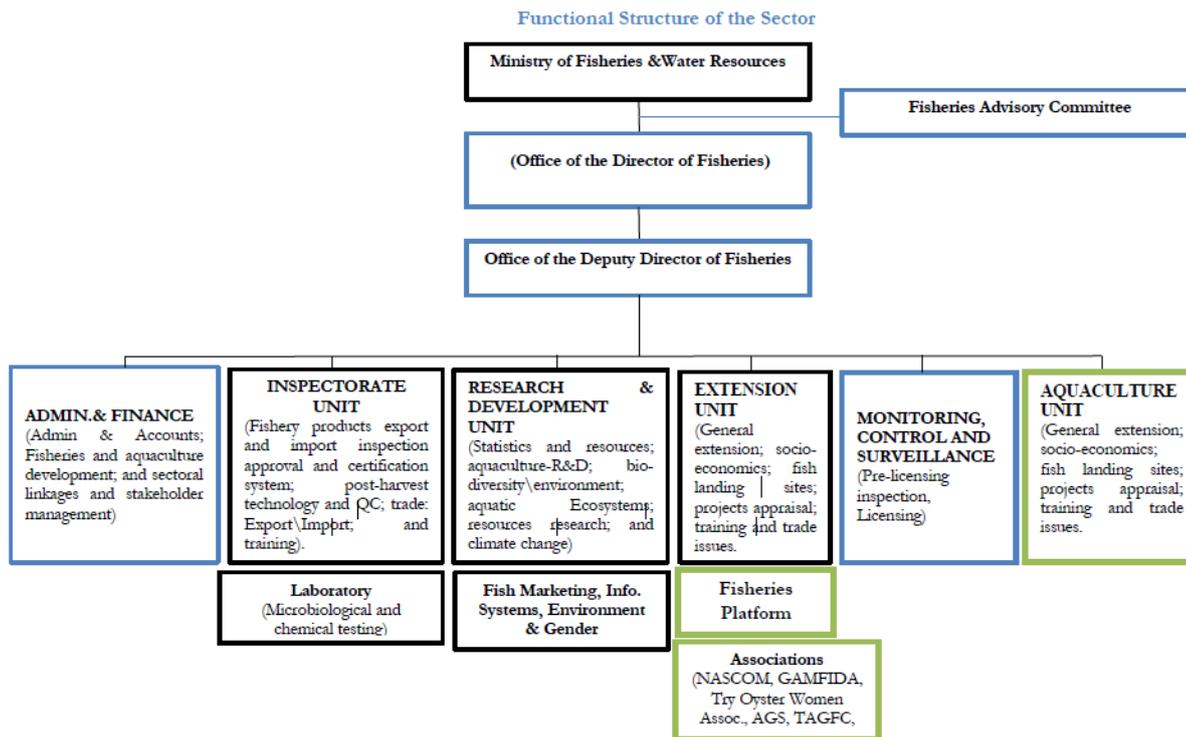


Figure 7 Functional structure of the Ministry of Fisheries and Water Resources. Source: Ministry of Environment, Climate Change and Natural Resources, undated

To support the DoF, a Fisheries Advisory Committee was established made up of several key stakeholders including the Ministry of Environment, Climate Change, Water, Wildlife, Forestry and Fisheries; Ministry of Trade, Industry, Regional Integration and Employment (MOTIE); Ministry of Lands and Regional Government (MoLRG); Ministry of Health and Social Welfare (MOHSW); Gambia Navy; Gambia Maritime Administration (GMA); National Environment Agency (NEA); and one representative each from the industrial, artisanal and aquaculture sectors (Fisheries and Aquaculture Sector Strategy). Community Fisheries Centres (CFCs) were also mandated to provide oversight of the sector and decentralised co-management. In addition, The Gambia has a bilateral agreement with Senegal, which has been in place since 1982. This agreement allows fishers to fish in either country provided they abide by the laws of the country where they are fishing (Tobey et al. 2009).

In 2013, the Sole Co-Management plan was adapted to become a multi-species management plan and included catfish species as it was determined that the fishery was actually mixed demersal with the primary species caught being salt water catfish and *Cymbium* species. Through this management plan the National Sole Fishery Co-management Committee (NASCOM) and its associated landing site committees (LACOMS) through the Community Fisheries Centre's Management Committees were given the exclusive rights to the artisanal sole fishery and the responsibility for its sustainable management within the special management area, declared by the Minister of Fisheries. NASCOM consists of representatives from the fishing communities, fish mongers and processors, LACOMS, the Gambian Artisanal Marine Fisheries Development Association (GAMFIDA), the National Association of Artisanal Fishing Operators (NAAFO), municipalities, the Department of Fisheries and the industrial sector.

7.6.2 Principle 3 Performance Indicator scores and rationales

PI 3.1.1 – Legal and/or customary framework

PI 3.1.1		The management system exists within an appropriate legal and/or customary framework which ensures that it:		
		<ul style="list-style-type: none"> - Is capable of delivering sustainability in the UoA(s); - Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and - Incorporates an appropriate dispute resolution framework 		
Scoring Issue		SG 60	SG 80	SG 100
a	Compatibility of laws or standards with effective management			
	Guide post	There is an effective national legal system and a framework for cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and organised and effective cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and binding procedures governing cooperation with other parties which delivers management outcomes consistent with MSC Principles 1 and 2.
	Met?	Yes	No	No
Rationale				

At the international level, The Gambia is party to many conventions while at the regional level, the Sub-Regional Fisheries Commission is an inter-governmental fisheries cooperation consisting of seven members across west Africa. Its purpose is to harmonise the national policies of its Members on the preservation, conservation and exploitation of fisheries resources and strengthen cooperation³.

At the national level, policy implementation and management of fisheries in The Gambia is the responsibility of the Department of Fisheries (DoF), which lies within the Ministry of Fisheries, Water Resources and National Assembly Matters (Tobey *et al.* 2009). The policy, legal and management framework is provided for by the Fisheries Policy (2007 prepared with FAO support), 2007 Fisheries Act, 2008 Fisheries Regulations, Fisheries Strategy (drafted and also prepared with FAO support), and 2009 Fisheries Management Plan for shrimp, sardinella, solefish and catfish. The aim of the Act is “to provide for the conservation, management, sustainable utilisation and development of fisheries and aquaculture in the fisheries waters and in the territory of The Gambia”. The act describes the administrative responsibilities for the sector, basic structures, its scope, rights and responsibilities of its staff and designated committees, licensing arrangements for fishing and aquaculture and prohibitions amongst other things (Fisheries and Aquaculture Sector Strategy). The main management measures include fishing zones for different sizes of vessels, fishing gear restrictions, minimum landing sizes of fish, and two artisanal sector management plans for sole, and cockles/oysters. However, there are no limits on the number of vessel or fishing licenses/authorisations in either the artisanal or industrial sectors (MacFayden *et al.*, 2018).

To support the DoF, a Fisheries Advisory Committee was established made up of several key stakeholders including the Ministry of Environment, Climate Change, Water, Wildlife, Forestry and Fisheries; Ministry of Trade, Industry, Regional Integration and Employment (MOTIE); Ministry of Lands and Regional Government (MoLRG); Ministry of Health and Social Welfare (MOHSW); Gambia Navy; Gambia Maritime Administration (GMA); National Environment Agency (NEA); and one representative each from the industrial, artisanal and aquaculture sectors) (Fisheries and Aquaculture Sector Strategy). Community Fisheries Centres were also mandated to provide oversight of the sector and decentralised co-management. In addition, The Gambia has a bilateral agreement with Senegal, which has been in place since 1982. This agreement allows fishers to fish in either country provided they abide by the laws of the country where they are fishing (Tobey *et al.* 2009).

There is a good basis for governance in The Gambia that should be capable of delivering sustainable fisheries however, there are potentially issues with effectiveness due to financial constraints. This is noted by Tobey *et al.* (2009) and MacFayden *et al.* (2018). For examples inadequate budgets in the DoF mean that it is difficult to implement the provisions within the fisheries regulation.

³ <http://spcsrp.org/en/presentation#Mandate>

Although there is a framework in place for cooperation through the SRFC this has no regulatory power and there is limited other regional cooperation which may reduce the effectiveness to deliver management outcomes consistent with MSC Principles 1 and 2. One exception could be the bilateral agreement with Senegal but across the region there is limited cooperation and therefore is only likely to meet **SG60**.

Resolution of disputes				
b	Guide post	The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the UoA.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective .
	Met?	Yes	No	No
Rationale				

There appears to be some mechanisms in place in regards to disputes. For example, the Environmental and Coastal Working Group consists of around 20 members from different institutions and deals with issues. Beyond this not much information was found during this assessment. Also in regards to wider fisheries management in The Gambia considering a lot of stocks are shared with other countries there appears to be no dispute mechanism at the regional level.

This is likely to meet **SG60**.

Respect for rights				
c	Guide post	The management system has a mechanism to generally respect the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to observe the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
	Met?	Yes	Yes	No
Rationale				

Gambia has a history of prioritising artisanal fisheries and, in management terms, has created examples of small-scale fishery co-management. In the 1980s Gambia created an initiative of Community Fishing Centres (CFCs), which got external funding to build some small-scale facilities. The Government eventually devolved management responsibility of the CFCs to communities and the fishing sector to create a structure for co-management (Tobey *et al.*, 2009). These CFCs are now managed by the villagers themselves, with the DoF providing support and guidance if required.

In addition to CFCs, under the Fisheries Act 2007, the Secretary of State may designate a Special Management Area, such as the Tanbi Wetlands, for the purposes of community-based management and application of conservation and management measures and artisanal or subsistence fishing operations.

Overall, this is likely to meet **SG80** as more evidence would be required to score higher.

References

MacFayden. G., Caillart. B. & Defaux. V. 2018. Ex ante evaluation study of a Sustainable Fisheries Partnership Agreement between the European Union and the Republic of The Gambia. Luxembourg: Publications Office of the European Union, 2018. doi: 10.2771/905549

Ministry of Environment, Climate Change and Natural Resources. Undated. Fisheries and Aquaculture Sector Strategy 2017-2021.

Tobey. J., Castro. K., Lee. V., Drammeh. O., Ibrahima. M., Crawford. B. & Vaidyanathan. T. 2009. An Overview of Marine Fisheries in the Gambia and preliminary Governance Baseline, *Coastal Resources Center*, University of Rhode Island. pp.26.

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	60-79
Information gap indicator	More information sought

PI 3.1.2 – Consultation, roles and responsibilities

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties		
Scoring Issue		SG 60	SG 80	SG 100
a	Roles and responsibilities			
	Guide post	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are generally understood .	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction.
	Met?	Yes	Yes	No
Rationale				

In the execution of its functions, the Department of State is supported by two technical Departments: Fisheries Department and Water Resources Department. These institutions were established by Government to regulate the use of Fisheries and Water resources and assure their effective and efficient management on a sustainable basis. The Department of State has responsibility to make policy pronouncements and the technical Departments have responsibility to implement policies.

The Fisheries Department has the responsibility of planning, managing and developing strategies for the advancement of the sector. It is also responsible for research, providing scientific advice, assistance and service to fisheries operators and all stakeholders. The Department has five main structures (i.e. Administration and Directorate, Research and Development, Inspectorate and Quality Control, Monitoring, Control and Surveillance (MCS) and Extension).

Under the National Environment Agency is the Natural Resources Working Group, which deals with the joint administration of fisheries and other natural resources⁴. In addition, The National Association of Artisanal Fisheries Operators (NAAFO) is a national organization created and recognized by Government of The Gambia to coordinate the affiliation of Artisanal Fisheries association's country wide. NAAFO was formed in 2004 to better represent and defend the interests of all groups of the artisanal fishery (Tobey *et al.*, 2009). In 1997, The Gambian Artisanal Fisheries Development Association, was established, which aims to promote the development of artisanal fishing, strengthen cooperation and resolve conflicts.

The Department of Parks and Wildlife is responsible for the management and protection of MPAs in The Gambia. It serves as the focal institute for several biodiversity and conservation related international agreements.

The Coastal and Marine Environment Working Group is made up of 20 members from various institutions. The aim of the group is to formulate, review and revise policies relating to all coastal, marine and fluvial activities. This group provides opportunity for all those affected to be involved in decision making. This group meets on a quarterly basis but can also arrange ad hoc meetings for urgent issues (Stakeholder Consultation, 2020).

As noted in 3.1.1, there are also several fisheries co-management and Community Fisheries Centres which help to organise the fishing industry into user group associations to address common concerns and interests.

Roles and responsibilities appear to be clearly defined and this is therefore likely to meet **SG80**. It is not clear if this extends to all areas and therefore is unlikely to meet SG100.

b	Consultation processes			
	Guide post	The management system includes consultation processes that obtain relevant information from the main affected parties,	The management system includes consultation processes that regularly seek and accept relevant information, including local	The management system includes consultation processes that regularly seek and accept relevant information, including local

⁴ <https://www.mofwr.gm/partnerships-agreements>

		including local knowledge, to inform the management system.	knowledge. The management system demonstrates consideration of the information obtained.	knowledge. The management system demonstrates consideration of the information and explains how it is used or not used.
	Met?	Yes	No	No

Rationale

Stakeholder consultation (2020) indicated that management is based on consultation with communities, resources users, government agencies and local authorities. Various fisheries in Gambia are managed through co-management and the catfish fishery is one of them. Therefore, consultation is at the heart of how this fishery is managed and the management plan was created using collaborative techniques. However, within other fisheries, such as the bonga shad artisanal fishery there were some suggestion that fishers were not involved in the decision-making process, for example the night time closures. This is therefore likely to meet **SG60**. This should include further consultation with resources users such as fishers, which was not possible due to the current COVID-19 pandemic.

	Participation			
C	Guide post		The consultation process provides opportunity for all interested and affected parties to be involved.	The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement.
	Met?		Yes	No

Rationale

The DoF has partnership with several other organisations in Gambia, including the National Environment Agency (NEA), National Association of Artisanal Fisheries Operators (NAAFO), Gambia Artisanal Fisheries Development Agency (GAMFIDA), Food Safety and Quality Authority (FSQA), Gambian Navy and the Gambian Maritime Agency. It also has connection with other community-based groups such as National Sole fishery Co-management Committee (NASCOM) and TRY Association which work in collaboration with the DoF.

The Fisheries Act allows for devolution of fisheries management responsibilities, which has been exercised through the creation of community fisheries centres and fishery advisory committees. It has also empowered local communities to form fisheries professional organisations, namely NAAFO, TRY Association, Association of Gambian Fishing Companies (TAGFC) and GAMFIDA. These associations help to provide non-governmental stakeholders with representation in the fisheries sector governance process (Ragusa, 2014)

Coastal and Marine Environment Working Group is made up of 20 members from various institutions. The aim of the group is to formulate, review and revise policies relating to all coastal, marine and fluvial activities. This group provides opportunity for all those affected to be involved in decision making. This group meets on a quarterly basis but can also arrange ad hoc meetings for urgent issues.

In addition, as most marine resources are shared in West Africa, the Sub-Regional Fisheries Commission was set up and includes the Gambia, Senegal, Mauritania, guinea (Bissau), guinea, Cape Verde and Sierra Leone. The objectives of this group are to reinforce cooperation and coordination of the management of the marine fisheries resources amongst member states.

According to government departments all decisions are made through a participatory process allowing consultation and participation from all resource users and stakeholders. This is therefore likely to meet **SG80** but more information should be sought from the fishers themselves as well as other stakeholders such as factory owners, to ensure all parties are consulted and to score SG100.

References

Department of Fisheries. 2018. Fisheries and Aquaculture Policy of The Gambia. Government of The Gambia Ministry of Fisheries, Water Resources and National Assembly Matter

Ragusa, G. 2014. Overview of the Fisheries Sector in the Gambia. *Fisheries and Aquaculture Journal*. 5:3, DOI: 10.4172/ 2150-3508.1000107

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	60-79
Information gap indicator	More information sought

PI 3.1.3 – Long term objectives

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Fisheries Standard, and incorporates the precautionary approach		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guide post	Long-term objectives to guide decision-making, consistent with the MSC Fisheries Standard and the precautionary approach, are implicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach are explicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach, are explicit within and required by management policy.
	Met?	Yes	Partial	No
Rationale				

The 2007 Fisheries Act makes explicit reference to the need for long-term conservation and sustainable utilisation of aquatic living resources and the application of the precautionary approach for conservation, management and development of fisheries and aquaculture. It also makes reference to an ecosystem-based approach by ensuring that the aquatic ecosystem is conserved as a whole, including species targeted, those not targeted and their associated or dependent species.

In addition to national management, there are various projects that attempt to use a regional and ecosystem approach to fishery management plans, such as the work that CECAF carries out and the Canary Current LME project and the EAF Nansen Project which gathers data and supports the implementation of an ecosystem approach to the management of fisheries in West Africa. The project 'Improved regional fisheries governance in western Africa (PESCAO)' is run by the European Commission between 2017 – 2022 in 13 West African countries including Gambia. The overall objective is to '*enhance the contribution of fisheries resources to sustainable development, food security and poverty alleviation in west Africa*'. The specific objective is to improve regional fisheries governance in the region through better coordination of national fisheries policies.

However, stakeholder consultation suggested that a stronger regional approach to fisheries management is needed due to the shared nature of many stocks and the agreements in place allowing other countries to fish within Gambian waters. This is therefore partially able to meet **SG80**.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range

Partial 80

Information gap indicator

Information sufficient to score PI

PI 3.2.1 – Fishery-specific objectives

PI 3.2.1		The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guide post	Objectives , which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are implicit within the fishery-specific management system.	Short and long-term objectives , which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery-specific management system.	Well defined and measurable short and long-term objectives , which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery-specific management system.
	Met?	Yes	No	No
Rationale				

The fishery co-management plan for The Gambia Sole Complex was signed in 2012 but in 2013 the plan became a multispecies management plan and was adapted to include catfish (CRC. 2014). Using the 2012 Sole fishery management plan there are clear general objectives laid out which are consistent with the Principles of 1 and 2 of the MSC. This includes:

- Biological:
 - Decrease catch of undersize fish (bycatch and discards);
 - Decrease catch of a bycatch species that is overfished; and
 - Allow more fish to spawn and grow
- Ecological:
 - To conserve the integrity and resilience of the aquatic ecosystem for continued productivity and sustained livelihoods for people dependent on the ecosystem.

It is unclear if an updated plan is available that specifically includes catfish as a target species but as they are considered the same fishery, the same management measures and objectives will apply.

Although there are general objectives in place, this is not supported by quantitative targets for catfish, such as a target reference points. This may therefore only meet **SG60**.

References

CRC. 2014. The Gambia Sole Fishery: Towards MSC Certification and Use of an Eco-label —An FIP-like Process. Available at https://www.crc.uri.edu/download/RKF13_GambiaSoleFisheryMSCCert.pdf [Accessed 15/10/2020]

Ministry of Fisheries, Water Resources and National Assembly Matters. 2012. Department of Fisheries Gambia. Fishery Co-Management Plan For The Gambia Sole Complex. https://www.crc.uri.edu/download/Sole_Plan_Jan_2012_508_Signatures1.pdf

Draft scoring range

60-79

Information gap indicator

Information sufficient to score PI

PI 3.2.2 – Decision-making processes

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery		
Scoring Issue		SG 60	SG 80	SG 100
a	Decision-making processes			
	Guide post	There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	
	Met?	No	No	
Rationale				

There does appear to be some decision-making processes in place as, for example, the sole management plan was adapted to include catfish and the mesh size was increased in 2013. However, beyond this there don't appear to have been many changes and therefore it is hard to tell if decisions are made to achieve fishery objectives especially considering there is no recent stock assessment for catfish and other elements of the UoA are not well monitored. Stakeholder consultation (2020) also indicated that there are currently no further management discussions concerning catfish.

This is unlikely to meet **SG60**.

		Responsiveness of decision-making processes		
b	Guide post	Decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
	Met?	Yes	No	No
Rationale				

Stakeholder consultation (2020) indicated that co-management is still occurring within this fishery and that during the pandemic they have adapted by using WhatsApp. Again, there is evidence that decision making responds to serious issues, such as the change in mesh size for gillnets and the inclusion of catfish due to the high proportion of catches. This therefore might meet **SG60** but no more recent changes appear to have been made.

		Use of precautionary approach		
c	Guide post	Decision-making processes use the precautionary approach and are based on best available information.		
	Met?		Yes	
Rationale				

The Sole Complex management plan makes specific reference to the use of the precautionary approach and therefore this is likely to meet **SG80**.

Accountability and transparency of management system and decision-making process

d	Guide post	Some information on the fishery's performance and management action is generally available on request to stakeholders.	Information on the fishery's performance and management action is available on request , and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Formal reporting to all interested stakeholders provides comprehensive information on the fishery's performance and management actions and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?	No	No	No

Rationale

There is no information in relation to catfish available and stakeholder consultation (2020) indicated that there are currently no management discussions concerning catfish. This is therefore unlikely to meet **SG60** as most information available is in relation to sole.

Approach to disputes

e	Guide post	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.
	Met?	Yes	Yes	No

Rationale

There do not appear to be any ongoing legal disputes and this is therefore likely to meet **SG80**. However, it is unclear if this fishery proactively avoids disputes.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	<60
Information gap indicator	More information sought

PI 3.2.3 – Compliance and enforcement

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with		
Scoring Issue		SG 60	SG 80	SG 100
a	MCS implementation			
	Guide post	Monitoring, control and surveillance mechanisms exist, and are implemented in the fishery and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance system has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A comprehensive monitoring, control and surveillance system has been implemented in the fishery and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	Met?	No	No	No
Rationale				

Stakeholder consultation (2020) indicated that NASCOM do their own MCS, supported through external funding. Further stakeholder consultation (2020) suggested that the DoF does have monitoring capacity and that there is an official rep at every landings site. Beyond this no information was found regarding an MCS system. There is generally thought to be a lack of monitoring in these fisheries due to inadequate funding. Illegal fishing is also known to be high in West Africa and this is a result of ineffective MCS by the DoF, the Gambian Navy and the lack of auto surveillance by fishers (Castro & Drammeh, 2012).

In Doumbouya (2017), the frequency of arrests for different types of illegal fishing activity in West Africa are listed, without specifying whether the vessels are industrial or artisanal. Gear related offences and fishing in prohibited zones are the second and third most frequent type of offence after under-reporting of catches. The study found that gear related offences and fishing in prohibited zones were more likely to be detected and sanctioned than other offences. They theorise that these types of offences have a greater impact on small-scale fisheries.

This is therefore unlikely to meet **SG60** as there is little evidence to support that the MCS measures are effective.

		Sanctions		
b	Guide post	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence.
	Met?	Yes	No	No
Rationale				

A study attempting to quantify IUU fishing in West Africa estimated that the illegal catch amounted to 65% of the legal catch across the whole region (Doumbouya, 2017). The study looked at indicators such as amount of arrests and size of fines issued and found that Sierra Leone and the Gambia had the most arrest and the highest fines for illegal fishing (Doumbouya, 2017), compared to other countries in the region. The study did not look at whether the fines were paid or how they were paid. Anecdotal evidence gathered during the pre-assessment suggests fines in Gambia are often settled out of court. The process of settling out of court, eliminates transparency, and makes it impossible to know the actual size of fines paid.

Stakeholder consultation (2020) indicated that the sanctions applied are not large enough to provide an effective deterrence and concurred that most disputes are settled out of court and there is no transparency. There have also been no prosecutions in the last three years. NASCOM issues the fines and then receives 25% while 75% goes to the landing site.

This is therefore likely to meet **SG60** at this stage as although sanctions exist and there is some evidence that they have been applied in this fishery they are not thought to be an effective deterrence.

Compliance				
C	Guide post	Fishers are generally thought to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.	Some evidence exists to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.	There is a high degree of confidence that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.
	Met?	No	No	No
Rationale				

Those stakeholders asked believe that IUU fishing in The Gambia is present and even on the rise because of this lack of MCS capacity. An NGO described that there are various different types of IUU fishing occurring, for example using illegal types of gear, catching fish and other animals that aren't allowed to be caught. Some IUU is due to a lack of MCS, and some is due to corruption. The environmental NGO Sea Shepherd is currently working in The Gambia with the Ministry of Fisheries, using their vessel resources to help with MCS and anti-IUU measures. Three vessels have so far been arrested.

Illegal activity is thought to occur in this UoA such as night time closures not being adhered to, poachers and illegal gear. The levels of illegal activity have not been quantified and so this is unlikely to meet **SG60**.

Systematic non-compliance			
d	Guide post		There is no evidence of systematic non-compliance.
	Met?		Yes
Rationale			

There is not thought to be evidence of systematic non-compliance and therefore will likely meet **SG80**.

References

Castro.K. & Drammeh. O. 2012. Bilateral Workshop for Improved CoManagement of Artisanal Fisheries in The Gambia and Senegal Gambia-Senegal Sustainable Fisheries Project (USAID/Ba Nafaa). Coastal Resources Center, University of Rhode Island, pp. 32

Doumbouya. A. *et al.*, 2017. Assessing the Effectiveness of Monitoring Control and Surveillance of Illegal Fishing: The Case of West Africa. *Frontiers in Marine Science*. 4(50)

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	<60
Information gap indicator	More information sought

PI 3.2.4 – Monitoring and management performance evaluation

PI 3.2.4	There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives There is effective and timely review of the fishery-specific management system		
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Scoring Issue	SG 60	SG 80	SG 100	
a	Evaluation coverage			
	Guide post	There are mechanisms in place to evaluate some parts of the fishery-specific management system.	There are mechanisms in place to evaluate key parts of the fishery-specific management system.	There are mechanisms in place to evaluate all parts of the fishery-specific management system.
	Met?	Yes	No	No

Rationale

There is some evidence that the management plan is evaluated, for example the decision to increase mesh size and change to a multi-species management plan followed an annual plan review including results of a revised stock assessment that indicated overfishing was still occurring and results of several studies on proposed gill net modifications.

This may meet **SG60** as although there appears to be revisions made it is unclear whether key parts of the management system are evaluated and how specific these are to catfish.

Internal and/or external review				
b	Guide post	The fishery-specific management system is subject to occasional internal review.	The fishery-specific management system is subject to regular internal and occasional external review.	The fishery-specific management system is subject to regular internal and external review.
	Met?	No	No	No

Rationale

The sole management plan is occasionally reviewed, although it is unclear whether this includes management for catfish and consultation (2020) indicated that management discussions on catfish have ceased. This is therefore unlikely to meet **SG60** at this stage.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	<60
Information gap indicator	More information sought

7.7 Assessment information

7.7.1 Small-scale fisheries

Table 13 – Small-scale fisheries

Unit of Assessment (UoA)	Percentage of vessels with length <15m	Percentage of fishing activity completed within 12 nautical miles of shore
Catfish demersal gillnet fishery	Unknown	Unknown but likely to be high as the zone between 1nm-9nm is reserved for artisanal fishing

7.8 Evaluation processes and techniques

7.8.1 Site visits

The stakeholders were contacted through both emails phones calls conducted by Hannah Richardson and Chloe North between August and September 2020, and included the following:

- Department of Parks and Wildlife
- National Environment Agency
- RAMPAO
- Department of Fisheries
- NASCOM
- Greenpeace Africa
- University of Gambia

7.8.2 Recommendations for stakeholder participation in full assessment

All stakeholders contacted in this pre-assessment should participate in a full assessment.

7.9 Risk-Based Framework outputs –

7.9.1 Productivity Susceptibility Analysis (PSA)

Table 14 – PSA productivity attributes and scores		
Performance Indicator	1.1.1	
Productivity		
Scoring element (species)	<i>Arius latiscutatus</i>	
Attribute	Rationale	Score
Average age at maturity	4-5 years	2
Average maximum age	20-30 years	3
Fecundity	29-40 eggs	3
Average maximum size Not scored for invertebrates	70 cm	1
Average size at maturity Not scored for invertebrates	35-40 cm	2
Reproductive strategy	Demersal egg layer (with mouth brooding)	2
Trophic level	3.3 ±0.50	3
Density dependence Invertebrates only	N/A	
Susceptibility		
Attribute	Rationale	Score
Areal Overlap	Unknown	3
Encounterability	Unknown	3
Selectivity of gear type	Unknown	3
Post capture mortality	Retained species	3
Catch (weight) Only where the scoring element is scored cumulatively	N/A	
PSA Score		3.77
MSC Score		<60

Table 15 – PSA productivity attributes and scores

Performance Indicator	2.2.1	
Productivity		
Scoring element (species)	Cassava Croaker	
Attribute	Rationale	Score
Average age at maturity	Unknown	3
Average maximum age	Over 20 years	2
Fecundity	78,612- 140,966 eggs	1
Average maximum size Not scored for invertebrates	114 cm	2
Average size at maturity Not scored for invertebrates	35 cm	1
Reproductive strategy	Broadcast spawner	1
Trophic level	3.8 ±0.71	3
Density dependence Invertebrates only	N/A	1 / 2 / 3
Susceptibility		
Attribute	Rationale	Score
Areal Overlap	Unknown	3
Encounterability	Unknown	3
Selectivity of gear type	Unknown	3
Post capture mortality	Unknown	3
Catch (weight) Only where the scoring element is scored cumulatively	N/A	
PSA Score		3.69
MSC Score		<60

Table 16 – PSA productivity attributes and scores

Performance Indicator	2.2.1	
Productivity		
Scoring element (species)	Sompat Grunt	
Attribute	Rationale	Score
Average age at maturity	Unknown	3
Average maximum age	Unknown	3
Fecundity	9,085 to 37,926 eggs	1
Average maximum size Not scored for invertebrates	60 cm	1
Average size at maturity Not scored for invertebrates	13.1 cm	1
Reproductive strategy	Broadcast spawner	1
Trophic level	3.3 ±0.50	3
Density dependence Invertebrates only	N/A	1 / 2 / 3
Susceptibility		
Attribute	Rationale	Score
Areal Overlap	Unknown	3
Encounterability	Unknown	3
Selectivity of gear type	Unknown	3
Post capture mortality	Unknown	3
Catch (weight) Only where the scoring element is scored cumulatively	N/A	
PSA Score		3.69
MSC Score		<60

Table 17 – PSA productivity attributes and scores

Performance Indicator	2.2.1	
Productivity		
Scoring element (species)	Bobo Croaker	
Attribute	Rationale	Score
Average age at maturity	No information	3
Average maximum age	No information	3
Fecundity	No information	3
Average maximum size Not scored for invertebrates	47 cm	1
Average size at maturity Not scored for invertebrates	19.1 cm	1
Reproductive strategy	Broadcast spawner	1
Trophic level	4.1 ± 0.70	3
Density dependence Invertebrates only	N/A	1 / 2 / 3
Susceptibility		
Attribute	Rationale	Score
Areal Overlap	Unknown	3
Encounterability	Unknown	3
Selectivity of gear type	Unknown	3
Post capture mortality	Unknown	3
Catch (weight) Only where the scoring element is scored cumulatively	N/A	
PSA Score		3.69
MSC Score		<60

Table 18 – PSA productivity attributes and scores

Performance Indicator	2.2.1	
Productivity		
Scoring element (species)	Lesser African Threadfin	
Attribute	Rationale	Score
Average age at maturity	Unknown	3
Average maximum age	Unknown	3
Fecundity	Unknown	3
Average maximum size Not scored for invertebrates	50cm	1
Average size at maturity Not scored for invertebrates	11.6cm	1
Reproductive strategy	Broadcast spawner	1
Trophic level	3.6 ± 0.50	3
Density dependence Invertebrates only	N/A	1 / 2 / 3
Susceptibility		
Attribute	Rationale	Score
Areal Overlap	Unknown	3
Encounterability	Unknown	3
Selectivity of gear type	Unknown	3
Post capture mortality	Unknown	3
Catch (weight) Only where the scoring element is scored cumulatively	N/A	
PSA Score		3.69
MSC Score		<60

Table 19 – PSA productivity attributes and scores

Performance Indicator	2.2.1	
Productivity		
Scoring element (species)	White skate	
Attribute	Rationale	Score
Average age at maturity	Unknown	3
Average maximum age	35 years	3
Fecundity	55-156 eggs	3
Average maximum size Not scored for invertebrates	230cm	2
Average size at maturity Not scored for invertebrates	Unknown	3
Reproductive strategy	Benthic egg layer	2
Trophic level	4.4 ±0.83	3
Density dependence Invertebrates only	N/A	1 / 2 / 3
Susceptibility		
Attribute	Rationale	Score
Areal Overlap	Unknown	3
Encounterability	Unknown	3
Selectivity of gear type	Unknown	3
Post capture mortality	Unknown	3
Catch (weight) Only where the scoring element is scored cumulatively	N/A	
PSA Score		4.14
MSC Score		<60

Table 20 – PSA productivity attributes and scores

Performance Indicator	2.3.1	
Productivity		
Scoring element (species)	Green Turtle (<i>Chelonia mydas</i>)	
Attribute	Rationale	Score
Average age at maturity	26-40 years depending on population (Seminoff 2004), although in the SE USA Goshe (2009) estimates it may be as high as 50 years	3
Average maximum age	Reproductive longevity estimated from an unimpacted population in Australia at 19 years on average (Seminoff 2004) – i.e. total life span would be estimated in the range 45-59 years	3
Fecundity	Three nests per female per season on average, with 100 eggs per nest (Seminoff 2004)	2
Average maximum size Not scored for invertebrates	There is negligible growth after maturity so average maximum size and average size at maturity are the same. Goshe (2009) gives a maximum size of ~95m straight carapace length, giving an overall size of ~1m.	2
Average size at maturity Not scored for invertebrates		2
Reproductive strategy	Demersal egg layer	2
Trophic level	Herbivorous – low	1
Density dependence Invertebrates only	N/A	1 / 2 / 3
Susceptibility		
Attribute	Rationale	Score
Areal Overlap	Unknown	3
Encounterability	Unknown	3
Selectivity of gear type	Unknown	3
Post capture mortality	Unknown	3
Catch (weight) Only where the scoring element is scored cumulatively	N/A	
PSA Score		2.14
MSC Score		<60

Table 21 – PSA productivity attributes and scores

Performance Indicator	2.3.1	
Productivity		
Scoring element (species)	Humpbacked dolphin (<i>Sousa teuszii</i>)	
Attribute	Rationale	Score
Average age at maturity	Unknown – assume high risk	3
Average maximum age	Generation time estimated at 25 years (Collins et al. 2017), so maximum age must be higher.	3
Fecundity	Nearest relative, the Indo-Pacific humpback dolphin <i>S. chinensis</i> (Collins et al. 2017) has one calf every 5 years (Nolte et al. 2012)	3
Average maximum size Not scored for invertebrates	Unknown. <i>S. chinensis</i> reaches asymptotic length at 2.4-2.7m, with maximum recorded lengths 2.5m (female) and 2.8m (male) (Nolte 2012).	2
Average size at maturity Not scored for invertebrates	Unknown. Females of 2.5m are mature (Collins et al. 2017). In <i>S. chinensis</i> females reach maturity ~2.3m (Nolte 2012).	3
Reproductive strategy	Live birth	3
Trophic level	Piscivorous predators – high (Collins et al. 2017)	3
Density dependence Invertebrates only	N/A	1 / 2 / 3
Susceptibility		
Attribute	Rationale	Score
Areal Overlap	Unknown	3
Encounterability	Unknown	3
Selectivity of gear type	Unknown	3
Post capture mortality	Unknown	3
Catch (weight) Only where the scoring element is scored cumulatively	N/A	
PSA Score		2.86
MSC Score		<60

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9 Template information and copyright

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Template version control		
Version	Date of publication	Description of amendment
1.0	15 August 2011	Date of first release
1.1	31 October 2013	Updated in line with changes to CR v1.3
2.0	08 October 2014	Confirmed background sections (Section 3) as optional (use of 'may' statements) Modified Table 6.3 to create a simplified scoring sheet to be completed in place of full evaluation tables Made amendments to PIs based on Fishery Standard Review changes (e.g. removed original PIs 1.1.2, 3.1.4 and 3.2.4).
2.1	9 October 2017	Inclusion of optional full evaluation tables
3.0	17 December 2018	Release alongside Fisheries Certification Process v2.1
3.1	29 March 2019	Minor document changes for usability

A controlled document list of MSC program documents is available on the MSC website (msc.org)

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Gambia bonga shad (*Ethmalosa fimbriata*) encircling gillnet fishery pre-assessment

Marine Stewardship Council

GB2786

Final Report

10th February 2021

Submitted by

MRAG

For



Gambia bonga shad (*Ethmalosa fimbriata*) encircling gillnet fishery

Pre-Assessment Report

Conformity Assessment Body (CAB)	MRAG Ltd
Fishery client	Marine Stewardship Council
Assessment Type	Pre-assessment
Authors	Chloe North, Hannah Richardson and Robert Wakeford
Date	10/02/2021

1 Contents

1	Contents.....	3
2	Glossary.....	5
3	Executive summary.....	6
4	Report details.....	7
4.1	Aims and constraints of the pre-assessment.....	7
4.2	Version details.....	7
5	Unit(s) of Assessment.....	7
5.1	Unit(s) of Assessment.....	7
6	Traceability.....	8
6.1	Traceability within the fishery.....	8
7	Pre-assessment results.....	9
7.1	Pre-assessment results overview.....	9
7.1.1	Overview.....	9
7.1.2	Recommendations.....	9
7.2	Summary of potential conditions by Principle.....	10
7.3	Summary of Performance Indicator level scores.....	10
7.4	Principle 1.....	15
7.4.1	Principle 1 background.....	15
7.4.2	Catch profiles.....	19
7.4.3	Total Allowable Catch (TAC) and catch data.....	20
7.4.4	Principle 1 Performance Indicator scores and rationales.....	21
PI 1.1.1A	– key Low Trophic-Level.....	21
PI 1.1.2	– Stock rebuilding.....	23
PI 1.2.1	– Harvest strategy.....	24
PI 1.2.2	– Harvest control rules and tools.....	27
PI 1.2.3	– Information and monitoring.....	29
PI 1.2.4	– Assessment of stock status.....	32
7.5	Principle 2.....	35
7.5.1	Principle 2 background.....	35
7.5.2	Principle 2 Performance Indicator scores and rationales.....	38
PI 2.1.1	– Primary species outcome.....	38
PI 2.1.2	– Primary species management strategy.....	40
PI 2.1.3	– Primary species information.....	42
PI 2.2.1	– Secondary species outcome.....	44
PI 2.2.2	– Secondary species management strategy.....	46
PI 2.2.3	– Secondary species information.....	48
PI 2.3.1	– ETP species outcome.....	50
PI 2.3.2	– ETP species management strategy.....	52
PI 2.3.3	– ETP species information.....	55
PI 2.4.1	– Habitats outcome.....	57
PI 2.4.2	– Habitats management strategy.....	59
PI 2.4.3	– Habitats information.....	61

PI 2.5.1 – Ecosystem outcome	63
PI 2.5.2 – Ecosystem management strategy	64
PI 2.5.3 – Ecosystem information	66
7.6 Principle 3	68
7.6.1 Principle 3 background	68
7.6.2 Principle 3 Performance Indicator scores and rationales	70
PI 3.1.1 – Legal and/or customary framework	70
PI 3.1.2 – Consultation, roles and responsibilities	73
PI 3.1.3 – Long term objectives	76
PI 3.2.1 – Fishery-specific objectives	77
PI 3.2.2 – Decision-making processes	78
PI 3.2.3 – Compliance and enforcement	80
PI 3.2.4 – Monitoring and management performance evaluation	82
8 Appendices	83
8.1 Assessment information	83
8.1.1 Small-scale fisheries	83
8.2 Evaluation processes and techniques	84
8.2.1 Site visits	84
8.2.2 Recommendations for stakeholder participation in full assessment	84
8.1 Risk-Based Framework outputs –	85
8.1.1 Productivity Susceptibility Analysis (PSA)	85
9 References	87
10 Template information and copyright	89

2 Glossary

Acronym	Definition
ATLAFCO	Ministerial Conference on Fisheries Cooperation Among African States Bordering the Atlantic Ocean
CAB	Conformity Assessment Body
CCLME	Canary Current Large Marine Ecosystem
CCRF	Code of Conduct for Responsible Fisheries
CECAF	Fishery Committee for the Eastern Central Atlantic
CPUE	Catch Per Unit Effort
CSA	Consequence Spatial Analysis
DPWM	Department of Parks and Wildlife Management
ECOWAS	Economic Community of West African States
EEZ	Exclusive Economic Zone
ETP	Endangered, Threatened or Protected species
FAO	Food and Agricultural Organisation of the United Nations
FMFO	Fish Meal, Fish Oil
FSQA	Food Safety and Quality Authority
GAMFIDA	Gambia Artisanal Fisheries Development Agency
GMA	Gambia Maritime Administration
GRT	Gross Registered Tons
HCR	Harvest Control Rules
IUCN	International Union for Conservation of Nature
IUU	Illegal, Unreported and Unregulated fishing
LCA	Length-based Cohort Analysis
LME	Large Marine Ecosystem
LTL	Key Low Trophic Species
MCS	Monitoring, Control and Surveillance
MOHSW	Ministry of Health and Social Welfare
MOTIE	Ministry of Trade, Industry, Regional Integration and Employment
MPA	Marine Protected Area
MSC	Marine Stewardship Council
MSY	Maximum Sustainable Yield
NAAFO	National Association of Artisanal Fisheries Operators
NASCOM	National Sole fishery Co-management Committee
NEA	National Environment Agency
NGO	Non-Governmental Organisation
PESCAO	Improved regional fisheries governance in western Africa
PRCM	Regional Partnership for Coastal and Marine Conservation
PRI	Point where recruitment would be impaired
PSA	Productivity Susceptibility Analysis
PSMA	Port State Measures Agreement
RAMAPO	Regional Network of Marine Protected Areas in West Africa
RBF	Risk Based Framework
SRFC	Sub-Regional Fisheries Commission
TAC	Total Allowable Catch
TAGFC	Association of Gambian Fishing
UNCLOS	United Nations Convention on the Law of the Sea
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFSA	United Nations Fish Stock Agreement
USA	United States of America
VME	Vulnerable Marine Ecosystem
WARMER	West African Marine Ecoregion
WWF	World Wildlife Fund for Nature

3 Executive summary

MRAG Ltd were commissioned by the MSC to undertake a range of pre-assessments in West Africa, analysing the stock status, impacts on the ecosystem and strength of management structures. The focus of this assessment was on the bonga shad (*Ethmalosa fimbriata*) encircling gillnet fishery of The Gambia. This assessment includes the artisanal fleet only.

Due to the COVID-19 pandemic this pre-assessment was undertaken remotely without an opportunity to conduct a site visit. Therefore, scores and rationale are based on information provided by the client, stakeholder interviews and other literature available online. Interviews were conducted with a variety of stakeholders including:

- The Department of Fisheries
- The National Environment Agency
- RAMPAO
- Greenpeace Africa
- TRY Oyster Woman's Association
- Department of Parks and Wildlife Management
- University of Gambia
- NASCOM

The following provides an overview of the scoring and rationale for each of the three principles.

Principle 1

The latest stock assessment for bonga shad indicates that the stock is overexploited and the biological reference points used are inappropriate for a key low trophic species. There is no formal rebuilding plan and the lack of enforcement on the number of fishing licenses undermines the current suite of technical and spatial management measures in place. The transboundary nature of the stock also requires this fishery to be managed regionally but currently a regional rebuilding plan is absent.

Principle 2

Catch data was provided for the encircling gillnet fishery by the Department of Fisheries in The Gambia for 2016. From the information provided, round sardinella (*Sardinella aurita*) was the only main primary species associated with this UoA. Atlantic horse mackerel (*Trachurus trachurus*) and flat sardinella (*Sardinella maderensis*) were considered to be minor species based on catch proportion. There were no main secondary species identified. No stock assessment could be conducted in 2019 for either sardinella species due to a lack of data. An analysis of available survey indices indicated that the sardinella stocks, particularly *S. aurita* are overexploited. It would be important for catch data to be provided over a longer period time to determine if other main species become apparent.

ETP species potentially affected by this fishery include various species of cetacean and four species of marine turtle. Not much is known about the population of these species or the level of interaction by this UoA but they are known to be impacted by gillnets. While protected by various legislation in The Gambia, monitoring and enforcement appears to be limited.

As this fishery uses pelagic gear, there are unlikely to be any impacts associated with this UoA that would reduce the structure and function of the habitat although evidence specifically for this fishery is missing. As bonga are a key LTL species they form the base of the food chain and their removal from the ecosystem could impact trophic interactions. As the fishery is thought to be overexploited there could be impacts to the ecosystem but the artisanal nature of the fishery means this is unlikely to cause irreversible harm.

Principle 3

There is a good basis for governance in The Gambia that should be capable of delivering sustainable fisheries however, there are potentially issues with effectiveness due to financial constraints. There is also limited regional cooperation which is important due to the shared nature of many stocks in the region. Roles and responsibility are well defined within the country and while management is based on consultation with communities, resources users, government agencies and local authorities there was some evidence of a lack of transparency and not all decisions were made in conjunction with stakeholder input.

The bonga shad fishery is managed by the DoF and a stock assessment is conducted by CECAF however, there is no formal management plan for small pelagics in The Gambia. The Gambian government doesn't currently run any patrolling and MCS is minimal. Within this fishery there is anecdotal evidence that spatial and technical regulations are not well complied with by the artisanal fleet. For example, mesh size is not being complied with, while zonation is somewhat complied with but there are some encroachments. The night time closure is supported by the fishers and therefore is likely to be more complied with but at-sea enforcement is limited.

4 Report details

4.1 Aims and constraints of the pre-assessment

The aim of the pre-assessment is to assess the performance of the bonga fishery to identify what improvements may need to be made to reach the level of a pass against the MSC standard. The MSC standard is considered the gold standard of sustainability in fisheries globally, and a pass against the standard allows the fishery to be considered sustainable at that point in time. The MSC standard can also be used as a tool on which to structure improvements to data and fishery management.

The focus of this assessment was the bonga shad (*Ethmalosa fimbriata*) encircling gillnet fishery of The Gambia. This assessment includes the artisanal fleet only.

Due to the current COVID-19 pandemic, site visits were not possible as originally planned. Therefore, all information was gathered by either remote interview or data available online.

This pre-assessment does not attempt to duplicate a full assessment against the MSC Fisheries Standard. A full assessment involves a group of assessment team members and public consultation stages that are not included in a pre-assessment. A pre-assessment provides a provisional assessment based on a limited set of information provided by the client.

4.2 Version details

Table 1 – Fisheries program documents versions

Document	Version number
MSC Fisheries Certification Process	Version 2.2
MSC Fisheries Standard	Version 2.01
MSC General Certification Requirements	Version 2.3
MSC Pre-Assessment Reporting Template	Version 3.1

5 Unit(s) of Assessment

5.1 Unit(s) of Assessment

The bonga shad encircling gillnet fishery of The Gambia targets the North-West African northern stock which is also found across Mauritania and Senegal. The Department of Fisheries has overall responsibility for management of this fishery and this assessment focuses on the artisanal fleet.

This fishery is eligible for participation in the MSC certification programme and assessment as it is within the scope of the MSC Fishery Certification Requirement, as per the following determinations:

- The target species are eligible;
- Fishing operations do not use poisons or explosives;
- The fishery is not conducted under a controversial unilateral exemption to an international agreement;
- The client has not been successfully prosecuted for a forced labour violation in the last two years;
- The fishery is not subject of controversy and/or dispute; and
- The fishery is not an enhanced fishery

Table 2 – Unit(s) of Assessment (UoA)

UoA 1	Description
Species	Bonga shad (<i>Ethmalosa fimbriata</i>)
Stock	North-West Africa northern stock
Geographical area	The Gambia EEZ- inshore area
Harvest method / gear	Encircling gillnet- artisanal fishery
Client group	Gambian artisanal fleet
Other eligible fishers	Senegalese fishers due to a reciprocal fisheries agreement
Justification for choosing the Unit of Assessment	Pre-determined by client

6 Traceability

6.1 Traceability within the fishery

In 2015, the Department of Fisheries embarked on a canoe registration scheme which was financed by NASCOM. However, this exercise remains incomplete due to a lack of available funds. This could pose some concern as regards to traceability as it may be unclear where the fish are caught, landed and by whom.

Small pelagics in The Gambia, are mainly consumed locally, traditionally processed or exported regionally. The artisanal fisheries also supply around 80% of throughput in the industrial fisheries processing plants through small pelagic catches (namely bonga, round and flat sardinella) (United Nations, 2014).

Table 3 – Traceability within the fishery

Factor	Description
<p>Will the fishery use gears that are not part of the Unit of Certification (UoC)?</p> <p>If Yes, please describe:</p> <ul style="list-style-type: none"> - If this may occur on the same trip, on the same vessels, or during the same season; - How any risks are mitigated. 	<p>Unlikely- Bonga live in shallow waters and therefore coastal purse seine vessels are unlikely to fish in the same area as they draw too deep. However, DoF said some gear changes are seasonal. This needs to be investigated further.</p>
<p>Will vessels in the UoC also fish outside the UoC geographic area?</p> <p>If Yes, please describe:</p> <ul style="list-style-type: none"> - If this may occur on the same trip; - How any risks are mitigated. 	<p>The bonga stock is shared across Senegal, Mauritania and The Gambia and therefore there is a possibility that fish might be taken from outside the UoC.</p>
<p>Do the fishery client members ever handle certified and non-certified products during any of the activities covered by the fishery certificate? This refers to both at-sea activities and on-land activities.</p>	<p>Most of the bonga catch is consumed locally and processed in a traditional manner. This means there is unlikely to be much risk associated with transport, auction or storage but some regional export is noted. There could</p>

<ul style="list-style-type: none"> - Transport - Storage - Processing - Landing - Auction <p>If Yes, please describe how any risks are mitigated.</p>	<p>be a risk of substitution as fishers are also able to target the same stock within Senegalese waters and vice versa.</p>
<p>Does transshipment occur within the fishery?</p> <p>If Yes, please describe:</p> <ul style="list-style-type: none"> - If transshipment takes place at-sea, in port, or both; - If the transshipment vessel may handle product from outside the UoC; - How any risks are mitigated. 	<p>No</p>
<p>Are there any other risks of mixing or substitution between certified and non-certified fish?</p> <p>If Yes, please describe how any risks are mitigated.</p>	<p>No</p>

7 Pre-assessment results

7.1 Pre-assessment results overview

7.1.1 Overview

The biological reference points used to assess the bonga shad stock are inappropriate for a key LTL species and the latest assessment indicates that the stock is overexploited. While there is also no formal rebuilding plan in place, a six-month seasonal closure exists from 1st June to 31st November to help protect spawning and recruitment periods. A lack of enforcement on the number and size of vessels in the fishery undermines the current suite of technical and spatial management measures in place. This UoA is therefore likely to fail P1.

The main primary species in this assessment are round and flat sardinella however no stock assessment could be conducted for them by CECAF due to a lack of data in 2019. An analysis of available survey indices however, indicates that the sardinella stocks, particularly *S. aurita*, is overexploited. Although management measures are in place for these species the likely poor status of these two stocks means are unlikely to maintain or improve the stocks above PRI. There is also insufficient information to score impacts with ETP species, habitats and ecosystem. This UoA is likely to fail P2.

There is a good basis for governance in The Gambia that should be capable of delivering sustainable fisheries however, there are potentially issues with effectiveness due to financial constraints. There is also limited regional cooperation across West Africa which is required due to the shared nature of several stocks. It is also unclear if decision making processes respond to serious issues in the stock as evidence indicates that the stock has been depleted for some time. This UoA is likely to fail P3.

7.1.2 Recommendations

Following this pre-assessment, the following recommendations are suggested:

- In general, more information is required to accurately score this fishery and it would benefit from a site visit to gain further insight into the operations of the fishery.
- Creating a mechanism to limit fishing effort – for example restricting artisanal licencing.
- Create a mechanism to control fishing effort from other countries – for example all artisanal vessels must have inshore Vessel Monitoring System
- Further data collection on elasmobranch, cetacean and turtle bycatch is required.

7.2 Summary of potential conditions by Principle

Table 4 – Summary of Performance Indicator level scores

Principle of the Fisheries Standard	Number of PIs with draft scoring ranges <60
Principle 1 – Stock status	5
Principle 2 – Minimising environmental impacts	8
Principle 3 – Effective management	3

7.3 Summary of Performance Indicator level scores

Table 5 – Summary of Performance Indicator level scores

Performance Indicator	Draft scoring range	Data deficient?
1.1.1 – Stock status	<60	No
Rationale or key points		
Biological reference point (F0.1) used to assess the status of the stock in relation to ecosystem needs is inappropriate for a key LTL species. The latest assessment indicates that the stock is overexploited.		
1.1.2 – Stock rebuilding	<60	Yes
Rationale or key points		
There is no formal rebuilding plan and therefore no rebuilding time frame for this stock to meet SG60. Further to this, the stock is transboundary and needs a regional rebuilding plan.		
1.2.1 – Harvest Strategy	<60	Yes
Rationale or key points		
The lack of enforcement on the number and size of vessels in the fishery undermines the current suite of technical and spatial management measures in place. The inability to control and reduce fishing mortality on a regional level despite the assessment of the status of the transboundary stock is overexploited means that the fishery does not meet SG60.		
1.2.2 – Harvest control rules and tools	<60	No
Rationale or key points		
Despite the suite of technical and spatial management measures used as part of a generally understood HCR, lack of control on fishing effort prevent level of exploitation rate is reduced as the PRI is approached.		
1.2.3 – Information and monitoring	60-79	Yes
Rationale or key points		
A range of fisheries dependent information is collected about the bonga gillnet fishery, including catch and effort statistics that can be used for stock assessment purposes. However, lack of a robust and routine data collection to		

monitor all removals from the stock at a regional level, including biological sampling prevent the fishery meeting SG80.		
1.2.4 – Assessment of stock status	<60	Yes
Rationale or key points		
The current assessment estimates stock status relative to generic reference points that are deemed inappropriate for key LTL species. The CECAF small pelagic Working Group calculate two biological reference points (Fmax and F0.1), where F0.1 is considered a proxy for target reference point, MSY (i.e. FMSY). A lower target reference point should be adopted for LTL species, such that 0.5 F0.1~ 0.5 FMSY. SG60 is not met.		
2.1.1 – Primary Outcome	<60	No
Rationale or key points		
The main primary species in this assessment is round sardinella. No stock assessment could be conducted in 2019 due to a lack of data. No data was provided by Senegal and insufficient data was provided by the other major sardinella fishing countries. An analysis of available survey indices indicates that the sardinella stocks, particularly <i>S. aurita</i> is overexploited.		
2.1.2 – Primary Management	<60	No
Rationale or key points		
Management measures for the gillnet fishery consist of a combination of spatial zoning, a six month no take zone within 1nm of the coast, a six month ban on night fishing annually, and technical measures for example a 40mm mesh size. Although there are measures in place, considering the potential status of these stocks and uncertainty surrounding their assessment, they are unlikely to maintain or improve the stocks above PRI and therefore SG60 is not met.		
2.1.3 – Primary Information	<60	No
Rationale or key points		
The sardinella (both species) assessments were limited due to major problems with the data across the sardinella range. These gaps lead to uncertainty in the stock assessment. Ultimately, due to the high uncertainty in the data, the assessment team had summarised various stock indicators in a qualitative fashion. So, it is difficult to fully know the impact of the fishery on the stock.		
2.2.1 – Secondary Outcome	≥80	No
Rationale or key points		
There are no main secondary species in this UoA and so will likely meet SG80 however, it is unknown whether minor species are highly likely above biological limits due to insufficient information.		
2.2.2 – Secondary Management	60-79	No
Rationale or key points		
Although there are some management measures in place it is not clear if these are being implemented successfully. This is in relation to minor species as there are no main species in this UoA. Shark finning is known to occur along the West African coast, but there is little detail as to which fisheries it is occurring in. Although it is thought to be unlikely that shark fins would be landed while their bodies were wasted in this UoA there is an absence of data to confirm this.		
2.2.3 – Secondary Information	≥80	No

Rationale or key points		
There are no main secondary species and the fishery will therefore meet SG≥80 .		
2.3.1 – ETP Outcome	<60	Yes
Rationale or key points		
ETP species such as cetaceans and turtles are known to be impacted by gillnet fisheries. As there is little information available for the impact of this UoA on turtle and cetacean species a PSA was conducted for green turtle (the most abundant in The Gambia) and humpbacked dolphins as they are thought to be particularly vulnerable to gillnet fisheries. Due to the limited information available to score the susceptibility aspect however, both green turtle and humpbacked dolphin are unlikely to meet SG60		
2.3.2 – ETP Management	<60	No
Rationale or key points		
Turtle and cetacean species are protected under National legislation and there was anecdotal evidence of training provided to fishers. However, monitoring of interactions is minimal in this fishery and there is insufficient data collected to determine if management measures are working. Enforcement of measures is also thought to be hampered by lack of resources, low institutional capacity and logistical barriers.		
2.3.3 – ETP Information	<60	Yes
Rationale or key points		
There is insufficient data collected to determine the impacts of this UoA of ETP species. The necessary information to conduct a PSA was also not available.		
2.4.1 – Habitats Outcome	≥80	No
Rationale or key points		
This fishery does not touch the bottom and is unlikely to have any habitat impacts. Therefore, this is likely to meet SG80 but more evidence would be needed to ensure that SG100 was met.		
2.4.2 – Habitats Management	<60	No
Rationale or key points		
As the gear in this fishery does not touch the bottom, management is likely to be sufficient. In addition to this, encircling gillnets are illegal in MPAs (Stakeholder Consultation, 2020). However, there is insufficient information on non-MSF fisheries and MPAs are not well respected in Gambia. The Gambian ministries tasked with enforcing protected areas, the DoF and the DPWM, are not in a good position to be able to enforce the areas well. Consultation also suggested that there are impacts from neighbouring countries using prohibited gear in MPAs		
2.4.3 – Habitats Information	<60	No
Rationale or key points		
The habitat types in The Gambia are well defined and as this gear has not contact with the seafloor, there are likely to be minimal impacts. However, a spatial footprint of the fishery could not be obtained and as such this is unlikely to meet SG60 .		
2.5.1 – Ecosystems Outcome	60 – 79	No
Rationale or key points		

A model of the Senegambian ecosystem found that most of consumption in the region is associated with coastal pelagics and zooplankton. Bonga shad have also been scored here as a Key LTL and therefore form the base of the food chain. Although the stock is possibly overexploited due to the artisanal nature of the fishery this UoA is unlikely to cause irreversible harm.

2.5.2 – Ecosystems Management	60 – 79	No
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Rationale or key points

There are both technical and spatial measures in place to limit catches of bonga shad, including no take zones, night time closures and minimum mesh sizes. Although measures are in place anecdotal evidence through stakeholder consultation suggests that mesh size is not being complied with, while zonation is somewhat complied with but there are some encroachments. The night time closure is supported by the fishers and therefore is likely to be more complied with but at-sea enforcement is limited. Therefore, there is insufficient evidence to suggest that measures are being implemented successfully

2.5.3 – Ecosystems Information	60 – 79	No
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Rationale or key points

A complete characterisation of the system has been undertaken and catch data provided. CECAF undertakes stock assessments of the target and primary species that could be used to infer consequences of fishing on the ecosystem. There is however, likely to be less information available on the impact on ETP species which may warrant further research.

3.1.1 – Legal and customary framework	60 – 79	No
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Rationale or key points

There is a good basis for governance in The Gambia that should be capable of delivering sustainable fisheries however, there are potentially issues with effectiveness due to financial constraints. There is also limited regional cooperation across West Africa which is required due to the shared nature of several stocks. Although there are some national mechanisms in place in regards to disputes again there appears to be no dispute mechanism at the regional level

3.1.2 – Consultation, roles and responsibilities	60 – 79	No
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Rationale or key points

Roles and responsibilities appear to be clearly defined and stakeholder consultation indicated that management is based on consultation with communities, resources users, government agencies and local authorities. However, stakeholder consultation also indicated that decision making is not always entirely transparent and some decision are made without consultation.

3.1.3 – Long term objectives	Partial 80	No
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Rationale or key points

Long term objectives are explicit through the 2007 Fisheries Act which make reference to the precautionary and ecosystem-based approach. However, stakeholder consultation suggested that a stronger regional approach to fisheries management is needed due to the shared nature of many stocks and the agreements in place allowing other countries to fish within Gambian waters.

3.2.1 – Fishery specific objectives	60 – 79	No
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Rationale or key points

There is a stock assessment conducted for bonga which makes recommendations regarding effort and catch levels. However, there is no small pelagic plan in place.

3.2.2 – Decision making processes	<60	No
Rationale or key points		
It is unclear if decision making processes respond to serious issues in the stock as evidence indicates that the stock has been depleted for some time. There also is limited regional coordination in regards to the management of this fishery.		
3.2.3 – Compliance and enforcement	<60	No
Rationale or key points		
There is minimal MCS in this UoA which is a concern due to the high levels of IUU fishing occurring in West African waters. The main forms of illegal fishing in the artisanal fleet catching bonga, are thought to be infringements on the spatial measures, the night fishing closure and using illegal mesh size. Stakeholders have indicated that mesh size infringement are frequent and even ubiquitous. Other reported IUU fishing that may affect the bonga fishery is encroachment of industrial vessel into the artisanal zone, this is likely to occur from industrial trawlers and be conducted at night.		
3.2.4 – Management performance evaluation	<60	No
Rationale or key points		
There is currently no specific management plan for bonga and monitoring is known to be very limited in this fishery. There is thought to be insufficient management evaluation.		

7.4 Principle 1

7.4.1 Principle 1 background

The Gambia has a coastline of 80 km, bisected by the River Gambia and its estuary. Fishing occurs all along the coastline, and within the estuary and river. The waters off northwest Africa are among the most productive upwelling areas in the world due to upwelling and the Canary Current Large Marine Ecosystem. The artisanal fisheries in the Gambia must also consider the River Gambia as even fully marine species may have a distribution that overlaps with the effect of the outflow of the river. Many species found close to the shore may also be found in the estuary. The estuarine conditions extend far up the River Gambia due to its low gradient in the lower 500 km part of the river. Bonga shad, for example, are found 300 km up river. Therefore, distinguishing between coastal and inland fisheries, for management purposes, may not be appropriate for some stocks. Of the 155 designated fish landing sites in Gambia, 11 are along the coast, and the rest are along the River Gambia and its tributaries (Ragusa, 2014).

Many small pelagic species are caught in the region, including: sardine, round and flat sardinella, chub and horse mackerel, and bonga shad. In Gambia, the main small-pelagic catch for the artisanal sector is bonga shad. Bonga is used as a key food source for the population and also for the fishmeal industry.

Biology and ecology

Bonga shad (*Ethmalosa fimbriata*) is a pelagic-neritic species that can be found in brackish and freshwater at certain stages of their lifecycle (Riede 2004). Their geographic range extends from Western Sahara south to Angola (Whitehead 1985). In coastal areas they are found in waters between 0-50 m and prefer a warmer tropical temperature range (FAO-FIGIS, 2001). The maximum common length is 25 cm, with a length at maturity at around 18 cm (Daget 1965). Reproduction occurs throughout the year and within a range of salinities. The abundance of small pelagics is often highly variable and closely linked to climatic variables. This, coupled with their relatively short life cycle, means that traditional forms of fishery management is often not responsive enough to be able to manage abundance. Shallow areas are important nursery and spawning grounds for bonga, and the Gambia river estuary is a principle spawning area (Sarré et al. 2018). Bonga has been reported to breed throughout the year in a large range of salinities. Indeed Sarré et al. (2018) refers to bonga as an estuarine species and assumes that they are closely associated with inshore systems and do not move far along the coast away from the rivers.

Bonga belongs to the family Clupeidae and is considered a key Low Trophic Level (LTL) species. A large number of other pelagic species at the same trophic level occur within the Canary Current LME (CCLME), such as sardine, sardinella and anchovy. Ecosystem modelling can be used to determine the role bonga plays within the CCLME, which has been found as a key prey item of large pelagic fish (37%), birds (36%) cetaceans (20%) and sharks (15%) (Pauly 2004).

The bonga stock targeted in The Gambia ranges from Mauritania to Senegal, encompassing the Gambian coastline and estuary (FAO 2018). Within this region, bonga are found very close to shore in shallow waters, so are generally targeted separately to sardinella. In The Gambia and Senegal they are mainly fished by artisanal vessels using encircling gillnets. All bonga shad fishing is therefore carried out by artisanal vessels as coastal purse-seiners draw too deep.

Stock status

The CECAF small pelagic Working Group conduct a regular stock assessment of bonga shad. This was last done in 2018, and then updated in 2019 (unconfirmed data in FAO 2019). It uses fishery-dependent and some biological data submitted from the participating countries in West Africa. The assessment for bonga used a Length-based Cohort Analysis (LCA) and a Yield per Recruit (YPR) model to estimate reference points based on Fishing mortality (F). There are some gaps in the data, and therefore stock biomass cannot be estimated and the other conclusions carry a high level of uncertainty.

CECAF define overexploited as ‘the current stock is 40% below the no-exploited stock, a stock which is less than that which sustains a MSY. Fishing is at an undesirable level both in terms of biomass and fishing mortality. Fishing pressure should be reduced to allow the stock to develop.’

Catch-per-unit-effort (tonnes/day) was used as an index of relative abundance for bonga up to 2016 (FAO 2018). CPUE data show catch rates have been declining in Mauritania to a low level since 2010 (Figure 1). In Senegal catch rates declined between 2001 and 2006, before recovering again in 2014 before a more recent decline. In contrast, The Gambia CPUE series is shorter and more erratic with very high catch rates reported in 2006 and 2011. There is no discernible trend in this dataset.

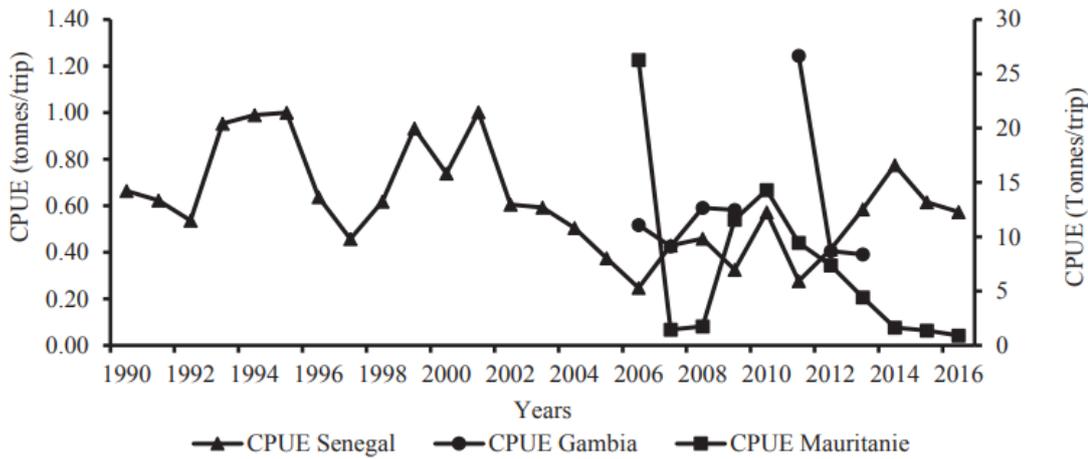


Figure 1: CPUE (tonnes/trip) from Senegalese, Gambian and Mauritanian surrounding gillnets (source FAO 2019).

In 2018, the stock assessment show that the fishing mortality is above the precautionary level ($F_{curr}/F_{0.1} = 1.45$) and therefore the stock is being overexploited (i.e. the current level of exploitation F_{curr} is well above the target level $F_{0.1}$). The management recommendation was to reduce catch and effort from current level. While the 2019 stock assessment update could not re-run the assessment due to a lack of data from Senegal, the Working Group concluded that the fishing pressure on bonga remains very high and “still in state overexploitation”.

The results showed that growth overfishing is occurring as the average size of fish has decreased over time. It remains unclear, however, if recruitment overfishing is occurring as the 2018 stock assessment indicates that fishing mortality (F) is high for fish retained between 18-36 cm, with the size at maturity between 17-18.5 cm.

In 2018, the CECAF small pelagic Working Group concluded the results of the stock assessment of bonga show that it is overexploited in the sub-region. Catches and fishing effort of this species increased in 2017 compared with 2016, despite the overexploitation situation and the 2016 recommendation that the effort be reduced compared to current levels. To this end, the Working Group reiterated the recommendation to reduce effort and catches by comparison with current levels throughout the sub-region, which would enable bonga to reach a level of biomass capable of ensuring sustainability. However, the results obtained from the analyses should be taken with caution given the uncertainties on gear selectivity, the lack of conclusive information on the identity of the stock of bonga in the subregion and its geographical distribution, and the limitations of biological data for different fisheries.

Harvest strategy

The Director of Fisheries is mandated to prepare and keep under continuous review, plans for the management, development and promotion of both inland and marine fisheries resources. Such fisheries management and development plans should also specify (apart from stating the objectives of management and development of the fisheries): management areas; limitations to be applied to local fishing operations; total allowable catch (TAC) limits on species (possible only where the status of the stocks is known) and any other relevant management and development measures to be applied based on formulated policies.

Bonga are found very close to shore in shallow coastal waters, estuaries, and even up river; so they are generally targeted separately to other small pelagic species, such as sardinella. Bonga shad in the Gambia is mainly fished by artisanal vessels (8-15 m pirogues) using encircling gillnets. It is also fished by vessels using purse seine; these vessels are classed as artisanal as they are pirogues, but, at 20 m they are longer than the gillnet vessels and are likely to exert greater fishing power. As stated under section 35(1) of Fisheries Act 2007, all local fishing vessels, including motorised and non-motorised canoes, must have a fishing licence issued by the Director, with the approval of the Secretary of State. To date, although regulated, there are no restrictions on the number or size of vessel, essentially making the artisanal fishery ‘open access’ in nature.

There is a Fishery Access Agreement (FAA) in the fishery between The Gambia and Senegal for both industrial and artisanal fishers; Senegal and Mauritania also have a similar agreement. Vessels move freely between Senegal and Gambia, further decreasing the ability to quantify or manage effort. In 2016, around 61% of the fishermen in the Gambia were reported as part of a migratory population (DoF, 2016). In addition there is a Technical Monitoring Committee of the agreement, which comprise of government representatives from artisanal and industrial fisheries of both countries that meet annually. They are tasked with deciding each year how many vessels can have licences to fish in the other country. However, they currently set a licence number and quota only on the industrial fleet. Minutes of the meeting in 2018 states the intention to set up regional fisheries organisations to try to limit the number of vessels that fish in the other countries waters.

At a national level, the bonga artisanal gillnet fishery is managed by a combination of spatial and technical measures, including (Sidibeh, 2020):

- 9 nm zone around the coast dedicated to the artisanal fleet (increased from 0.5nm in 2013)
- Vessels of 250 Gross Registered Tons (GRT) or less are allowed to fish between 9-12 nm
- Trawling is banned in the River Gambia
- Gillnets are banned within 2 nm of Dog Island and Fort James Island in the River Gambia
- With exception to an areas around Bijilo, all beach seines are banned.
- Mesh size for encircling gillnets is no less than 40 mm

In addition to the above, bonga and associated species are likely to benefit from a no-take zone established for sole within 1 nm of the shore between June and November. A recent harvest strategy has recently been introduced in the last three years to hold a six month closed season for night fishing for the artisanal sector between June-November annually. This strategy was initiated and is supported by the fishing industry and was in place in 2018 and 2019. While this six month closure period is legislated, the duration can vary depending on prevailing conditions. For example, the Gambia Fisheries Department reduced the season from six month to three in 2020. In consequence, the artisanal fishing industry was not happy about the reduction in months due to concerns of over-exploitation of the bonga stock, fish spoilage and prevalence of accidents at sea. Data about the reduction in effort that is created by this HCR should be analysed.

Fishing in the estuary and upriver is covered under the same regulation in the Fisheries Act as the marine fisheries. Management, however, currently lacks an artisanal licencing system, however, and this is required to regulate fishing effort. It is clear, also, that management measures are not implemented regionally and resources for Monitoring Control and Surveillance (MCS) remain very limited.

Harvest control rule

The lack of control within the current licencing system means the fishery remains effectively open access. Fishery Access agreements with Senegal and Mauritania further increases the fishing effort. There is no control on effort creep up in terms of vessel capacity. As well as the number of vessels that come from third countries, according to fishery stakeholders, Gambian artisanal vessels tend to be between 8 and 15 m, whereas Senegalese vessels that travel into Gambian waters tend to be larger, around 25 m.

It is well documented that an artisanal licencing system is to be introduced at some point. The EU have recently commenced a new project in West Africa, the PESCAO project, which is working on improving fisheries governance. The Gambian Department of Fisheries is actively participating in this project. Part of the project work will apparently be registering the artisanal vessels. However, a licencing system that can control the size of fleet is some way beyond registering the vessels, especially to the Senegalese Access Agreement.

The suite of management measures within the harvest strategy are generally understood to control fishing effort and may be used as a tool to reduce fishing mortality (catches) if and when the status of the stock approaches the point of recruitment impairment. To date, however, there is little evidence to demonstrate that fishing pressure has been reduced in the bonga fishery, and the stock continues to show signs of overexploitation.

Information and monitoring

Basic information about the biological characteristics of bonga are known, such as growth and maturity. In addition, Frame Surveys have been conducted in 1997, 2006 and 2016, which show fishing effort over time in the artisanal sector. The Frame Survey also notes nationality of fishers, and therefore captures migrant fishermen living in Gambia, but does not capture the effort migrating into Gambian waters on a daily basis, but landing in other countries such as Senegal and Guinea Bissau.

Currently, DoF collect basic fisheries statistics using the Catch Assessment Survey (CAS) from all major landing sites on the coast, and some of the inland landing sites up the River Gambia as well. In order to maximise resources available, the CAS uses a sampling strategy that has a flexible reference period (normally 10 days per month: five days in the first half and five day in the second half of the month). The collected sample data within the survey period are used to provide estimates on a monthly basis by gear/boat category and by species. These data are used to provide annual estimates. More specifically, the CAS uses a two-stage sampling strategy:

- First stage: The Primary Sampling Units (PSU) are selected landing sites for sampling.
- Second stage: The Secondary Sampling Units (SSU) includes sampling fishing boat landings by type of gear used.

Under the first stage, all landing sites were selected for the Atlantic Coast Stratum for catch and effort data collection and for inland landing sites, samples are selected from all landing sites within each administrative Division (strata). However due to human and technical limitations, some constraints were imposed on the selection of sample landing sites. Where no resident recorder was present in an area, the selected fishing site was withdrawn from sampling.

Under the second stage, field staff are instructed to use one of two alternative methods: census or sample only. The census approach is used where a limited number of landings occur in the sample day (up to 10 landing sites), whereas a sampling approach is used for a larger number of landing sites in a stratum. In the latter case, the method of selection adopted was systematic sampling where the starting point and the space interval determine the whole sample.

Data from the CAS can be used to monitor trends in species composition within the gillnet fishery, as well as trends in relative abundance, such as catch-per-unit-effort.

One source of data uncertainty is the fact that Senegalese fishermen can fish in Gambian waters and vice versa. Senegalese fishermen may fish in Gambia but landing Senegal, and therefore the data on these fish landings will not be collected in Gambia. The short coastline of the Gambia (80 km) means that likely many of the stocks will straddle between both countries and even beyond, and therefore it would be more appropriate to manage Gambian and Senegalese fisheries together, currently data is sometimes shared between the two countries, but there is no standardised method for collecting the data.

Biological sampling from the fishery is limited, with reported data gaps in length data. A comprehensive picture of the stock structure is necessary for an accurate stock assessment. Gambia is one country out of three that fish this stock, and must contribute the same amount of data relative to catches, as the other countries do. Other biological studies are also recommended such as growth studies with otoliths. These are the same recommendations as given by the stock assessment working group.

No fisheries independent monitoring of *Ethmalosa fimbriata* occurs from scientific surveys in the subregion because research vessels cannot operate below 10-15 m.

Stock assessment

A Length-based Cohort Analysis (LCA) method (Jones 1984) and the Thomson-Bell (1934) yield-per-recruit model was used because there was insufficient fisheries-dependent data to use a dynamic production model. Further to this, bonga shad exhibit large concentrations in water too shallow to conduct acoustic surveys from the Fridtjof Nansen programme (FAO 2018).

Given the imprecision of the length frequency data series provided by the Gambia in 2016, the lack of size frequency in 2017, and considering the longevity of the species, the CECAF Working Group decided to test three scenarios for assessment (Mauritania, Senegal-Gambia and Mauritania-Senegal) for the 2013-2017 period. The length composition data was used for the LCA model, and the results of the LCA model were used for the yield per recruit model. Growth and natural mortality parameters were estimated based on an analysis of modal progression, and length-weight relationships parameters were sourced from FishBase.

The results obtained were mainly inconclusive with exception to the Mauritania-Senegal scenario. The results were presented for this assessment only. In addition, there are some key limitations of these assessment models such that they don't take into consideration uncertainty in the data, nor can they be used to determine stock biomass or fishing mortality in relation to both target and limit reference points. Further to this, when there is not an understanding of the energy needs of the ecosystem from the different species and components, then the MSC has set precautionary reference points for management of key LTL species at a target exploitation rate of $0.5F_{MSY}$. MSC guidelines for scoring LTL stocks on F (GSA2.2.15) indicate to meet SG60 F must be below F_{MSY} but not as low as $0.5F_{msy}$ for 2 years or more. The CECAF assessment for bonga uses $F_{0.1}$, which is often used as a proxy for F_{MSY} , for species that are not key LTL. In other words the fishing mortality reference point is expected to be considerably lower than that used in the current assessment, which has already be shown to be over-exploited. In consequence, the bonga stock is likely to be heavily over-exploited.

7.4.2 Catch profiles

Bonga shad (*Ethmalosa fimbriata*) is retained in the artisanal encircling gillnet fishery. Within The Gambia, an increasing trend in total catch of small pelagic species has been observed since 1990 to 2017 (Figure 1). Bonga has always been the dominant species (with exception to the 2013) and, in 2017, constituted 65 percent of overall catch of small pelagic species. Flat and round sardinella are the other dominant species.

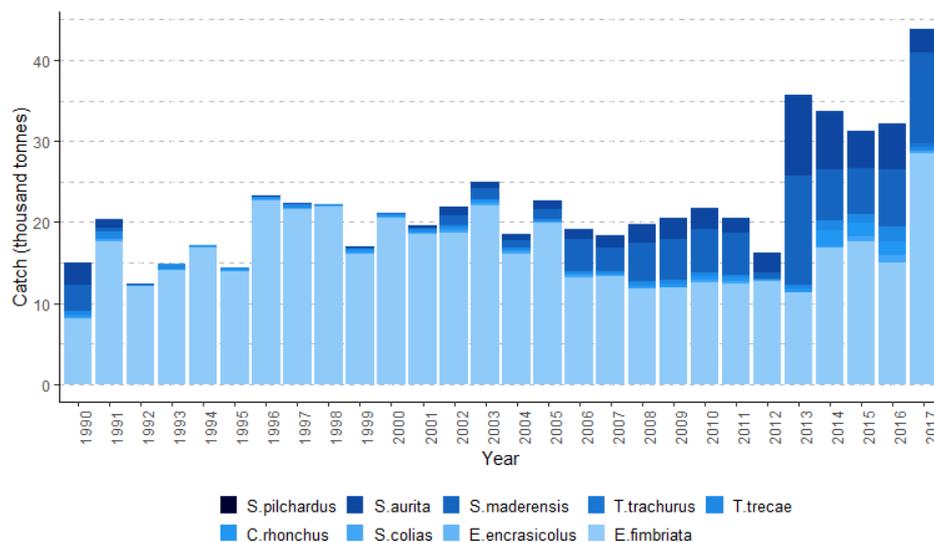


Figure 2: Annual Catches in The Gambia by species (weight in tonnes)(FAO 2018)

The catch proportion is shown in the table below and shows that on average over 55% of the catch from encircling gillnets is made up of bonga shad.

Table 6: Species catch profile from the Gambian artisanal encircling gillnet fishery (source: DoF, 2019)

Scientific	Common name	Average catch % (2015-2019)
<i>Ethmalosa fimbriata</i>	Bonga shad	55.2
<i>Sardinella maderensis</i>	Flat sardinella	24.8
<i>Sardinella aurita</i>	Round sardinella	13.0
<i>Decapterus spp</i>	Scads	3.1
<i>Scomber japonicus</i>	Chub mackerel	1.4
<i>Trachurus trecae</i>	Cunene horse mackerel	2.5

Within the region, catches of bonga shad have showed an overall increase since 1990 (Figure). The increase has come from a relatively new fishery for bonga shad in Mauritania, which significantly increased production from 2009. In 1990, Senegal was catching 65% of the bonga shad catch, The Gambia 35% and Mauritania none; now in 2017, Mauritania is catching 62%, Senegal 13% and The Gambia 24% (FAO 2018).

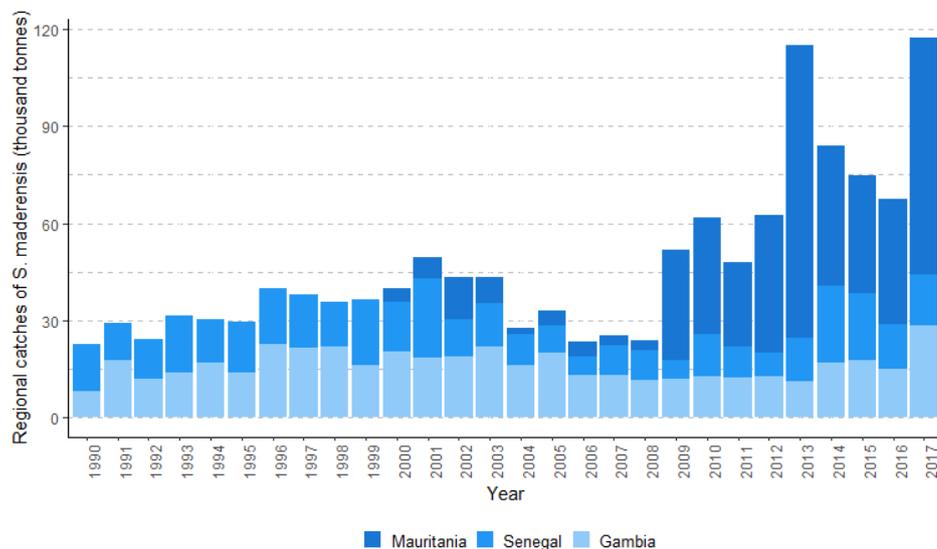


Figure 3: The regional catch of bonga shad, *Ethmalosa fimbriata*

7.4.3 Total Allowable Catch (TAC) and catch data

There is no TAC set in this fishery, at a national level, nor a regional level.

Table 7– Total Allowable Catch (TAC) and catch data

TAC	Year	NA	Amount	NA
UoA share of TAC	Year	NA	Amount	NA
UoA share of total TAC	Year	NA	Amount	NA
Total green weight catch by UoC	Year (most recent)	NA	Amount	NA
Total green weight catch by UoC	Year (second most recent)	NA	Amount	NA

7.4.4 Principle 1 Performance Indicator scores and rationales

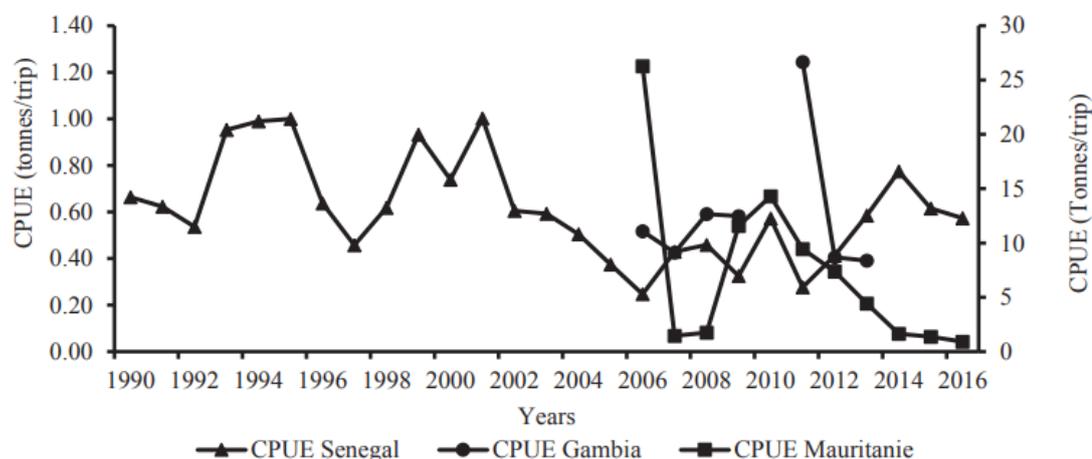
PI 1.1.1A – key Low Trophic-Level

Note - only use this for stocks identified as key Low Trophic-Level (LTL).

PI 1.1.1A		The stock is at a level which has a low probability of serious ecosystem impacts		
Scoring Issue		SG 60	SG 80	SG 100
a	Stock status relative to ecosystem impairment			
	Guide post	It is likely that the stock is above the point where serious ecosystem impacts could occur.	It is highly likely that the stock is above the point where serious ecosystem impacts could occur.	There is a high degree of certainty that the stock is above the point where serious ecosystem impacts could occur.
	Met?	No	No	No
Rationale				

The CECAF small pelagic Working Group conduct a regular stock assessment of bonga shad. This was last done in 2018, and then updated in 2019 (FAO 2019). It uses fishery and some biological data submitted from the participating countries in West Africa. CECAF define overexploited as ‘the current stock is 40% below the no- exploited stock, a stock which is less than that which sustains a MSY. Fishing is at an undesirable level both in terms of biomass and fishing mortality. Fishing pressure should be reduced to allow the stock to develop.’

Catch-per-unit-effort (tonnes/day) was used as an index of relative abundance for bonga up to 2016 (FAO 2019). CPUE data show catch rates have been declining in Mauritania to a low level since 2010 (Figure 1). In Senegal catch rates declined between 2001 and 2006, before recovering again in 2014 before a more recent decline. In contrast, The Gambia CPUE series is shorter and more erratic with very high catch rates reported in 2006 and 2011. There is no discernible trend in this dataset.



CPUE (tonnes/trip) from Senegalese, Gambian and Mauritanian surrounding gillnets (source FAO 2019).

In 2018, the stock assessment show that the fishing mortality is above the precautionary level ($F_{curr}/F_{0.1} = 1.45$) and therefore the stock is being overexploited (i.e. the current level of exploitation F_{curr} is well above the target level $F_{0.1}$). The management recommendation was to reduce catch and effort from current level. While the 2019 stock assessment update could not re-run the assessment due to a lack of data from Senegal, the Working Group concluded that the fishing pressure on bonga remains very high and “still in state overexploitation”.

The results showed that growth overfishing is occurring as the average size of fish has decreased over time. It remains unclear, however, if recruitment overfishing is occurring as the 2018 stock assessment indicates that fishing mortality (F) is high for fish retained between 18-36 cm, with the size at maturity between 17-18.5 cm. Although stakeholders reported that the fishers are catching up to 80% juveniles at certain times.

During the 2018 stock assessment different stock structure scenarios were tested. The Working Group decided to use a scenario for one regional stock using fisheries-dependent data from Mauritania-Senegal only - the results of the other scenarios were inconclusive. Uncertainties in the Mauritanian processor data, Gambian biological data,

uncertainties on gear selectivity, and lack of agreement on the stock boundary, all mean that there is large uncertainty in the stock assessment (FAO 2019). Uncertainty in data also leads to conclusion that precaution should be exerted, so stock unlikely to be above point where ecosystem impacts could occur <SG60.

Given stock is overexploited we also need to score stock rebuilding PI1.1.2

Stock status in relation to ecosystem needs				
b	Guide post		The stock is at or fluctuating around a level consistent with ecosystem needs.	There is a high degree of certainty that the stock has been fluctuating around a level consistent with ecosystem needs or has been above this level over recent years.
	Met?		No	No

Rationale

Biological reference points used to assess the status of the fishery are used as a proxy for MSY (i.e. $F_{0.1} \sim F_{MSY}$) but has not been adjusted for management of key LTL species (i.e. $0.5 F_{MSY}$). The target reference point is too high and will lead to higher levels of exploitation and lower stock biomass for the ecosystem needs. In consequence, the stock has shown signs of overexploitation and high level of fishing pressure prevent the stock from rebuilding to sustainable levels to meet ecosystem needs. The SG80 is not met.

References

FAO. 2019. Report of the FAO Working Group on the Assessment of Small Pelagic Fish off Northwest Africa. Banjul, the Gambia, 26 June – 1 July 2018. Rapport du Groupe de travail de la FAO sur l'évaluation des petits pélagiques au large de l'Afrique nord-occidentale. Banjul, Gambie, 26 juin–1 juillet 2018. FAO Fisheries and Aquaculture Report/ FAO Rapport sur les pêches et l'aquaculture No. R1247. Rome. Licence: CC BY-NC-SA 3.0 IGO.

Stock status relative to reference points

	Type of reference point	Value of reference point	Current stock status relative to reference point
Reference point used in scoring stock relative to ecosystem impairment (SIa)	Not available	Not available	Not available
Reference point used in scoring stock relative to ecosystem needs (SIb)	$F_{0.1} \sim F_{MSY}$ is not appropriate	Not available	$(F_{curr}/F_{0.1}) = 1.45$ overexploited and not appropriate

Overall Performance Indicator (PI) Rationale

Biological reference point ($F_{0.1}$) used to assessment the status of the stock in relation to ecosystem needs is inappropriate for a key LTL species. The latest assessment indicates that the stock is overexploited.

Draft scoring range	<60
Information gap indicator	More information sought
Data-deficient? (Risk-Based Framework needed)	No

PI 1.1.2 – Stock rebuilding

PI 1.1.2		Where the stock is reduced, there is evidence of stock rebuilding within a specified timeframe		
Scoring Issue		SG 60	SG 80	SG 100
a	Rebuilding timeframes			
	Guide post	A rebuilding timeframe is specified for the stock that is the shorter of 20 years or 2 times its generation time . For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.		The shortest practicable rebuilding timeframe is specified which does not exceed one generation time for the stock.
	Met?	No		No
Rationale				

There is no formal rebuilding plan and therefore no rebuilding time frame for this stock to meet SG60. Further to this, the stock is transboundary and needs a regional rebuilding plan.

b	Rebuilding evaluation			
	Guide post	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within the specified timeframe.	There is evidence that the rebuilding strategies are rebuilding stocks, or it is likely based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe .	There is strong evidence that the rebuilding strategies are rebuilding stocks, or it is highly likely based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe .
	Met?	Yes	No	No
Rationale				

There is a regular annual stock assessment conducted by CECAF small pelagic Working Group, using fishery-dependant data. This would provide sufficient monitoring to determine whether rebuilding strategies were being effective, if there was a rebuilding strategy. SG60 is likely to be met. However there is no rebuilding strategy, therefore there is no evidence that it's likely to work, SG80 is not met.

References

None

Overall Performance Indicator (PI) Rationale

There is no formal rebuilding plan and therefore no rebuilding time frame for this stock to meet SG60. Further to this, the stock is transboundary and needs a regional rebuilding plan.

Draft scoring range

<60

Information gap indicator

More information sought

PI 1.2.1 – Harvest strategy

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Scoring Issue		SG 60	SG 80	SG 100
a	Harvest strategy design			
	Guide post	The harvest strategy is expected to achieve stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in PI 1.1.1 SG80.
	Met?	Yes	No	No
Rationale				

Bonga are found very close to shore in shallow coastal waters, estuaries, and even up river, so they are generally targeted separately to other small pelagic species, such as sardinella. Bonga shad in The Gambia is mainly fished by artisanal vessels (8-15 m pirogues) using encircling gillnets. It is also fished by vessels using purse seine; these vessels are classed as artisanal as they are pirogues, but, at 20 m they are longer than the gillnet vessels and are likely to exert a greater fishing power. Under section 35(1) of Fisheries Act 2007, all local fishing vessels, including motorised and non-motorised canoes, must have a fishing licence issued by the Director, with the approval of the Secretary of State. To date, although regulated, there is a lack of enforcement on the number or size of vessel, essentially making the artisanal fishery 'open access' in nature.

There is a Fishery Access Agreement in the fishery between The Gambia and Senegal for both industrial and artisanal; Senegal and Mauritania also have a similar agreement. Vessels move freely between Senegal and Gambia, further decreasing the ability to quantify or manage effort. 61% of the fishermen in Gambia are a migratory population (DoF, 2016). There is a Technical Monitoring Committee of the agreement, comprise of government representatives of both countries, which meets annually and is tasked with deciding each year how many vessels can have licences to fish in the other country. However, currently they only set licence number and quota on the industrial fleet. Minutes of the meeting in 2018 states the intention to set up regional fisheries organisations to try to place a number of the number of vessels that fish in the other countries waters. More recent minutes have not been provided.

The fishery is managed by a combination of spatial and technical measures. They are within 1 nm from the coastline is a no-take zone, for all fisheries. The next zone is between 1 nm and 9 nm, which is reserved for the artisanal fleet. The area 9 nm - 12 nm is reserved for semi-industrial vessels below 250 tonnes, and beyond 12 nm is for industrial vessel above 250 tonnes. There is mesh size measure of 40 mm for the bong fishery. Fishing in the estuary and upriver is covered under the same regulation in the Fisheries Act as the marine fisheries.

Data is collected by the DoF Research Department. They have a representative stationed at five of the 6 key bonga landing sites along the coast, according to stakeholders, and some of the inshore landing sites along the river Gambia as well.

Anecdotally, the pre-assessment team have been told that spatial and technical regulations are not well complied with by the artisanal fleet. There is some at-sea surveillance that the Gambian DoF conducts in conjunction with the international NGO Sea Shepherd. However this is ad hoc and does not form part of a strategy for the stock, also, it is focussed on the industrial sector.

There is a stock assessment which is conducted regularly and collates data from all countries in the region. It was last conducted in 2018, and the working group met in 2019 to review the additional years' data. The stock assessment has recommended for the last few years that fishing pressure be reduced. The 2019 assessment recommended that *effort and catch be reduced to below 2017 levels* (FAO 2019). If this statement is taken as the stock management objective, then the harvest strategy does not have the ability to limit, let alone reduce, fishing pressure.

Despite the stock range running from Mauritania to Senegal and Gambia, and despite fishery access agreements between Gambia and Senegal, and Senegal and Mauritania, the management is not conducted at this broader regional level, in terms of controls or enforcement. There is, as yet, no agreement on total allowable catch of all the countries combined. A recent independent hydroacoustic survey (Sparre, 2018) indicated that bonga was only found

along the coast of the Gambia, so the Gambian DoF should ensure to manage its bonga resources by coordinating management with the countries it has Fishery Access Agreements with (Senegal).

The range of national measures within the harvest strategy is expected to achieve the stock management objectives to meet SG60, but the lack of reduction in fishing effort demonstrates that the fishery cannot be considered to be responsive to the state of the stock to meet SG80 and above.

Harvest strategy evaluation				
b	Guide post	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	Met?	No	No	No
Rationale				

Spatial management is appropriate for this species as it is known to stay in shallow coastal and estuarine areas, and is therefore protected somewhat from industrial fishing pressure. Bonga are found to approximately 20 m depth (Sarre, 2018). Mesh size restrictions are also appropriate for this species as it is known to impact the size of small pelagic fish caught.

The major weakness in the harvest strategy is that the artisanal fishery has a lack of enforcement on the number and size of vessels, both within Gambia, and also to Senegalese vessels too. Given the high demand for small pelagic fish to input to fishmeal factories in Gambia, Senegal and Mauritania, it is unlikely that spatial and technical measures alone will suffice to protect the stock. Indeed the stock assessment shows the harvest strategy is not working. SG60 is not met.

Harvest strategy monitoring				
c	Guide post	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Met?	No		
Rationale				

Data are collected on volume of bonga landed, but the size of the bonga is not measured. Stock assessments are conducted annually, although the 2019 stock assessment was not conducted due to lack of data.

The landings that are made into Senegal and other countries, are not measured by Gambia. The data all feed into a regional stock assessment, so, if the other countries are collecting the data too, it should not matter to the stock assessment that the landings have been made in a different country to the catches, although it does hide nuances of the dynamics of the fishery. However it makes it impossible to apply the data to Gambia's harvest strategy, and know exactly how much effort is actually occurring in Gambian waters. Also, in the 2019 meeting of the stock assessment working group, 2018 data from Senegal was not available and therefore landings from Senegal could not be added to the regional landings (FAO 2019). Therefore SG60 is not met.

Harvest strategy review				
d	Guide post			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			No
Rationale				

The harvest strategy is not reviewed and improved as necessary. SG100 is not met.

e	Shark finning			
	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	NA	NA	NA
Rationale				

The target species is not a shark.

f	Review of alternative measures			
	Guide post	There has been a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock, and they are implemented, as appropriate.
	Met?	NA	NA	NA
Rationale				

There is no evidence to suggest there exists unwanted catch in the gillnet fishery.

References

Agreement between the Government of the Republic of Senegal and the Government of the republic of Gambia in the Field of Fisheries and Aquaculture (2017)

Minute of the first meeting of the Technical Monitoring Committee on the Fisheries and Aquaculture Agreement and its protocols of implementation (2018)

FAO. 2019. Report of the FAO Working Group on the Assessment of Small Pelagic Fish off Northwest Africa. Banjul, the Gambia, 26 June–1 July 2018. Rapport du Groupe de travail de la FAO sur l'évaluation des petits pélagiques au large de l'Afrique nord-occidentale. Banjul, Gambie, 26 juin–1 juillet 2018. FAO Fisheries and Aquaculture Report/ FAO Rapport sur les pêches et l'aquaculture No. R1247. Rome. Licence: CC BY-NC-SA 3.0 IGO.

Overall Performance Indicator (PI) Rationale

The lack of enforcement on the number and size of vessels in the fishery undermines the current suite of technical and spatial management measures in place. The inability to reduce fishing mortality on a regional level despite the transboundary stock is considered overexploited means that the fishery does not meet SG60.

Draft scoring range	<60
Information gap indicator	More information sought

PI 1.2.2 – Harvest control rules and tools

PI 1.2.2		There are well defined and effective harvest control rules (HCRs) in place		
Scoring Issue		SG 60	SG 80	SG 100
a	HCRs design and application			
	Guide post	Generally understood HCRs are in place or available that are expected to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached.	Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	The HCRs are expected to keep the stock fluctuating at or above a target level consistent with MSY, or another more appropriate level taking into account the ecological role of the stock, most of the time.
	Met?	Yes	No	No
Rationale				

In 2016 the stock assessment team recommended a decrease in catches but instead an increase occurred. Recommendations in the 2018 assessment again was to reduce catch and effort and allow the stock to return to a sustainable level of biomass. However the 2018 assessment notes a very strong increase in effort and catches in 2017 compared to 2016 (FAO 2019). This is the most recent information available. There should be harvest control rules that can limit fishing effort or catches, and be able to reduce the exploitation rate.

A lack of an enforced licencing system means the fishery has unrestricted access. Fishery Access agreements with Senegal and Mauritania further increases the fishing effort. There is no control on effort creeping up in terms of vessel capacity either. As well as the number of vessels that come from other countries, according to fishery stakeholders, Gambian artisanal vessels tend to be between 10 and 15 m, whereas Senegalese vessels that travel into Gambian waters tend to be larger, around 25 m.

It is well documented that an artisanal licencing system is to be introduced at some point. The EU have recently commenced a new project in West Africa, the PESCAO project, which is working on improving fisheries governance. The Gambian Department of Fisheries is actively participating in this project. Part of the project work will apparently be registering the artisanal vessels. However, a licencing system that can control the size of fleet is some way beyond registering the vessels, especially to the Senegalese Access Agreement.

Spatial and technical measures (Sidibeh, 2020):

- The spatial management involves a 1nm around the coast no-take zone between June-November annually
- 9 nm zone around the coast dedicated to the artisanal fleet (increased from 0.5 nm in 2013)
- Vessels of 250 Gross Registered Tons (GRT) or less are allowed to fish between 9-12 nm
- Trawling is banned in the River Gambia
- Gillnets are banned within 2 nm of Dog Island and Fort James Island in the River Gambia
- Beach seines are banned in all waters.
- Mesh size for encircling gillnets is no less than 40 mm

A recent harvest strategy has recently been introduced in the last three years to hold a six month closed season for night fishing for the artisanal sector between June-October annually. This strategy is supported by the fishing industry and was in place in 2018, and 2019 but was reduced to three months for 2020 by the Department of Fisheries. The fishing industry was not happy about the reduction in months because on concern of over-exploitation of the stock. Data about the reduction in effort that is created by this HCR should be analysed.

The size-at-maturity for bonga is 170-185 mm. The average length of bonga is 250 mm and the max length is 460 mm. The mesh size of 40 mm may be appropriate but stakeholder consultation has provided the information that few, if any, fishers use 40 mm mesh size. This is because the age structure of the population is such that they are catching 80% juveniles, and the fishery would not be viable were they to use 40mm mesh size, because their catches would be so low.

In principle there are a suite of management measures that form a generally understood HCR to meet G60 but they are deemed to be 'well defined' to keep the stock around target reference points sufficient to meet SG80.

HCRs robustness to uncertainty				
b	Guide post		The HCRs are likely to be robust to the main uncertainties.	The HCRs take account of a wide range of uncertainties including the ecological role of the stock, and there is evidence that the HCRs are robust to the main uncertainties.
	Met?		No	No
Rationale				

The main uncertainties include the actual amount of fishing effort and landings from all neighbouring countries, the lack of stock assessment for 2019 due to poor data, the age or size structure of the stock, and whether the HCRs are being complied with. There are not sufficient buffers or precautionarily yet build into the HCRs to be robust to uncertainties. SG80 is not met.

HCRs evaluation				
c	Guide post	There is some evidence that tools used or available to implement HCRs are appropriate and effective in controlling exploitation.	Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.	Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the HCRs.
	Met?	No	No	No
Rationale				

There is a suite of management measures that support a generally understood HCRs but the state of the stock means that the regulations are difficult to comply with. Anecdotal evidence through stakeholder consultation suggests that mesh size is not being complied with, and the zonation is somewhat complied with but there are some encroachments.

The night time closure is supported by the fishers and therefore is likely to be more complied with but at-sea enforcement is limited. Evidence suggests that effort is increasing through vessel numbers, especially from neighbouring countries, and there is not an HCR yet that can control this. SG60 is not met.

References

FAO. 2019. Report of the FAO Working Group on the Assessment of Small Pelagic Fish off Northwest Africa. Banjul, the Gambia, 26 June–1 July 2018. Rapport du Groupe de travail de la FAO sur l'évaluation des petits pélagiques au large de l'Afrique nord-occidentale. Banjul, Gambie, 26 juin–1 juillet 2018. FAO Fisheries and Aquaculture Report/ FAO Rapport sur les pêches et l'aquaculture No. R1247. Rome. Licence: CC BY-NC-SA 3.0 IGO.

Overall Performance Indicator (PI) Rationale

Despite the suite of technical and spatial management measures used as part of a generally understood HCR, lack of control on fishing effort prevent level of exploitation rate is reduced as the PRI is approached.

Draft scoring range	<60
Information gap indicator	More information sought

PI 1.2.3 – Information and monitoring

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue	SG 60	SG 80	SG 100	
a	Range of information			
	Guide post	Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data are available to support the harvest strategy.	A comprehensive range of information (on stock structure, stock productivity, fleet composition, stock abundance, UoA removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
	Met?	Yes	No	No
Rationale				

Multiple studies have been carried out to define the connectivity and indicate population structures of bonga along the West African coastline. Different studies have come to different conclusions about stock definition. Some studies have indicated there are genetic flows along the coastline, whereas others have concluded that there are distinct breaks between stocks in different regions (FAO 2019). The results of these studies differ between 1, 2, 3 and 4 distinct stocks. Therefore, due to the lack of single conclusion, the stock assessment, carried out by the CECAF small pelagic working group, has conducted stock assessment based on a scenario of two stocks (Mauritanian, and Senegalo-Gambian), and an assessment based on a scenario of one stock for the whole sub-region.

Bonga is usually found in large concentrations in shallow coastal and estuarine areas, which are too shallow for the Fridtjof Nansen research vessel to enter, and therefore no acoustic or biological surveys have been conducted by this vessel. Sarre (2018) conducted a fishery-independent biomass survey in the River Gambia and the Sine Saloum Delta, however this was one biomass estimate in 2017, rather than a timeseries, therefore this study should be repeated on a regular basis. All data for the stock assessment comes from sampling of the commercial fisheries. Volume and species data is collected in sampling at landing sites.

The length-weight relationship of bonga in the river Gambia estuary, has been established (Ecoutin, 2005). Senegal provided size frequency data for the stock assessment, sampled from landings; providing 14 samples per 1,000 tonnes in 2016, and 9 samples per 1,000 tonnes in 2017. Gambia however, did not provide size frequency data in 2017, but has done in previous years up to 2016. Currently length data is not collected in Gambian fisheries landings data collection for the artisanal sector. The size and age structure of the stock is currently unknown.

There has been a socio-economic study conducted in 2006 and 2016 in Gambia, the Frame Survey. It collected data on effort in terms of number of vessels, crew, and horsepower; the gear type used in terms of frequency (DoF, 2016). The percentage of motorised and non-motorised canoes has decreased between the two surveys by 41% and 7% respectively (DoF, 2016). The decrease has been felt across all gear types with demersal gill net and drifting gillnet decreasing by 50% and 60% respectively (DoF, 2016). This data collection is now five years old, so the situation may have changed since then. The information that number of canoes has decreased is in contrast with the conclusion from the stock assessment that effort in the bonga fishery has increased. The 2019 stock assessment also describes that Gambian artisanal fisheries have increased due to migration from inland areas (FAO CECAF, 2019). The increase in effort in the bonga fishery may be relatively new, since 2016, and may be coming from a mixture of Gambian inland areas and from other countries, such as Senegal. Data collection would be required to demonstrate the validity of these assumptions.

Artisanal vessels are currently un-registered and it is not known how many vessels in neighbouring countries also are in the bonga fleet.

The information provided above provides evidence that there is some relevant information available on the stock structure, stock productivity and fleet composition to support the harvest strategy sufficient to meet SG60. Given that the stock assessment requires additional biological information (e.g. length data) to determine the status of the stock, strongly indicates this is not sufficient to meet SG80.

b	Monitoring			
	Guide post	Stock abundance and UoA removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and UoA removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule , and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.	All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.
	Met?	Yes	No	No
Rationale				

Monitoring of catches is conducted by the Ministry of Fisheries. For the artisanal fleet, species and volume is collected. Catch data is gathered by counting baskets of bonga and then estimating the weight. The enumerators at the ports use a catch-recording spreadsheet. They collect these variables: region, gear type, recorder, date, month, active boat and sampled boat. 6 vessels are sampled, Data collection is twice a month for a week at a time. 6 vessels per day per landing site are sampled. There are between 600-1000 vessels per landing site. Volumes are then raised using a raising factor to estimate volume for the entire fleet. It is not clear how this raising factor is calculated or checked, or how accurate it is, but the enumerators are aware of roughly how many vessels there are per landing site.

The most recent stock assessment was conducted in 2018, data was then updated in 2019, with 2018 data. The stock assessment in 2018 concluded that there was insufficient data collection for the bonga fishery from Gambia, especially in the form of biological data; Gambian stakeholders have informed us that this is due in large part to a lack of availability of trained personnel to collect the data. The MAVA foundation in West Africa are supporting the Gambian government to train personnel, and provide equipment such as tablets and data analysis units.

Stock abundance and UoA removals are monitored but the HCRs are made up of spatial and technical measures. Spatial information is requested of fishers under the heading 'region' in the data collection spreadsheet, but this is not verified independently, and therefore cannot be used to support compliance of the HCR. 'Gear type' is requested in the data collection spreadsheet as well, but there is no indication that mesh size is measured. However, fisheries dependent catch and effort data are collected to potentially estimate catch rates that can be used in the stock assessment. This is deemed sufficient to meet SG60. However, compliance with the no-take zone and the ban on night fishing should be monitored and indicate that removals are not regularly monitored sufficient to meet SG80

c	Comprehensiveness of information			
	Guide post		There is good information on all other fishery removals from the stock.	
	Met?		No	
Rationale				

Within Gambia, use a two-part sampling strategy as part of the CAS methodology to accommodate limited resources available. The raising factor must ensure that they are capturing the entire bonga fleet, as bonga can be found upriver at certain times. Elsewhere, sampling intensity in Senegal decreased between 2016 and 2017 and resulting in the coastal state not providing catch data in 2018 for the meeting of the stock assessment working group in 2019. Thus, it is concluded that given the transboundary distribution of the stock, insufficient information is available on all other removals from the stock to meet SG80.

References

Sarré, A., Krakstad, J.O., Brehmer, P. and Mbye, E.M., 2018. Spatial distribution of main clupeid species in relation to acoustic assessment surveys in the continental shelves of Senegal and The Gambia. *Aquatic Living Resources*, 31, p.9.

FAO. 2019. Report of the FAO Working Group on the Assessment of Small Pelagic Fish off Northwest Africa. Banjul, the Gambia, 26 June–1 July 2018. Rapport du Groupe de travail de la FAO sur l'évaluation des petits pélagiques au large de l'Afrique nord-occidentale. Banjul, Gambie, 26 juin–1 juillet 2018. FAO Fisheries and Aquaculture Report/ FAO Rapport sur les pêches et l'aquaculture No. R1247. Rome. Licence: CC BY-NC-SA 3.0 IGO.

Overall Performance Indicator (PI) Rationale

A range of fisheries dependent information is collected about the bonga gillnet fishery, including catch and effort statistics that can be used for stock assessment purposes. However, lack of a robust and routine data collection to monitor all removals from the stock at a regional level, including biological sampling prevent the fishery meeting SG80.

Draft scoring range	60-79
Information gap indicator	More information sought
Data-deficient? (Risk-Based Framework needed)	No

PI 1.2.4 – Assessment of stock status

PI 1.2.4		There is an adequate assessment of the stock status		
Scoring Issue		SG 60	SG 80	SG 100
a	Appropriateness of assessment to stock under consideration			
	Guide post		The assessment is appropriate for the stock and for the harvest control rule.	The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA.
	Met?		No	No
Rationale				

The continental shelf in the Gambia has a wide shallow area of less than 10m deep, which is too shallow for the Fridtjof Nansen research vessel to operate, therefore the area is unassessed by this regional acoustic survey programme. Bonga has a mostly inshore distribution and therefore the lack of fishery-independent survey injects uncertainty in biomass estimates and distribution mapping, which further increases uncertainty in the assessment (Sparre, 2017).

In 2018, the assessment methodology for bonga used a Length-based Cohort Analysis (LCA) and a Yield per Recruit (YPR) model to estimate reference points based on fishing mortality (F) because there was insufficient data to use a dynamic production model (FAO 2019). There are some gaps in the data, and therefore biomass cannot be estimated and the other conclusions carry high uncertainty. Fishery-dependent length composition data was used for the LCA model, and the results of the LCA model were used for the YPR model. Growth and natural mortality parameters were estimated based on an analysis of modal progression, and length-weight relationships parameters were sourced from FishBase.

There was no length data from Gambia for 2017, so the length data from Senegal was extrapolated to the total capture of Senegambia. The length-frequency data from Gambia in 2016 is also described imprecise. There was no landings data from Senegal for 2018. These gaps are identified in the stock assessment report. Three scenarios were tested for the assessment, to take into account the uncertainty in the connectivity along the coast, and the uncertainty in the length-frequency data. The three scenarios are: Mauritania, Senegal-Gambia and Mauritania-Senegal. The results of the Mauritania and Senegal-Gambia analyses were inconclusive and therefore not retained.

Based on the range of issues raised above, the equilibrium-based assessment is not deemed appropriate for the stock and harvest control rule sufficient to meet SG80. Further improvements are required in the quality and quantity of regional fisheries-dependent data collection and research to improve the quality of the outcome.

b	Assessment approach			
	Guide post	The assessment estimates stock status relative to generic reference points appropriate to the species category.	The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.	
	Met?	No	No	
Rationale				

The CECAF small pelagic Working Group calculate two biological reference points (F_{max} and $F_{0.1}$), where $F_{0.1}$ is considered a proxy for target reference point, MSY (i.e. F_{MSY}). A lower target reference point should be adopted for key LTL species, such that $0.5 F_{0.1} \sim 0.5 F_{MSY}$. The assessment does not therefore estimate stock status relative to reference points that are appropriate to the species group. SG60 is not met.

Uncertainty in the assessment				
c	Guide post	The assessment identifies major sources of uncertainty.	The assessment takes uncertainty into account.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.
	Met?	Yes	No	No
Rationale				

The stock assessment cautions that results from the assessment should be taken with caution given the uncertainties in gear selectivity, and the lack of conclusive information on the identity of the stock, as well as the limitation of biological data from Gambia. While the assessment is able to identify the range of possible uncertainties in the results sufficient to meet SG60, the assessment methodology is not able to take these into account. SG80 is not met.

Evaluation of assessment				
d	Guide post			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?			No
Rationale				

The stock assessment has not been fully tested and shown to be robust to alternative hypotheses, such as recruitment patterns, unreported fishing etc. The simplicity of the assessment models used without extensive testing through management strategy evaluation make it unlikely to meet SG100.

Peer review of assessment				
e	Guide post		The assessment of stock status is subject to peer review.	The assessment has been internally and externally peer reviewed.
	Met?		Yes	No
Rationale				

The CECAF small pelagic Working Group provides an opportunity for the assessment of stock status to be subject to internal and external peer review (FAO 2020). Indeed, it is the peer review process that rejected the results from the recent 2019 stock assessment and provided recommendations to reduce catch from 2018 levels to prevent any further increase in fishing mortality. This is likely to meet SG80 but would require peer review outside of CECAF to fully meet SG100.

References

FAO. 2019. Report of the FAO Working Group on the Assessment of Small Pelagic Fish off Northwest Africa. Banjul, the Gambia, 26 June–1 July 2018. Rapport du Groupe de travail de la FAO sur l'évaluation des petits pélagiques au large de l'Afrique nord-occidentale. Banjul, Gambie, 26 juin–1 juillet 2018. FAO Fisheries and Aquaculture Report/ FAO Rapport sur les pêches et l'aquaculture No. R1247. Rome. Licence: CC BY-NC-SA 3.0 IGO.

Overall Performance Indicator (PI) Rationale

The current assessment estimates stock status relative to generic reference points that are deemed inappropriate for key LTL species. The CECAF small pelagic Working Group calculate two biological reference points (F_{max} and $F_{0.1}$),

where $F_{0.1}$ is considered a proxy for target reference point, MSY (i.e. F_{MSY}). A lower target reference point should be adopted for key LTL species, such that $0.5 F_{0.1} \sim 0.5 F_{MSY}$. SG60 is not met.

Draft scoring range	<60
Information gap indicator	More information sought

7.5 Principle 2

7.5.1 Principle 2 background

The pre-assessment team was provided with catch data for the encircling gillnet fishery by the DoF for 2016. The catch profile is presented below:

Table 8 Encircling gillnet catch data in 2016.

Species	Catch Kg in 2016	% of catch in 2016	Primary/Secondary	Main/Minor
Shad/Bonga	13,078,725	85.30	Target	Target
Round Sardinella	1,606,375	10.48	Primary	Main
Long Neck Croaker	1548	0.01	Secondary	Minor
Flat Sardinella	5,01,145	3.27	Primary	Minor
Cassava Croaker	409	0.00	Secondary	Minor
Bobo Croaker	47,741	0.31	Secondary	Minor
Rubberlip Grunt	403	0.00	Secondary	Minor
Sompat Grunt	68,909	0.45	Secondary	Minor
Bigeye grunt	303	0.00	Secondary	Minor
Giant African threadfins	82	0.00	Secondary	Minor
Atlantic Horse Mackerel	27,328	0.18	Primary	Minor
Total	15,332,968	100		

From the information provided by the DoF, round sardinella (*Sardinella aurita*) is the only main primary species within this UoA. Atlantic horse mackerel (*Trachurus trachurus*) and flat sardinella (*Sardinella maderensis*) were considered to be minor species based on catch proportion for 2016. There were no main secondary species identified.

S. aurita is a coastal pelagic species that is found inshore and near the surface. It is thought to breed throughout the year but with distinct peaks between June and September^{1,2}. The main spawning area extends over the continental shelf from The Gambia to Cape Blanc with larvae found across the full width of the continental shelf. The embryos accumulate in very shallow waters leading to the concentration in two nurseries, one of which is situated on the Petite Cote of Senegal from Dakar to the north of Gambia while the other, is in the region of Cape Timiris and the Arguin Bank off Mauritania. At these sites the juvenile sardinella develop until they reach a size of 20-25 cm, when they are just over one year old. As they grow, they move to slightly deeper waters of about 20 m. Round sardinella feed mainly on plankton, phytoplankton and zooplankton².

No stock assessment could be conducted in 2019 due to a lack of data for *Sardinella aurita*. No data was provided by Senegal and insufficient data was provided by the other major sardinella fishing countries. An analysis of available survey indices indicates that the sardinella stocks, particularly *S. aurita* is overexploited. The working group estimated a 50% reduction in fishing effort and catch for all countries and stressed that strong action is required (FAO, 2020).

No stock assessment could be conducted in 2019 for flat sardinella (*S. maderensis*) due to insufficient data. As with round sardinella, CECAF notes challenges with this stock due to absence of regional acoustic estimates for recent years and the deterioration of the available CPUE series. There was also limited sampling of size frequencies in Senegal and Mauritania, with low sampling intensity in both countries.

Atlantic horse mackerel (*Trachurus trachurus*) in 2018 was overexploited but did improve in 2019 and was thought to be fully exploited. This suggests that the Atlantic horse mackerel fishery in 2019 was operating within the limits of sustainability.

The management measures in place for sardinella are the same as those for bonga. This includes a combination of spatial zoning, a six month no take zone within 1nm of the coast, a six month ban on night fishing annually, and technical measures for example a 40mm mesh size. As with bonga, there is no licencing in this fleet.

Some elasmobranch species were also included in the artisanal catch profile however, the gear type associated with these catches was not provided. Elasmobranchs may be analysed as vulnerable species and therefore count as major if over 2% of the catch. Even assuming the worst-case scenario that all elasmobranchs were caught by encircling gillnets, and that there was no other bycatch other than the major species, no elasmobranch species made up more than 0.47% of the catch.

¹ <https://www.fishbase.se/summary/sardinella-aurita>

² <http://www.fao.org/3/n0952e/n0952e07.htm>

Table 9 Elasmobranch catches in artisanal fishery

Name	Common name	Tonnes per year average 2015-2019	Percentage of total
<i>Carcharhinus limbatus</i>	Blacktip shark	58.8	0.19
<i>Rhizoprionodon acutus</i>	Milk shark	66.4	0.22
<i>Centrophorus granulosus</i>	Gulper shark	32.5	0.11
<i>Dasyatis marginata</i>	Daisy stingray	15.9	0.05
<i>Raja alba</i>	White skate	142.4	0.47
<i>Rhinoptera marginata</i>	Lsuitanian cownose ray	34.2	0.11
<i>Centrophorus lusitanicus</i>	Lowfin gulper shark	46.3	0.15
<i>Raja miraletus</i>	Brown ray	10.6	0.03
<i>Rhinobatos albomaculatus</i>	White spotted guitarfish	38.6	0.13
<i>Rhinobatos cemiculus</i>	Blackchin guitarfish	3.1	0.01
<i>Ginglymostoma cirratum</i>	Nurse shark	0.3	0.00
<i>Shyrna lewini</i>	Scallop hammerhead	13.4	0.04
<i>Shyrna mokarran</i>	Great hammerhead	10.0	0.03
-	Marbled stingray	6.8	0.02

Table 10 – Scoring elements

Component	Scoring elements	Designation	Data-deficient
Primary	Round Sardinella	Main	No
Primary	Flat Sardinella	Minor	No
Primary	Atlantic Horse Mackerel	Minor	No
Secondary	Long Neck Croaker	Minor	Unknown
Secondary	Cassava Croaker	Minor	Unknown
Secondary	Bobo Croaker	Minor	Unknown
Secondary	Rubberlip Grunt	Minor	Unknown
Secondary	Sompat Grunt	Minor	Unknown
Secondary	Bigeye grunt	Minor	Unknown
Secondary	Giant African threadfins	Minor	Unknown

From the catch data provided by the DoF, interaction with specific ETP species cannot be determined. Therefore, information was gathered from available literature and stakeholder consultation on species that are likely to be impacted. ETP species potentially affected by this fishery are humpbacked dolphins (*Sousa teuszii*) and bottlenose dolphins (*Tursiops truncatus*). Warebeek (2016) described that there is dolphin bycatch in The Gambia from gillnets

set for bonga, catfish and ladyfish, although the source of this information is not clear. Other cetacean species that could be important to note in The Gambia are short-beaked common dolphin (*Delphinus delphis*), longbeaked common dolphin (*Delphinus capensis*), Clymene dolphin (*Stenella clymene*), harbour porpoise (*Phocoena phocoena*) and Bryde's whale (*Balaenoptera brydei*) (Lee *et al.*, 2009). The Sole co-management plan (Ministry of Fisheries, Water Resources and National Assembly Matters, 2012) also mentions short finned pilot whale (*Globicephala macrorhynchus*).

Four marine turtle species are known to occur in Gambian waters (green, hawksbill, leatherback and olive ridley), with green turtles being the most abundant (Lee, 2009). Not much is known about the status of turtle populations in the Gambia but they are threatened by different gear types including driftnets, which are similar to the encircling gillnets used in the UoA, in that they are thin (so less visible) nets that float on the surface.

In the Gambia, all turtle species are protected under the Wildlife Conservation Act 1977, and the Biodiversity/Wildlife Policy and Regulation of 1999 and 2003. The Gambia is a signatory to the Abidjan Memorandum in 1999, which provides a basis for conservation of turtles along the African Atlantic coast, and a regional conservation plan has been created. Turtle fishing is prohibited in Gambia, although turtle is considered as a delicacy by part of the population (ECOLAS, 2000) and is sold at some of the markets. Cetaceans are also protected under the Wildlife and Conservation Act and The Gambia is signatory to the Convention on Migratory Species, which covers some dolphin species. Despite protection for ETP species being in place information on interactions with turtles and dolphins is unknown and stakeholder consultation (2020) indicated that interaction of fisheries with dolphins is not monitored.

There is dynamite fishing that is prevalent in West Africa (Stakeholder consultation, 2020). It is not specific to the encircling gillnet fishery but it is important to mention because it is part of the artisanal sector and is not part of a targeted fishery, so could easily slip through the net of the MSC standard. Any improvement work should include working on this damaging fishing technique as it is part of the artisanal fishery in general.

The West African region is characterised by rich biodiversity and various critical habitats such as sea grass, coral reefs, mangroves ecosystem and endangered species. This is largely due to the Canary Current Large Marine Ecosystem, which is a highly productive cold water upwelling system. The upwelling occurs in Mauritania and Northern Senegal around November, and moves south. Gambia benefits from the upwelling in March/April. Due to the importance of the marine and coastal region in West Africa, the Regional Partnership for Coastal and Marine Conservation (PRCM) was set up which is a coalition of actors in support of coastal and marine conservation along the West African coastline covering Cape Verde, Gambia, Guinea Conakry, Guinea-Bissau, Mauritania, Senegal and Sierra Leone. Specifically, the PRCM has a project dedicated to building transparency and sustainable management of small pelagics and their sites according to the Ecosystem Based Approach to Fisheries. In 2007, the Regional Network of MPA's in West Africa (RAMPAO) was launched with a mission to '*ensure, within the West African marine ecoregion that encompasses Cape Verde, the Gambia, Guinea Bissau, Guinea, Mauritania, Senegal and Sierra Leone, the maintaining of a coherent set of critical habitats necessary for the dynamic functioning of the ecological processes essential to the regeneration of the natural resources and the conservation of biodiversity for the benefit of societies.*'

As this fishery uses pelagic gear, there is unlikely to be any habitat impacts associated with this UoA. Seagrass and coral reefs are located within the area but due to the nature of the gear it is unlikely to be impacted. Encircling gillnets are also prohibited from fishing within MPA's in The Gambia (Stakeholder Consultation, 2020). There are five national parks in Gambia that extend to the estuarine and marine region. The Niimi National Park covers 2740ha of the maritime zone, and is protected for water birds, manatees and dolphins, as well as turtles, crocodiles and otters. Fishing and oyster collection does occur in the Park. The Tanji and Bijol Island banks is 612ha along the Atlantic coast, south Gambia River, and the Tanji River. Bijol island is the only island off the coast of Gambia and is an important turtle laying site and a site for migratory birds. Dolphins and otters are also present in the reserve. Fishing and wood collection for fuel occur, it is unclear whether the wood collection is mangrove wood, but this activity does occur in Gambia, according to stakeholders. Bao Bolong is a 22,000ha RAMSAR site in the Gambia River. Hippos, manatees, otters and crocodiles are all present. The Tanbi National Park is a RAMSAR site that covers 4,000ha of wetlands, and 2,000ha of marine area. The park is 80% mangroves, and is a reproduction site for shrimps. Humpback dolphins, manatees and otter are all present. Fishing and oyster collection occur in the site. Finally, the Bolongfenyo community reserve is a forest, coastal and marine area managed by the community for eco-tourism. There are currently two more MPAs that are going to be established in The Gambia, including one on the high seas (Stakeholder Consultation, 2020).

7.5.2 Principle 2 Performance Indicator scores and rationales

PI 2.1.1 – Primary species outcome

PI 2.1.1		The UoA aims to maintain primary species above the point where recruitment would be impaired (PRI) and does not hinder recovery of primary species if they are below the PRI		
Scoring Issue		SG 60	SG 80	SG 100
a	Main primary species stock status			
	Guide post	Main primary species are likely to be above the PRI. OR If the species is below the PRI, the UoA has measures in place that are expected to ensure that the UoA does not hinder recovery and rebuilding.	Main primary species are highly likely to be above the PRI. OR If the species is below the PRI, there is either evidence of recovery or a demonstrably effective strategy in place between all MSC UoAs which categorise this species as main , to ensure that they collectively do not hinder recovery and rebuilding.	There is a high degree of certainty that main primary species are above the PRI and are fluctuating around a level consistent with MSY.
	Met?	No	No	No

Rationale

The only main primary species identified in this fishery from data provided is round sardinella (*S. aurita*). No quantitative stock assessment could be conducted in 2019 due to a lack of data but concluded that the stock is overexploited. No data was provided by Senegal and insufficient data was provided by the other major sardinella fishing countries. An analysis of available survey indices indicates that the sardinella stocks, particularly *S. aurita* is overexploited. The working group estimated a 50% reduction in fishing effort and catch for all countries and stressed that strong action is required (FAO, 2020).

The stock assessment in 2018 determined that *S. aurita* was overexploited in the northern area. Due to the multi-specific nature of the fishery and as a precaution the Working Group recommended reducing effort and catches for these two species in all zones and fleets and could not make catch recommendations (FAO, 2018)

CECAF notes challenges with this stock due to absence of regional acoustic estimates for recent years and the deterioration of the available CPUE series. There was also limited sampling of size frequencies in Senegal and Mauritania, with low sampling intensity in both countries. A survey carried out by the R/V Dr Fridtjof Nansen in May-July 2017 also showed a very low biomass for sardinella.

SG60 is not met for round sardinella.

b	Minor primary species stock status			
	Guide post			Minor primary species are highly likely to be above the PRI. OR If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species.
	Met?			No

Rationale

CECAF indicated that the Atlantic horse mackerel (*Trachurus trachurus*) in 2018 was overexploited but did improve in 2019 and was thought to be fully exploited. This suggests that the fishery in 2019 was operating within the limits of sustainability but given the multi-specific nature of these fisheries the Working Group recommends to not exceed the 2018 catch level. As such this is unlikely to meet SG100.

No stock assessment could be conducted in 2019 for flat sardinella (*S. maderensis*) due to insufficient data. As with round sardinella, CECAF notes challenges with this stock due to absence of regional acoustic estimates for recent years and the deterioration of the available CPUE series. There was also limited sampling of size frequencies in Senegal and Mauritania, with low sampling intensity in both countries. As such this is unlikely to meet SG100.

References

FAO .2018. Status summary for small pelagic stocks in the Northern Area of the Eastern Central Atlantic – CECAF. Scientific Sub-Committee, Eighth Session. Available at <http://www.fao.org/fi/static-media/MeetingDocuments/CECAF/CECAF-SSC8/2e.pdf> [Accessed 09/10/2020]

FAO. 2020. *Report of the FAO Working Group on the Assessment of Small Pelagic Fish off Northwest Africa. Casablanca, Morocco, 8–13 July 2019. Rapport du Groupe de travail de la FAO sur l'évaluation des petits pélagiques au large de l'Afrique nord-occidentale. Casablanca, Maroc, 8-13 juillet 2019.* FAO Fisheries and Aquaculture Report/FAO Rapport sur les pêches et l'aquaculture. Rome.

FAO. 2020. Summary Report FAO Working Group on the Assessment of Small Pelagic Fish off Northwest Africa 2019, *Fishery Committee for the Eastern Central Atlantic*. Available at <http://www.fao.org/3/cb0490en/cb0490en.pdf> [Accessed 20/10/2020]

Draft scoring range	<60
Information gap indicator	More information sought
Data-deficient? (Risk-Based Framework needed)	No

PI 2.1.2 – Primary species management strategy

PI 2.1.2		There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are measures in place for the UoA, if necessary, that are expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are likely to be above the PRI.	There is a partial strategy in place for the UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the PRI.	There is a strategy in place for the UoA for managing main and minor primary species.
	Met?	No	No	No
Rationale				

Management measures for the gillnet fishery consist of a combination of spatial zoning, a six month no take zone within 1nm of the coast, a six month ban on night fishing annually, and technical measures for example a 40mm mesh size. Data are collected at landing sites, there is participation in regional science through CECAF, and a small amount of enforcement in Gambia, which is mainly focussed on the industrial fleet outside of this UoA. Although there are measures in place, considering the potential status of these stocks and uncertainty surrounding their assessment, they are unlikely to maintain or improve the stocks above PRI and therefore **SG60** is not met.

b	Management strategy evaluation			
	Guide post	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.
	Met?	No	No	No
Rationale				

The fishing pressure on the sardinella stock across its range, has increased steadily year on year. There are also other fleets that target this stock, so the increase in pressure is not from the Gambian fleet alone. There are some measures in place in the Gambian artisanal fishery, but, licencing of vessels is not sufficient. The measures cannot therefore be considered likely to maintain a good level of the stock, and indeed CPUE is the lowest in the timeseries. **SG60** is not met.

c	Management strategy implementation			
	Guide post		There is some evidence that the measures/partial strategy is being implemented successfully .	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its overall objective as set out in scoring issue (a) .
	Met?		No	No
Rationale				

Although there are some management measures in place it is not clear if these are being implemented successfully. For example, the annual 6-month ban on night fishing was reduced to 3 months, there are reports of the incorrect mesh size being used and although there is some data collection occurring there are gaps. There has also been intent over the last few years to register all artisanal vessels which would be a pre-cursor to licencing, however this has not yet been implemented. This is therefore unlikely to meet **SG80**.

d	Shark finning			
	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	NA	NA	NA
Rationale				

No primary species are sharks and therefore this is not scored.

e	Review of alternative measures			
	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all primary species, and they are implemented, as appropriate.
	Met?	NA	NA	NA
Rationale				

As all catches within in this fishery are retained, this is N/A.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020

Draft scoring range	<60
Information gap indicator	Information sufficient to score PI

PI 2.1.3 – Primary species information

PI 2.1.3		Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impact on main primary species			
	Guide post	Qualitative information is adequate to estimate the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main primary species.	Some quantitative information is available and is adequate to assess the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for main primary species.	Quantitative information is available and is adequate to assess with a high degree of certainty the impact of the UoA on main primary species with respect to status.
	Met?	No	No	No
Rationale				

The sardinella assessment was limited due to major problems with the data across the sardinella range. There is concern that sardinella catches have been underreported in Mauritania in 2017 due to a new law that limits the FMFO processing of sardinella, but not bonga shad. No data was submitted from Senegal in 2018. Gambia does collect catch volume data but does not collect length or other biological data. These gaps lead to uncertainty in the stock assessment. Ultimately, due to the high uncertainty in the data, the assessment team had summarised various stock indicators in a qualitative fashion. So, it is difficult to fully know the impact of the fishery on the stock.

This is therefore unlikely to meet **SG60**.

b	Information adequacy for assessment of impact on minor primary species			
	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.
	Met?			No
Rationale				

Atlantic horse mackerel (*Trachurus trachurus*) is listed in the catch data, but according to the stock assessment, fishery statistics do not differentiate between species of horse mackerel (*T.trachurus* or *T.trecae*). There was some confusion about which species to allocate catches to. The same issues that apply to round sardinella also apply to flat sardinella. This may prevent both species from scoring **SG100**.

c	Information adequacy for management strategy			
	Guide post	Information is adequate to support measures to manage main primary species.	Information is adequate to support a partial strategy to manage main primary species.	Information is adequate to support a strategy to manage all primary species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.

	Met?	No	No	No
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Rationale

The measures include technical gear measures, and spatial measures. Currently no fish length data is being collected to analyse whether the gear measures are working to protect sardinella of a certain size. The size and age structure of the population should be analysed because reports from stakeholders is that the size of individuals is decreasing, and therefore the gear restrictions are not working.

SG60 is not met.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	<60
Information gap indicator	Information sufficient to score PI

PI 2.2.1 – Secondary species outcome

PI 2.2.1		The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit		
Scoring Issue		SG 60	SG 80	SG 100
a	Main secondary species stock status			
	Guide post	Main secondary species are likely to be above biologically based limits. OR If below biologically based limits, there are measures in place expected to ensure that the UoA does not hinder recovery and rebuilding.	Main secondary species are highly likely to be above biologically based limits. OR If below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding. AND Where catches of a main secondary species outside of biological limits are considerable , there is either evidence of recovery or a, demonstrably effective strategy in place between those MSC UoAs that have considerable catches of the species , to ensure that they collectively do not hinder recovery and rebuilding.	There is a high degree of certainty that main secondary species are above biologically based limits.
	Met?	Yes	Yes	Yes
Rationale				

There are no main secondary species in this UoA. This therefore meets **SG100**.

b	Minor secondary species stock status			
	Guide post			Minor secondary species are highly likely to be above biologically based limits. OR If below biologically based limits', there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species
	Met?			No
Rationale				

From the catch data provided the following species were identified as secondary minor species:

Long Neck Croaker
Cassava Croaker
Bobo Croaker

Rubberlip Grunt
Sompat Grunt
Bigeye grunt
Giant African threadfins

There is insufficient information to score these species and a PSA is likely to be needed. However, for this assessment there is insufficient information on susceptibility to score this section. This is therefore unlikely to meet SG100.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI
Data-deficient? (Risk-Based Framework needed)	No

PI 2.2.2 – Secondary species management strategy

PI 2.2.2		There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are measures in place, if necessary, which are expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a partial strategy in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a strategy in place for the UoA for managing main and minor secondary species.
	Met?	Yes	Yes	No
Rationale				

There are no main secondary species retained and the fishery is likely to meet **SG80**. There is no strategy for managing minor secondary species and so will unlikely score SG100.

b	Management strategy evaluation			
	Guide post	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.
	Met?	Yes	Yes	No
Rationale				

The gillnet fishery is managed through a combination of spatial zoning, a six month no take zone within 1nm of the coast, a six month ban on night fishing annually, and technical measures for example a 40mm mesh size. There is no licencing in the artisanal fleet that makes up the UoA. Data are collected at landing sites, there is participation in regional science through CECAF, and a small amount of enforcement in Gambia, which is mainly focussed on the industrial fleet outside of this UoA. However, there is no specific management measures for secondary species and testing is not available for this to meet SG100. This is likely to meet **SG80**.

c	Management strategy implementation			
	Guide post		There is some evidence that the measures/partial strategy is being implemented successfully .	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) .
	Met?		No	No
Rationale				

Although there are some management measures in place it is not clear if these are being implemented successfully. For example, the annual 6-month ban on night fishing was reduced to 3 months, there are reports of the incorrect mesh size being used and although there is some data collection occurring there are gaps. There has also been intent over the last few years to register all artisanal vessels which would be a pre-cursor to licencing, however this has not yet been implemented. This is therefore unlikely to meet **SG80**.

d	Shark finning			
	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	Yes	No	No
Rationale				

Shark finning is known to occur along the West African coast, but there is little detail as to which fisheries it is occurring in (ECOLAS, 2000). Lee *et al.*, (2009) details that sharks are landed as bycatch and used for the shark fin trade. The catch data for the total artisanal catch (no detail on gear type) did show some bycatch of elasmobranchs in the artisanal fishery.

Artisanal fish processors described to the assessment team how there is very little fish being landed currently, and it has been described to the team that everything caught is landed. Given this anecdotal evidence, and the known issues with food security in West Africa, it seems unlikely that shark fins would be landed while their bodies were wasted. It is therefore not likely that shark finning would occur in the artisanal fishery. This is likely to meet **SG60-79** in the absence of data.

e	Review of alternative measures to minimise mortality of unwanted catch			
	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main secondary species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main secondary species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all secondary species, and they are implemented, as appropriate.
	Met?	N/A	N/A	N/A
Rationale				

As all catches within in this fishery are retained, this is N/A.

References

ECOLAS (2000) Trade Gateway Project Environmental Impact Assessment Study. Draft Final Report, ECOLAS, Antwerp, Belgium.

Lee. V., Tobey. J., Castro. K., Crawford. B., Ibrahima. M., Drammeh. O. & Vaidyanathan. T. 2009. Marine Biodiversity Assets and Threats Assessment, Gambia-Senegal Sustainable Fisheries Project, *Coastal Resources Center*, University of Rhode Island. pp 50

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	60-79
Information gap indicator	More information sought

PI 2.2.3 – Secondary species information

PI 2.2.3		Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species		
Scoring Issue		SG 60	SG 80	SG 100
Information adequacy for assessment of impacts on main secondary species				
a	Guide post	Qualitative information is adequate to estimate the impact of the UoA on the main secondary species with respect to status.	Some quantitative information is available and adequate to assess the impact of the UoA on main secondary species with respect to status.	Quantitative information is available and adequate to assess with a high degree of certainty the impact of the UoA on main secondary species with respect to status.
		OR	OR	
	If RBF is used to score PI 2.2.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species.	If RBF is used to score PI 2.2.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.		
Met?	Yes	Yes	Yes	

Rationale

Fisheries dependent catch data from CAS show there are no main secondary species retained in the fishery. The fishery is likely to meet **SG100**.

Information adequacy for assessment of impacts on minor secondary species				
b	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
	Met?			No

Rationale

There is insufficient information for this to score SG100.

Information adequacy for management strategy				
c	Guide post	Information is adequate to support measures to manage main secondary species.	Information is adequate to support a partial strategy to manage main secondary species.	Information is adequate to support a strategy to manage all secondary species, and evaluate with a high degree of certainty whether the strategy is achieving its objective .
	Met?	Yes	Yes	No

Rationale

Fisheries dependent catch data from CAS show there are no main secondary species and therefore information is thought to be adequate to support a partial strategy on main species. However, there is inadequate information on the stock status of minor species to know with a high degree of certainty whether the strategy is achieving its objectives. The fishery would be unlikely to meet SG100.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

PI 2.3.1 – ETP species outcome

PI 2.3.1		The UoA meets national and international requirements for the protection of ETP species The UoA does not hinder recovery of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
a	Effects of the UoA on population/stock within national or international limits, where applicable			
	Guide post	Where national and/or international requirements set limits for ETP species, the effects of the UoA on the population/ stock are known and likely to be within these limits.	Where national and/or international requirements set limits for ETP species, the combined effects of the MSC UoAs on the population /stock are known and highly likely to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a high degree of certainty that the combined effects of the MSC UoAs are within these limits.
	Met?	NA	NA	NA
Rationale				

N/A

b	Direct effects			
	Guide post	Known direct effects of the UoA are likely to not hinder recovery of ETP species.	Direct effects of the UoA are highly likely to not hinder recovery of ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species.
	Met?	No	No	No
Rationale				

Four marine turtle species are known to occur in Gambian waters (green, hawksbill, leatherback and olive ridley), with green turtles being the most abundant (Lee *et al.*, 2009). Not much is known about the status of turtle populations in the Gambia (Barnett *et al.*, 2003) but they are threatened by different gear types including driftnets, which are similar to the encircling gillnets used in the UoA, in that they are thin (so less visible) nets that float on the surface. Not much was known by stakeholders on the potential interaction of this fishery with turtles but anecdotal evidence detailed in ECOLAS, 2000, and also gathered through stakeholder consultation for this assessment, says that nesting turtles have decreased significantly. There is also some reference in reports to marine turtle bycatch in gillnets (WWF-WARMER, 2003 cited in Lee *et al.*, 2009).

Other ETP species potentially affected by this fishery are humpbacked dolphins (*Sousa teuszii*) and bottlenose dolphins (*Tursiops truncatus*). The Atlantic humpback dolphin depends on nearshore habitat and therefore this greatly increases their susceptibility to anthropogenic threats and may overlap with this UoA (Brownell *et al.* 2019). *Sousa spp.* in particular are thought to be affected by gillnet fisheries in the coastal and riverine habitats (Brownell *et al.* 2019). Bottlenose dolphins are found from Western Sahara down to Guinea, including a semi-resident population of around 120 in the River Gambia and Gambian coastal waters (Warebeek, 2016). They feed nearshore in shallow water as well as offshore (Warebeek, 2016). The ECOLAS (2000) report describes that the status of the humpbacked dolphin has been questioned, but does not give any further detail. It also states that bottlenose dolphins are quite common, although from anecdotal evidence, they are seen less in the river Gambia than in the past. There is no formal assessment of population status, due to lack of information, the most that can be summarised is that fewer dolphins being landed may be demonstrating an apparent population decline. Warebeek (2016) described that there is dolphin bycatch in Gambia from gillnets set for bonga, catfish and ladyfish, although the source of this information is not clear. Warebeek took data from landing sites and noted a number of dolphins being landed, and there is a local market for the meat. Surveys and data collection on dolphin bycatch in fisheries is scarce in the region, but there are some surveys from Ghana that show that dolphin bycatch is occurring (66 per year in one port). Other cetacean species that could be important to note are short-beaked common dolphin (*Delphinus delphis*), longbeaked common dolphin (*Delphinus capensis*), Clymene dolphin (*Stenella clymene*), harbour porpoise (*Phocoena phocoena*), and Bryde's whale (*Balaenoptera brydei*) (Lee *et al.*, 2009).

The bycatch is mainly from drifting gillnets. Encircling gillnets are shot around the shoal and then hauled immediately so they pose less of a risk than drifting gillnets. Stakeholder consultation (2020) indicated that dolphin bycatch used to

be a big problem in The Gambia, especially around the southern end of the coastline. However, due to training and enforcement on bycatch measures this has reduced in recent years although some incidences still do happen.

As there is little information available for the impact of this UoA on turtle and cetacean species a PSA was conducted for green turtle (the most abundant in The Gambia) and humpbacked dolphins as they are thought to be particular vulnerable to gillnet fisheries. This gives an indication of the level of risk to ETP species (See Section 8.1)

Due to the limited information available to score the susceptibility aspect of this pre-assessment both green turtle and humpbacked dolphin are unlikely to meet **SG60**.

	Indirect effects			
C	Guide post		Indirect effects have been considered for the UoA and are thought to be highly likely to not create unacceptable impacts.	There is a high degree of confidence that there are no significant detrimental indirect effects of the UoA on ETP species.
	Met?		No	No
Rationale				

There may be an issue with ghost fishing in this UoA and nets are known to be washed up on shore. However, there was very little evidence of this either qualitative or quantitative, and therefore warrants further investigation.

This is unlikely to meet **SG80**

References

Barnett, L.K., Emms, C., Jallow, A., Cham, A.M., Mortimer, J.A., 2004. The distribution and conservation status of marine turtles in The Gambia, West Africa: a first assessment. *Oryx* 38, 203–208. <https://doi.org/10.1017/S0030605304000353>

Brownell Jr, R., et al. Bycatch in gillnet fisheries threatens Critically Endangered small cetaceans and other aquatic megafauna. *Endang. Species. Res.* 40, 285–296. <https://doi.org/10.3354/esr00994> haven't read this one yet

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Lee, V., Tobey, J., Castro, K., Crawford, B., Ibrahima, M., Drammeh, O. & Vaidyanathan, T. 2009. Marine Biodiversity Assets and Threats Assessment, Gambia-Senegal Sustainable Fisheries Project, *Coastal Resources Center*, University of Rhode Island. pp 50

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Van Waerebeek, K., Ofori-Danson, P.K., Debrah, J., Collins, T., Djiba, A. and Samba Ould Bilal, A., 2016. On the status of the common bottlenose dolphin *Tursiops truncatus* in western Africa, with emphasis on fisheries interactions, 1947-2015. Document SC/66b/SM19 presented to the Scientific Committee of the International Whaling Commission, Bled, Slovenia.

Draft scoring range	<60
Information gap indicator	More information sought
Data-deficient? (Risk-Based Framework needed)	Yes

PI 2.3.2 – ETP species management strategy

PI 2.3.2	<p>The UoA has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> - meet national and international requirements; - ensure the UoA does not hinder recovery of ETP species. <p>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species</p>			
	Scoring Issue	SG 60	SG 80	SG 100
a	Management strategy in place (national and international requirements)			
	Guide post	There are measures in place that minimise the UoA-related mortality of ETP species, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a comprehensive strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to achieve above national and international requirements for the protection of ETP species.
	Met?	NA	NA	NA
Rationale				

N/A

b	Management strategy in place (alternative)			
	Guide post	There are measures in place that are expected to ensure the UoA does not hinder the recovery of ETP species.	There is a strategy in place that is expected to ensure the UoA does not hinder the recovery of ETP species.	There is a comprehensive strategy in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species.
	Met?	Yes	Yes	No
Rationale				

In the Gambia, all turtle species are protected under the Wildlife Conservation Act 1977, and the Biodiversity/Wildlife Policy and Regulation of 1999 and 2003. The Gambia is a signatory to the Abidjan Memorandum in 1999, which provides a basis for conservation of turtles along the African Atlantic coast, and a regional conservation plan has been created. The Department of Parks and Wildlife Management are the lead agency for implementation of national wildlife legislation (Barnett *et al.*, 2003). Although turtle fishing is prohibited in Gambia, it is also considered as a delicacy by part of the population (ECOLAS, 2000) and is sold at some of the markets. It seems from the ECOLAS report that if it is declared as accidental bycatch, they will not be prosecuted for landing it. Stakeholder consultation indicated that if a turtle is caught accidentally, it will be processed on-board, landed just as the meat and, if sold, it would not be sold on the open market.

Cetaceans are also protected under the Wildlife and Conservation Act and The Gambia is signatory to the Convention on Migratory Species, which covers some dolphin species. Stakeholder consultation also indicated there has been training and enforcement which has resulted in a decline in accidental dolphin captures.

This is likely to meet **SG80** as there is a strategy in place to ensure that the UoA does not hinder ETP species however, monitoring is minimal and interactions with cetaceans and turtles are known to occur.

c	Management strategy evaluation			
	Guide post	The measures are considered likely to work, based on plausible	There is an objective basis for confidence that the measures/strategy will work,	The strategy/comprehensive strategy is mainly based on information directly about the

		argument (e.g., general experience, theory or comparison with similar fisheries/species).	based on information directly about the fishery and/or the species involved.	fishery and/or species involved, and a quantitative analysis supports high confidence that the strategy will work.
	Met?	No	No	No
Rationale				

Stakeholder consultation (2020) indicated that accidental catch of dolphin has declined due to training and enforcement but little data are collected. This is supported by Leeney et al. (2015) who states that marine mammal bycatch is not monitored in West Africa and the conservation status of most cetacean populations is unknown. There is also insufficient data collected on turtles to determine whether the measures are likely to work and therefore this is unlikely to meet **SG60**.

	Management strategy implementation			
d	Guide post		There is some evidence that the measures/strategy is being implemented successfully.	There is clear evidence that the strategy/comprehensive strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) or (b) .
	Met?		No	No
Rationale				

Lee *et al.*, (2009) concludes that enforcement of regulations and implementation of policies is hampered by lack of resources, low institutional capacity and logistical barriers. The Department of Parks and Wildlife (DPWM) described that the institutions tasked with environmental management work too independently of each other, and have a lack of resources and personnel (Lee *et al.*, 2009). Stakeholder consultation (2020) also indicated that although surveys were previously conducted on dolphin interaction this stopped in 2010 due to funding limitations.

This is therefore unlikely to meet **SG80**

	Review of alternative measures to minimize mortality of ETP species			
e	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.
	Met?	No	No	No
Rationale				

There appears to be no review of alternative measures and a lack of monitoring of ETP interaction was cited by several stakeholders due to limited funding.

This is unlikely to meet **SG60**.

References

Barnett, L.K., Emms, C., Jallow, A., Cham, A.M., Mortimer, J.A., 2004. The distribution and conservation status of marine turtles in The Gambia, West Africa: a first assessment. *Oryx* 38, 203–208. <https://doi.org/10.1017/S0030605304000353>
 ECOLAS (2000) Trade Gateway Project Environmental Impact Assessment Study. Draft Final Report, ECOLAS, Antwerp, Belgium.

Lee. V., Tobey. J., Castro. K., Crawford. B., Ibrahima. M., Drammeh. O. & Vaidyanathan. T. 2009. Marine Biodiversity Assets and Threats Assessment, Gambia-Senegal Sustainable Fisheries Project, *Coastal Resources Center*, University of Rhode Island. pp 50

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	<60
Information gap indicator	Information sufficient to score PI

PI 2.3.3 – ETP species information

PI 2.3.3		Relevant information is collected to support the management of UoA impacts on ETP species, including: <ul style="list-style-type: none"> - Information for the development of the management strategy; - Information to assess the effectiveness of the management strategy; and - Information to determine the outcome status of ETP species 		
Scoring Issue		SG 60	SG 80	SG 100
Information adequacy for assessment of impacts				
a	Guide post	Qualitative information is adequate to estimate the UoA related mortality on ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for ETP species.	Some quantitative information is adequate to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for ETP species.	Quantitative information is available to assess with a high degree of certainty the magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status of ETP species.
	Met?	No	No	No
Rationale				

Information on turtle nesting site numbers is lacking, although there is a report stating that the DPWM and the National Environment Agency were planning to start a voluntary data collection project to gather nesting site data from fishermen and volunteers, in 2000. Stakeholder consultation (2020) could not confirm this. In addition, information on turtle habitat and population dynamics is thought to be incomplete (Lee *et al.*, 2009). No information was provided on magnitude of catch of turtle by this UoA.

Stakeholder consultation (2020) indicated that the level of dolphin interaction is not currently monitored, although further consultation suggested that incidences are now less common. Warebeek (2016) conducted a study reviewing publications, reports and un-published data on fishery interactions with bottlenose dolphins. In The Gambia the data collected are now fairly outdated (1951, 2997 and 2000) and confirmed that there is little information available on the status of the common bottlenose dolphin in western Africa. A study by Weir *et al.*, (2011) on the Atlantic humpback dolphin also indicated that the lack of monitoring effort prevents an assessment of the scale of dolphin bycatch in most West African states. There is also no information on the population status for bottlenose or humpback dolphin, except the IUCN status.

There is also insufficient information on susceptibility specific to this UoA and is therefore unlikely to meet **SG60**.

Information adequacy for management strategy				
b	Guide post	Information is adequate to support measures to manage the impacts on ETP species.	Information is adequate to measure trends and support a strategy to manage impacts on ETP species.	Information is adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives.
	Met?	No	No	No

Rationale

Consultation with stakeholders suggests that there is little information currently collected to manage the impacts on both dolphins and turtles. This is also supported by reports and research undertaken across West Africa. This is therefore unlikely to meet **SG60**.

References

Lee, V., Tobey, J., Castro, K., Crawford, B., Ibrahima, M., Drammeh, O. & Vaidyanathan, T. 2009. Marine Biodiversity Assets and Threats Assessment, Gambia-Senegal Sustainable Fisheries Project, *Coastal Resources Center*, University of Rhode Island. pp 50

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Van Waerebeek, K., Ofori-Danson, P.K., Debrah, J., Collins, T., Djiba, A. and Samba Ould Bilal, A., 2016. On the status of the common bottlenose dolphin *Tursiops truncatus* in western Africa, with emphasis on fisheries interactions, 1947-2015. Document SC/66b/SM19 presented to the Scientific Committee of the International Whaling Commission, Bled, Slovenia.

Weir, C., Van Waerebeek, K., Jefferson, T. & Collins, T. 2011. West Africa's Atlantic humpback dolphin (*Sousa teuszii*): endemic, enigmatic and soon Endangered? *African Zoology*. 46(1): 1–17

Draft scoring range	<60
Information gap indicator	More information sought

PI 2.4.1 – Habitats outcome

PI 2.4.1		The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates		
Scoring Issue		SG 60	SG 80	SG 100
a	Commonly encountered habitat status			
	Guide post	The UoA is unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.
	Met?	Yes	Yes	No
Rationale				

This fishery does not touch the bottom and is unlikely to have any habitat impacts. Therefore, this is likely to meet **SG80** but more evidence would be needed to ensure that SG100 was met.

b	VME habitat status			
	Guide post	The UoA is unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.
	Met?	Yes	Yes	No
Rationale				

Seagrass habitats are found outside the Tanbi wetlands, where manatee and turtles are known to feed (ECOLAS, 2000). Seagrass areas are mostly un-mapped and un-protected in Gambia, with the exception of seagrass beds around Bijol Island, which are included in the Bijol Island Reserve³. The seagrass meadow identified was deemed to be in relatively good health. The nature of this fishery also suggests that impacts to seagrass habitats would be minimal as it does not make contact with the bottom. Stakeholder consultation (2020) also indicated there are some reefs in The Gambia, but these are minimal and again are unlikely to be impacted due to gear type used.

Therefore, this is likely to meet **SG80** but more evidence would be needed to ensure that SG100 was met.

c	Minor habitat status			
	Guide post			There is evidence that the UoA is highly unlikely to reduce structure and function of the minor habitats to a point where there would be serious or irreversible harm.
	Met?			No
Rationale				

There is insufficient information for this to score SG100.

References

³ <http://resiliensea.org/pilot-projects/gambia/pilotsitebijolisland/>

ECOLAS (2000) Trade Gateway Project Environmental Impact Assessment Study. Draft Final Report, ECOLAS, Antwerp, Belgium.

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI
Data-deficient? (Risk-Based Framework needed)	No

PI 2.4.2 – Habitats management strategy

PI 2.4.2		There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a strategy in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.
	Met?	Yes	Yes	No
Rationale				

As the gear in this fishery does not touch the bottom, this is likely to meet **SG80**. In addition to this, encircling gillnets are illegal in MPAs (Stakeholder Consultation, 2020). However, there is insufficient information on non-MSC fisheries to score this at **SG100**.

b	Management strategy evaluation			
	Guide post	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).	There is some objective basis for confidence that the measures/partial strategy will work, based on information directly about the UoA and/or habitats involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or habitats involved.
	Met?	Yes	Yes	No
Rationale				

Encircling gillnets are a passive gear that do not touch the seafloor and therefore the need for management is not necessarily required. In Gambia, encircling gillnet fishing is prohibited in MPAs however, the extent to which this is complied with is unknown and there is anecdotal evidence of MPA encroachment (not necessarily by vessels in this UoA) and so is unlikely to meet SG100 but will meet **SG80**.

c	Management strategy implementation			
	Guide post		There is some quantitative evidence that the measures/partial strategy is being implemented successfully.	There is clear quantitative evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).
	Met?		No	No
Rationale				

Stakeholder consultation has highlighted that MPAs are not well respected in Gambia, and that the Gambian ministries tasked with enforcing protected areas, the DoF and the DPWM, are not in a good position to be able to enforce the areas well. Compared to Mauritania and Senegal, Gambia lacks equipment and technical knowledge. Regional efforts should therefore focus more on Gambia and Guinea Bissau, than Mauritania and Senegal, when it comes to protected areas. Communities are often involved in protection of reserves that they live in, but fishers coming from elsewhere undermine these efforts.

This is therefore unlikely to meet **SG80**.

Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs				
d	Guide post	There is qualitative evidence that the UoA complies with its management requirements to protect VMEs.	There is some quantitative evidence that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.	There is clear quantitative evidence that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.
		No	No	No
Rationale				

Stakeholder consultation has highlighted that MPAs are not well respected in Gambia, and that the Gambian ministries tasked with enforcing protected areas, the DoF and the DPWM, are not in a good position to be able to enforce the areas well. Consultation also suggested that there are impacts from neighbouring countries using prohibited gear in MPAs. This is therefore unlikely to meet **SG60**.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	<60
Information gap indicator	Information sufficient to score PI

PI 2.4.3 – Habitats information

PI 2.4.3		Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guide post	<p>The types and distribution of the main habitats are broadly understood.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA: Qualitative information is adequate to estimate the types and distribution of the main habitats.</p>	<p>The nature, distribution and vulnerability of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA: Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.</p>	<p>The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.</p>
	Met?	Yes	Yes	No

Rationale

The types of habitat of The Gambia are well defined in the National Status Report Coastal and Marine Environment Gambia (UNEP, undated) as well as through other project such as the Integrated Coastal Area and Marine Biodiversity Project which ended in 2008. Although the main habitats are known in the area it is not clear if the distribution of all habitats is known to meet SG100. Therefore, this meets **SG80**.

		Information adequacy for assessment of impacts		
b	Guide post	<p>Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA: Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.</p>	<p>Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA: Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.</p>	<p>The physical impacts of the gear on all habitats have been quantified fully.</p>
	Met?	No	No	No

Rationale

The information is likely to broadly understand the main impacts as the gear does not touch the seafloor and therefore impacts are not thought to occur. However, a spatial footprint of the fishery could not be obtained and as such this is unlikely to meet **SG60**.

C	Monitoring			
	Guide post		Adequate information continues to be collected to detect any increase in risk to the main habitats.	Changes in all habitat distributions over time are measured.
	Met?		No	No
Rationale				

There was no evidence found of ongoing monitoring of the fishery footprint and therefore **SG80** is unlikely to be met.

References

UNEP. Undated. National Status Report Coastal and Marine Environment Gambia. Available at <https://wedocs.unep.org/bitstream/handle/20.500.11822/10420/National%20Status%20Report%20Coastal%20and%20Marine%20Environment%20Gambia.pdf?sequence=1&isAllowed=y> [Accessed 30/09/2020].

Draft scoring range	<60
Information gap indicator	Information sufficient to score PI

PI 2.5.1 – Ecosystem outcome

PI 2.5.1		The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	Ecosystem status			
	Guide post	The UoA is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is evidence that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
	Met?	Yes	No	No
Rationale				

A model of the Gambian continental shelf ecosystem was first conducted in 1986, it was then re-run with updated data on the same model, in 1992 and 1995 (Mendy, 2004). Fisheries were analysed taking trophic interactions into account and the model includes both artisanal and industrial fisheries and included 23 functional groups

The ecosystem models conducted between 1986 and 1995 concluded that changes in the diets of predators was limited in that period. However, it would be a large assumption to assume that diets had not changed significantly in the 25 years since the last ecosystem modelling. There are some citations of a biodiversity assessment conducted by the University of Rhode Island, although this assessment cannot be publicly found online.

A model was applied to the Senegambian ecosystem based on the trophic relationships and flows between functional groups (Samb & Mendy, 2004). This study found that most of consumption in the region is associated with coastal pelagics and zooplankton. Bonga shad has also been scored here as a Key LTL and therefore as they form the base of the food chain, it is important to understand the ecosystem impacts of their removal. It is unclear if any work has been conducted on this but there are concerns from stakeholder consultation. For example, stakeholder consultation (2020) indicated that dolphin and juvenile sharks feed on bonga and therefore there may be some impact on ecosystem energy flow. Stakeholder consultation (2020) indicated that the bonga population is possibly overexploited however, this was largely attributed to the industrial fishing vessels targeting small pelagic for fishmeal.

This is therefore likely to meet **SG60-79** as although the stock is possibly overexploited due to the artisanal nature of the fishery this UoA is unlikely to cause irreversible harm.

References

Mendy, A.N. 2004. A trophic model of the Gambian continental shelf in 1986, p. 81-88. *In*: Palomares, M.L.D., Pauly, D. (eds.) West African marine ecosystems: models and fisheries impacts. Fisheries Centre Research Reports 12(7). Fisheries Centre, UBC, Vancouver.

Mendy, A.N. 2004. Addendum: the Gambian continental shelf in 1992 and 1995, p. 89-94. *In*: Palomares, M.L.D., Pauly, D. (eds.) West African marine ecosystems: models and fisheries impacts. Fisheries Centre Research Reports 12(7). Fisheries Centre, UBC, Vancouver.

Samb, B., Mendy, A.N. 2004. Dynamics réseau of the l'écosystème Senegambian Ecosystem Food Web in 1990, p. 57-70. *In*: Palomares, M.L.D., Pauly, D. (eds.) West African marine ecosystems: models and fisheries impacts. Fisheries Centre Research Reports 12(7). Fisheries Centre, UBC, Vancouver.

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	60-79
Information gap indicator	Information sufficient to score PI
Data-deficient? (Risk-Based Framework needed)	No

PI 2.5.2 – Ecosystem management strategy

PI 2.5.2		There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are measures in place, if necessary which take into account the potential impacts of the UoA on key elements of the ecosystem.	There is a partial strategy in place, if necessary, which takes into account available information and is expected to restrain impacts of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	There is a strategy that consists of a plan , in place which contains measures to address all main impacts of the UoA on the ecosystem, and at least some of these measures are in place.
	Met?	Yes	No	No
Rationale				

There are both technical and spatial measures in place to limit catches of bonga shad, including no take zones, night time closures and minimum mesh sizes. Although bonga are mainly caught in the marine/coastal area they are also found within the mouth of wetlands where they breed. Fishing in the wetlands however, is regulated by the Fishing and Wildlife Acts to protect species in the wetlands. Several wetlands in The Gambia are also MPA, where the use of encircling gillnets is prohibited.

This is therefore likely to meet **SG60-79** as issues with the stock status suggests that this is unlikely to score higher.

b	Management strategy evaluation			
	Guide post	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar UoAs/ ecosystems).	There is some objective basis for confidence that the measures/ partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved.	Testing supports high confidence that the partial strategy/ strategy will work, based on information directly about the UoA and/or ecosystem involved.
	Met?	Yes	No	No
Rationale				

There are some studies of ecosystem impacts in The Gambia (e.g. (Mendy, 2004)) which suggest that the measures are likely to work, and measures are in place to protect juvenile and breeding stocks. However, there is no information available directly related to this UoA and therefore is likely to meet **SG60-79**.

c	Management strategy implementation			
	Guide post		There is some evidence that the measures/partial strategy is being implemented successfully .	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) .
	Met?		No	No
Rationale				

Although the measures such as gear size restrictions are in place anecdotal evidence through stakeholder consultation suggests that mesh size is not being complied with, while zonation is somewhat complied with but there

are some encroachments. The night time closure is supported by the fishers and therefore is likely to be more complied with but at-sea enforcement is limited. Therefore, there is insufficient evidence to suggest that measures are being implemented successfully. This is supported by the state of the stock which is overexploited.

This is unlikely to meet **SG80**.

References

Mendy, A.N. 2004. A trophic model of the Gambian continental shelf in 1986, p. 81-88. *In*: Palomares, M.L.D., Pauly, D. (eds.) West African marine ecosystems: models and fisheries impacts. Fisheries Centre Research Reports 12(7). Fisheries Centre, UBC, Vancouver.

Mendy, A.N. 2004. Addendum: the Gambian continental shelf in 1992 and 1995, p. 89-94. *In*: Palomares, M.L.D., Pauly, D. (eds.) West African marine ecosystems: models and fisheries impacts. Fisheries Centre Research Reports 12(7). Fisheries Centre, UBC, Vancouver.

Draft scoring range	60-79
Information gap indicator	Information sufficient to score PI

PI 2.5.3 – Ecosystem information

PI 2.5.3		There is adequate knowledge of the impacts of the UoA on the ecosystem		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guide post	Information is adequate to identify the key elements of the ecosystem.	Information is adequate to broadly understand the key elements of the ecosystem.	
	Met?	Yes	Yes	
Rationale				

The coast off The Gambia is part of the Canary Current Large Marine Ecosystem (CCLME) which is an eastern boundary upwelling system. A complete characterisation of this system was undertaken by a collaboration of 54 scientists from 25 institutions⁴. This includes a study on pelagic fish stocks and their response to fisheries and environmental variation in the CCLME (Braham & Corten, 2015). This is therefore likely to meet **SG80**.

b	Investigation of UoA impacts			
	Guide post	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but have not been investigated in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and some have been investigated in detail .	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and have been investigated in detail .
	Met?	Yes	Yes	No
Rationale				

There was limited evidence of research into the impacts of this UoA on key ecosystems however, RAMPAO have recently commissioned some research into ecosystem services, and Tanbi wetlands is one of the target sites of the study. This will be the first study into this in West Africa. There is also information regarding stock status due to the regular CECAF small pelagic stock assessment and some information on removals. This is therefore likely to meet **SG80** but more research would be needed to score SG100.

c	Understanding of component functions			
	Guide post		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are known .	The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the ecosystem are understood .
	Met?		Yes	No
Rationale				

The main functions of the main, primary, ETP species and habitat are known and therefore this is likely to meet **SG80** but the impacts on all areas are not understood in sufficient detail.

d	Information relevance			
	Guide post		Adequate information is available on the impacts of the UoA on these	Adequate information is available on the impacts of the UoA on the components

⁴ <https://en.unesco.org/news/oceanographic-and-biological-features-canary-current-large-marine-ecosystem>

			components to allow some of the main consequences for the ecosystem to be inferred.	and elements to allow the main consequences for the ecosystem to be inferred.
	Met?		No	No
Rationale				

CECAF undertakes stock assessments of the target and main primary species that could be used to infer consequences of fishing on the ecosystem. There is however, likely to be less information available on the impact on ETP species which may warrant further research. As such, to be precautionary, this is unlikely to meet **SG80**

	Monitoring			
e	Guide post		Adequate data continue to be collected to detect any increase in risk level.	Information is adequate to support the development of strategies to manage ecosystem impacts.
	Met?		No	No
Rationale				

Although data are likely to be collected on target and primary species there again is a potential risk on the impact on ETP species as bonga are a low trophic species. As such further information should be collected and to be precautionary, this is unlikely to meet **SG80**

References

Braham, C. -B. and Corten, A. 2015. Pelagic fish stocks and their response to fisheries and environmental variation in the Canary Current Large Marine Ecosystem. In: Oceanographic and biological features in the Canary Current Large Marine Ecosystem. Valdés, L. and Déniz-González, I. (eds). IOC-UNESCO, Paris. IOC Technical Series, No. 115, pp. 197-213.

Draft scoring range

60-79

Information gap indicator

Information sufficient to score PI

7.6 Principle 3

7.6.1 Principle 3 background

At the international level, The Gambia is party to many conventions including United Nations Convention on the Law of the Sea (UNCLOS), United Nations Fish Stock Agreement (UNFSA), Code of Conduct for Responsible Fisheries (CCRF) and Port State Measures Agreement (PSMA.) The Gambia was also one of the founding members of the Economic Community of West African States (ECOWAS) and Sub-Region Fisheries Commission (SRFC). It is a member of FAO, CEEAC and Ministerial Conference on Fisheries Cooperation Among African States Bordering the Atlantic Ocean (ATLAFCO) and is a signatory of the Convention on Biodiversity and the International Union for the Conservation of Nature, amongst others⁵.

At the regional level, the Sub-Regional Fisheries Commission is an inter-governmental fisheries cooperation consisting of seven members across west Africa: Cabo Verde, The Gambia, Guinea, Guinea-Bissau, Mauritania, Senegal and Sierra Leone. Its purpose is to harmonise the national policies of its Members on the preservation, conservation and exploitation of fisheries resources and strengthen cooperation⁶.

At the national level, policy implementation and management of fisheries in The Gambia is the responsibility of the Department of Fisheries (DoF), which lies within the Ministry of Fisheries, Water Resources and National Assembly Matters (Tobey *et al.* 2009) (See Figure 2). The policy, legal and management framework is provided for by the Fisheries and Aquaculture Policy (2018), 2007 Fisheries Act, 2008 Fisheries Regulations, Fisheries Strategy (drafted and also prepared with FAO support), and Fisheries Management Plans for oyster and cockle and sole and catfish. The aim of the Act is “to provide for the conservation, management, sustainable utilisation and development of fisheries and aquaculture in the fisheries waters and in the territory of The Gambia”. The act describes the administrative responsibilities for the sector, basic structures, its scope, rights and responsibilities of its staff and designated committees, licensing arrangements for fishing and aquaculture and prohibitions amongst other things (Ministry of Environment, Climate Change and Natural Resources, undated). The main management measures include fishing zones for different sizes of vessels, fishing gear restrictions, minimum landing sizes of fish, and two artisanal sector management plans for sole, and cockles/oysters. However, there are no limits on the number of vessels or fishing licenses/authorisations in either the artisanal or industrial sectors (MacFayden *et al.*, 2018).

⁵ <https://www.mofwr.gm/partnerships-agreements>

⁶ <http://spsrpf.org/en/presentation#Mandate>

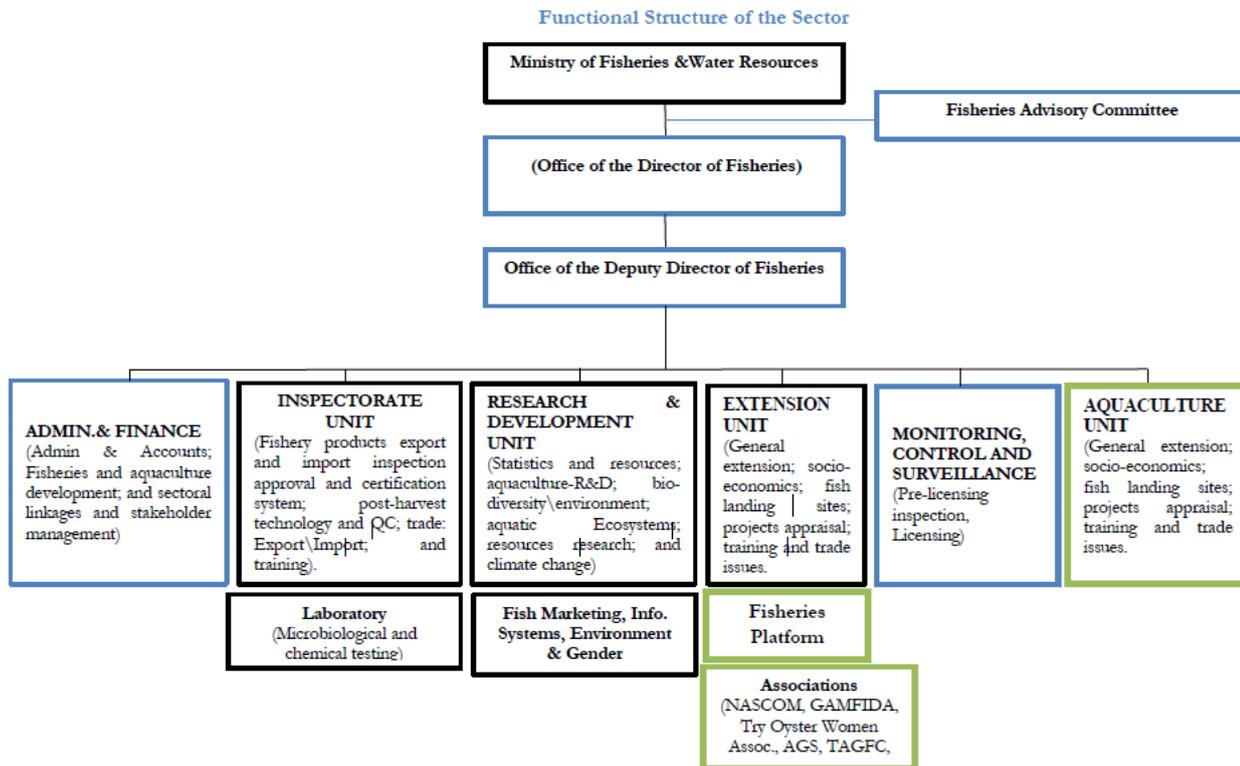


Figure 2 Functional structure of the Ministry of Fisheries and Water Resources. Source: Ministry of Environment, Climate Change and Natural Resources, undated

To support the DoF, a Fisheries Advisory Committee was established made up of several key stakeholders including the Ministry of Environment, Climate Change, Water, Wildlife, Forestry and Fisheries; Ministry of Trade, Industry, Regional Integration and Employment (MOTIE); Ministry of Lands and Regional Government (MoLRG); Ministry of Health and Social Welfare (MOHSW); Gambia Navy; Gambia Maritime Administration (GMA); National Environment Agency (NEA); and one representative each from the industrial, artisanal and aquaculture sectors (Fisheries and Aquaculture Sector Strategy). Community Fisheries Centres (CFCs) were also mandated to provide oversight of the sector and decentralised co-management. In addition, The Gambia has a bilateral agreement with Senegal, which has been in place since 1982. This agreement allows fishers to fish in either country provided they abide by the laws of the country where they are fishing (Tobey *et al.* 2009).

The bonga shad fishery is managed by the DoF and a stock assessment is undertaken through CECAF. There was a management plan created by the BaNaFaa project for small pelagics, but it was not created by the government and was therefore not agreed and gazetted. When the BaNaFaa project ended, the management plan was shelved and not implemented. Stakeholder consultation (2020) indicated that a new small pelagic management plan is in development and will be streamlined into the Tanbi Wetland Management Plan however, it is unknown when this will be implemented.

In The Gambia, the navy is responsible for fisheries protection but they are severely limited by their budget. They are restricted to patrolling for one trip of less than 24 hours per month and maintenance of vessels is also an issue. There is also no functional fisheries monitoring centre. Illegal fishing is common throughout West Africa though it is largely attributed to industrial vessels rather than the artisanal fleet. The main forms of illegal fishing in the artisanal fleet catching bonga, are infringements on the spatial measures, the night fishing closure and using illegal mesh size. Stakeholders have indicated that mesh size infringement are frequent and even ubiquitous.

7.6.2 Principle 3 Performance Indicator scores and rationales

PI 3.1.1 – Legal and/or customary framework

PI 3.1.1	The management system exists within an appropriate legal and/or customary framework which ensures that it:			
	<ul style="list-style-type: none"> - Is capable of delivering sustainability in the UoA(s); - Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and - Incorporates an appropriate dispute resolution framework 			
Scoring Issue	SG 60	SG 80	SG 100	
a	Compatibility of laws or standards with effective management			
	Guide post	There is an effective national legal system and a framework for cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and organised and effective cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and binding procedures governing cooperation with other parties which delivers management outcomes consistent with MSC Principles 1 and 2.
	Met?	Yes	No	No
Rationale				

At the international level, The Gambia is party to many conventions while at the regional level, the Sub-Regional Fisheries Commission is an inter-governmental fisheries cooperation consisting of seven members across west Africa. Its purpose is to harmonise the national policies of its Members on the preservation, conservation and exploitation of fisheries resources and strengthen cooperation⁷.

At the national level, policy implementation and management of fisheries in The Gambia is the responsibility of the Department of Fisheries (DoF), which lies within the Ministry of Fisheries, Water Resources and National Assembly Matters (Tobey *et al.* 2009). The policy, legal and management framework is provided for by the Fisheries Policy (2007 prepared with FAO support), 2007 Fisheries Act, 2008 Fisheries Regulations, Fisheries Strategy (drafted and also prepared with FAO support), and 2009 Fisheries Management Plan for shrimp, sardinella, solefish and catfish. The aim of the Act is “to provide for the conservation, management, sustainable utilisation and development of fisheries and aquaculture in the fisheries waters and in the territory of The Gambia”. The act describes the administrative responsibilities for the sector, basic structures, its scope, rights and responsibilities of its staff and designated committees, licensing arrangements for fishing and aquaculture and prohibitions amongst other things (Fisheries and Aquaculture Sector Strategy). The main management measures include fishing zones for different sizes of vessels, fishing gear restrictions, minimum landing sizes of fish, and two artisanal sector management plans for sole, and cockles/oysters. However, there are no limits on the number of vessel or fishing licenses/authorisations in either the artisanal or industrial sectors (MacFayden *et al.*, 2018).

To support the DoF, a Fisheries Advisory Committee was established made up of several key stakeholders including the Ministry of Environment, Climate Change, Water, Wildlife, Forestry and Fisheries; Ministry of Trade, Industry, Regional Integration and Employment (MOTIE); Ministry of Lands and Regional Government (MoLRG); Ministry of Health and Social Welfare (MOHSW); Gambia Navy; Gambia Maritime Administration (GMA); National Environment Agency (NEA); and one representative each from the industrial, artisanal and aquaculture sectors (Fisheries and Aquaculture Sector Strategy). Community Fisheries Centres were also mandated to provide oversight of the sector and decentralised co-management. In addition, The Gambia has a bilateral agreement with Senegal, which has been in place since 1982. This agreement allows fishers to fish in either country provided they abide by the laws of the country where they are fishing (Tobey *et al.* 2009).

There is a good basis for governance in The Gambia that should be capable of delivering sustainable fisheries however, there are potentially issues with effectiveness due to financial constraints. This is noted by Tobey *et al.* (2009) and MacFayden *et al.* (2018). For examples inadequate budgets in the DoF mean that it is difficult to implement the provisions within the fisheries regulation.

Although there is a framework in place for cooperation through the SRFC this has no regulatory power and there is limited other regional cooperation which may reduce the effectiveness to deliver management outcomes consistent

⁷ <http://spcsrp.org/en/presentation#Mandate>

with MSC Principles 1 and 2. One exception could be the bilateral agreement with Senegal but across the region there is limited cooperation and therefore is only likely to meet **SG60-79**.

Resolution of disputes				
b	Guide post	The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the UoA.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective .
	Met?	Yes	No	No
Rationale				

There appears to be some mechanisms in place in regards to disputes. For example, the Environmental and Coastal Working Group consists of around 20 members from different institutions and deals with issues. Beyond this not much information was found during this assessment. Also in regards to wider fisheries management in The Gambia considering a lot of stocks are shared with other countries there appears to be no dispute mechanism at the regional level.

This is likely to meet **SG60**.

Respect for rights				
c	Guide post	The management system has a mechanism to generally respect the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to observe the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
	Met?	Yes	Yes	No
Rationale				

Gambia has a history of prioritising artisanal fisheries and, in management terms, has created examples of small-scale fishery co-management. In the 1980s Gambia created an initiative of Community Fishing Centres (CFCs), which got external funding to build some small-scale facilities. The Government eventually devolved management responsibility of the CFCs to communities and the fishing sector to create a structure for co-management (Tobey *et al.*, 2009). These CFCs are now managed by the villagers themselves, with the DoF providing support and guidance if required.

In addition to CFCs, under the Fisheries Act 2007, the Secretary of State may designate a Special Management Area, such as the Tanbi Wetlands, for the purposes of community-based management and application of conservation and management measures and artisanal or subsistence fishing operations.

Overall, this is likely to meet **SG80** as more evidence would be required to score higher.

References

MacFayden. G., Caillart. B. & Defaux. V. 2018. Ex ante evaluation study of a Sustainable Fisheries Partnership Agreement between the European Union and the Republic of The Gambia. Luxembourg: Publications Office of the European Union, 2018. doi: 10.2771/905549

Ministry of Environment, Climate Change and Natural Resources. Undated. Fisheries and Aquaculture Sector Strategy 2017-2021.

Tobey. J., Castro. K., Lee. V., Drammeh. O., Ibrahima. M., Crawford. B. & Vaidyanathan. T. 2009. An Overview of Marine Fisheries in the Gambia and preliminary Governance Baseline, *Coastal Resources Center*, University of Rhode Island. pp.26.

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	60-79
Information gap indicator	More information sought

PI 3.1.2 – Consultation, roles and responsibilities

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties		
Scoring Issue		SG 60	SG 80	SG 100
a	Roles and responsibilities			
	Guide post	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are generally understood .	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction.
	Met?	Yes	Yes	No
Rationale				

In the execution of its functions, the Department of State is supported by two technical Departments: Fisheries Department and Water Resources Department. These institutions were established by Government to regulate the use of Fisheries and Water resources and assure their effective and efficient management on a sustainable basis. The Department of State has responsibility to make policy pronouncements and the technical Departments have responsibility to implement policies.

The Fisheries Department has the responsibility of planning, managing and developing strategies for the advancement of the sector. It is also responsible for research, providing scientific advice, assistance and service to fisheries operators and all stakeholders. The Department has five main structures (i.e. Administration and Directorate, Research and Development, Inspectorate and Quality Control, Monitoring, Control and Surveillance (MCS) and Extension).

Under the National Environment Agency is the Natural Resources Working Group, which deals with the joint administration of fisheries and other natural resources⁸. In addition, The National Association of Artisanal Fisheries Operators (NAAFO) is a national organization created and recognized by Government of The Gambia to coordinate the affiliation of Artisanal Fisheries association's country wide. NAAFO was formed in 2004 to better represent and defend the interests of all groups of the artisanal fishery (Tobey *et al.*, 2009). In 1997, The Gambian Artisanal Fisheries Development Association, was established, which aims to promote the development of artisanal fishing, strengthen cooperation and resolve conflicts.

The Department of Parks and Wildlife is responsible for the management and protection of MPAs in The Gambia. It serves as the focal institute for several biodiversity and conservation related international agreements.

The Coastal and Marine Environment Working Group is made up of 20 members from various institutions. The aim of the group is to formulate, review and revise policies relating to all coastal, marine and fluvial activities. This group provides opportunity for all those affected to be involved in decision making. This group meets on a quarterly basis but can also arrange ad hoc meetings for urgent issues (Stakeholder Consultation, 2020).

As noted in 3.1.1, there are also several fisheries co-management and Community Fisheries Centres which help to organise the fishing industry into user group associations to address common concerns and interests.

Roles and responsibilities appear to be clearly defined and this is therefore likely to meet **SG80**. It is not clear if this extends to all areas and therefore is unlikely to meet SG100.

b	Consultation processes			
	Guide post	The management system includes consultation processes that obtain relevant information from the main affected parties,	The management system includes consultation processes that regularly seek and accept relevant information, including local	The management system includes consultation processes that regularly seek and accept relevant information, including local

⁸ <https://www.mofwr.gm/partnerships-agreements>

		including local knowledge, to inform the management system.	knowledge. The management system demonstrates consideration of the information obtained.	knowledge. The management system demonstrates consideration of the information and explains how it is used or not used.
	Met?	Yes	No	No
Rationale				

Stakeholder consultation (2020) indicated that management is based on consultation with communities, resources users, government agencies and local authorities. This is specifically demonstrated in the community-based fisheries such as the TRY Oyster Association. However, within other fisheries, such as the bonga shad artisanal fishery there were some suggestion that fishers were not involved in the decision-making process, for example the night time closures. This is therefore likely to meet **SG60-79**. This should include further consultation with resources users such as fishers, which was not possible due to the current COVID-19 pandemic.

	Participation			
C	Guide post		The consultation process provides opportunity for all interested and affected parties to be involved.	The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement.
	Met?		Yes	No
Rationale				

The DoF has partnership with several other organisations in Gambia, including the National Environment Agency (NEA), National Association of Artisanal Fisheries Operators (NAAFO), Gambia Artisanal Fisheries Development Agency (GAMFIDA), Food Safety and Quality Authority (FSQA), Gambian Navy and the Gambian Maritime Agency. It also has connection with other community-based groups such as National Sole fishery Co-management Committee (NASCOM) and TRY Association which work in collaboration with the DoF.

The Fisheries Act allows for devolution of fisheries management responsibilities, which has been exercised through the creation of community fisheries centres and fishery advisory committees. It has also empowered local communities to form fisheries professional organisations, namely NAAFO, TRY Association, Association of Gambian Fishing Companies (TAGFC) and GAMFIDA. These associations help to provide non-governmental stakeholders with representation in the fisheries sector governance process (Ragusa, 2014)

Coastal and Marine Environment Working Group is made up of 20 members from various institutions. The aim of the group is to formulate, review and revise policies relating to all coastal, marine and fluvial activities. This group provides opportunity for all those affected to be involved in decision making. This group meets on a quarterly basis but can also arrange ad hoc meetings for urgent issues.

In addition, as most marine resources are shared in West Africa, the Sub-Regional Fisheries Commission was set up and includes the Gambia, Senegal, Mauritania, guinea (Bissau), guinea, Cape Verde and Sierra Leone. The objectives of this group are to reinforce cooperation and coordination of the management of the marine fisheries resources amongst member states.

According to government departments all decisions are made through a participatory process allowing consultation and participation from all resource users and stakeholders. This is therefore likely to meet **SG80** but more information should be sought from the fishers themselves as well as other stakeholders such as factory owners, to ensure all parties are consulted and to score SG100.

References

Department of Fisheries. 2018. Fisheries and Aquaculture Policy of The Gambia. Government of The Gambia Ministry of Fisheries, Water Resources and National Assembly Matter

Ragusa. G. 2014. Overview of the Fisheries Sector in the Gambia. *Fisheries and Aquaculture Journal*. 5:3, DOI: 10.4172/ 2150-3508.1000107

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	60-79
Information gap indicator	More information sought

PI 3.1.3 – Long term objectives

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Fisheries Standard, and incorporates the precautionary approach		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guide post	Long-term objectives to guide decision-making, consistent with the MSC Fisheries Standard and the precautionary approach, are implicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach are explicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach, are explicit within and required by management policy.
	Met?	Yes	Partial	No
Rationale				

The 2007 Fisheries Act makes explicit reference to the need for long-term conservation and sustainable utilisation of aquatic living resources and the application of the precautionary approach for conservation, management and development of fisheries and aquaculture. It also makes reference to an ecosystem-based approach by ensuring that the aquatic ecosystem is conserved as a whole, including species targeted, those not targeted and their associated or dependent species.

In addition to national management, there are various projects that attempt to use a regional and ecosystem approach to fishery management plans, such as the work that CECAF carries out and the Canary Current LME project and the EAF Nansen Project which gathers data and supports the implementation of an ecosystem approach to the management of fisheries in West Africa. The project 'Improved regional fisheries governance in western Africa (PESCAO)' is run by the European Commission between 2017 – 2022 in 13 West African countries including Gambia. The overall objective is to '*enhance the contribution of fisheries resources to sustainable development, food security and poverty alleviation in west Africa*'. The specific objective is to improve regional fisheries governance in the region through better coordination of national fisheries policies.

However, stakeholder consultation suggested that a stronger regional approach to fisheries management is needed due to the shared nature of many stocks and the agreements in place allowing other countries to fish within Gambian waters. This is therefore partially able to meet **SG80**.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range

Partial 80

Information gap indicator

Information sufficient to score PI

PI 3.2.1 – Fishery-specific objectives

PI 3.2.1		The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guide post	Objectives , which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are implicit within the fishery-specific management system.	Short and long-term objectives , which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery-specific management system.	Well defined and measurable short and long-term objectives , which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery-specific management system.
	Met?	Yes	No	No
Rationale				

A management plan was created by the BaNaFaa project, but as it was not created by the government it was not agreed or gazetted. When the BaNaFaa project ended, the management plan was shelved and not implemented. Stakeholder consultation (2020) indicated that a new small pelagic management plan is in development and will be streamlined into the Tanbi Wetland Management Plan however, it is unknown when this will be implemented.

There is a stock assessment in place for bonga which is conducted regularly. It was last conducted in 2018, and the working group met in 2019 to review the additional years data. The stock assessment has recommended for the last few years that fishing pressure be reduced. The 2019 assessment recommended that *effort and catch be reduced to below 2017 levels* (FAO, 2020). There is however, no agreement on total allowable catch at a regional level despite the stock running from Mauritania to Senegal and Gambia. This information can be used to help inform a management plan and demonstrates that some objectives are in place for this fishery. This is therefore likely to meet **SG60-79** but a specific management plan is required.

References

FAO .2018. Status summary for small pelagic stocks in the Northern Area of the Eastern Central Atlantic – CECAF. Scientific Sub-Committee, Eighth Session. Available at <http://www.fao.org/fi/static-media/MeetingDocuments/CECAF/CECAF-SSC8/2e.pdf> [Accessed 09/10/2020]

FAO. 2020. *Report of the FAO Working Group on the Assessment of Small Pelagic Fish off Northwest Africa. Casablanca, Morocco, 8–13 July 2019. Rapport du Groupe de travail de la FAO sur l'évaluation des petits pélagiques au large de l'Afrique nord-occidentale. Casablanca, Maroc, 8-13 juillet 2019.* FAO Fisheries and Aquaculture Report/FAO Rapport sur les pêches et l'aquaculture. Rome.

Management Plan for the Small Pelagic Fishery of The Gambia - Regional Consultative Committee for Promoting Sustainable Exploitation and Cooperative Management of the SP. Dakar, Senegal, 3rd – 5th Sept. 2013.
URL http://spsr.org/spsr/sites/default/files/csrp/projets/pelagics/CCR/Banjul_SRFC_NCC_Dakar_3

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range

60-79

Information gap indicator

Information sufficient to score PI

PI 3.2.2 – Decision-making processes

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery		
Scoring Issue		SG 60	SG 80	SG 100
a	Decision-making processes			
	Guide post	There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	
	Met?	No	No	
Rationale				

In 2020, The Gambian government reduced the night-time closure from six months to three months in this UoA. The fishers were uncomfortable with how this decision was taken without both consultation or transparency. The poor status of the stock suggests that management measures should be brought in to reduce pressure on the stock and limit effort however, this does not appear to be happening. In fact, the opposite could be true with the reduce closure. This is therefore unlikely to meet **SG60**.

b	Responsiveness of decision-making processes			
	Guide post	Decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
	Met?	No	No	No
Rationale				

It is unclear if decision making processes respond to serious issues and there is limited regional coordination in regards to the management of this fishery. This is therefore unlikely to meet **SG60**.

c	Use of precautionary approach			
	Guide post		Decision-making processes use the precautionary approach and are based on best available information.	
	Met?		No	
Rationale				

The stock assessment indicates that the stock is overexploited but it is stated that there are known uncertainties associated with this assessment. However, despite this management decisions do not appear to be based on a precautionary approach, for example the reduction in the night time closures. This is therefore unlikely to meet **SG80**.

d	Accountability and transparency of management system and decision-making process			
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	Guide post	Some information on the fishery's performance and management action is generally available on request to stakeholders.	Information on the fishery's performance and management action is available on request , and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Formal reporting to all interested stakeholders provides comprehensive information on the fishery's performance and management actions and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?	Yes	No	No
Rationale				

Stock assessments, catch data and rules and regulations were made available for this assessment and so therefore will meet **SG60-79**. Stakeholder consultation suggested that not all decisions are transparent and sometimes made without consultation. Therefore, this is unlikely to score any higher.

Approach to disputes				
e	Guide post	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.
	Met?	Yes	Yes	No
Rationale				

No apparent ongoing legal disputes in this fishery therefore, it is likely to meet **SG80**. GAMFIDA also has a scheme in place to settle disputes which come about as a result of fishing activities⁹. However, it is unclear if this fishery proactively avoids disputes.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	<60
Information gap indicator	Information sufficient to score PI

⁹ <https://www.accessgambia.com/biz1/gamfida-gambia-artisanal-fisheries-development-agency.html>

PI 3.2.3 – Compliance and enforcement

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with		
Scoring Issue		SG 60	SG 80	SG 100
a	MCS implementation			
	Guide post	Monitoring, control and surveillance mechanisms exist, and are implemented in the fishery and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance system has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A comprehensive monitoring, control and surveillance system has been implemented in the fishery and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	Met?	No	No	No
Rationale				

In The Gambia, the Navy is responsible for fisheries protection, but they are severely limited by their budget. They are restricted to patrolling for one trip of less than 24 hours per month and maintenance of vessels is also an issue. There is also no functional fisheries monitoring centre.

Senegal and The Gambia have a fisheries agreement which allows Senegalese vessels to fish in Gambian waters. The agreement also sets out the framework for collaborative surveillance and information exchange, although there is limited evidence of this being conducted in practice (Poseidon et al. 2018).

The EU Fishery Access Agreement provides funds for fishery management, part of which is being used to prepare a Nation Plan of Action against IUU fishing.

While illegal fishing is pervasive in Gambia, it is mainly attributed to industrial vessels, which are not part of this specific UoA. The main forms of illegal fishing in the artisanal fleet catching bonga, will be infringements on the spatial measures, the night fishing closure and using illegal mesh size. Stakeholders have indicated that mesh size infringement are frequent and even ubiquitous. Other reported IUU fishing that may affect the bonga fishery is encroachment of industrial vessel into the artisanal zone, this is likely to occur from industrial trawlers and be conducted at night (Doumbouya, 2017).

In Doumbouya (2017), the frequency of arrests for different types of illegal fishing activity in West Africa are listed, without specifying whether the vessels are industrial or artisanal. Gear related offences and fishing in prohibited zones are the second and third most frequent type of offence after under-reporting of catches. The study found that gear related offences and fishing in prohibited zones were more likely to be detected and sanctioned than other offences. They theorise that these types of offences have a greater impact on small-scale fisheries.

This is therefore unlikely to meet **SG60** as there is little evidence to support that the MCS measures are effective.

		Sanctions		
b	Guide post	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence.
	Met?	No	No	No
Rationale				

A study attempting to quantify IUU fishing in West Africa estimated that the illegal catch amounted to 65% of the legal catch across the whole region (Doumbouya, 2017). The study looked at indicators such as amount of arrests and size of fines issued and found that Sierra Leone and the Gambia had the most arrest and the highest fines for illegal fishing

(Doubouya, 2017), compared to other countries in the region. The study did not look at whether the fines were paid or how they were paid. Anecdotal evidence gathered during the pre-assessment suggests fines in Gambia are often settled out of court. The process of settling out of court, eliminates transparency, and makes it impossible to know the actual size of fines paid.

This is therefore unlikely to meet **SG60** at this stage as although sanctions exist it is unknown whether they have been applied in this fishery as most information refers to West Africa in general.

Compliance				
C	Guide post	Fishers are generally thought to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.	Some evidence exists to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.	There is a high degree of confidence that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.
	Met?	No	No	No
Rationale				

The Gambian government doesn't currently run any patrolling, and efforts to acquire a patrol vessel have been blocked through the Ministry of Finances as it will increase the debt burden of the country. Those stakeholders asked believe that IUU fishing in The Gambia is present and even on the rise because of this lack of MCS capacity. An NGO described that there are various different types of IUU fishing occurring, for example using illegal types of gear, catching fish and other animals that aren't allowed to be caught. Some IUU is due to a lack of MCS, and some is due to corruption. The environmental NGO Sea Shepherd is currently working in The Gambia with the Ministry of Fisheries, using their vessel resources to help with MCS and anti-IUU measures. Three vessels have so far been arrested.

Within this fishery there is anecdotal evidence that spatial and technical regulations are not well complied with by the artisanal fleet. For example, mesh size is not being complied with, while zonation is somewhat complied with but there are some encroachments. The night time closure is supported by the fishers and therefore is likely to be more complied with but at-sea enforcement is limited. Therefore, to be precautionary, this is unlikely to meet **SG60**.

Systematic non-compliance				
d	Guide post	There is no evidence of systematic non-compliance.		
	Met?		Yes	
Rationale				

There is not thought to be evidence of systematic non-compliance and therefore will likely meet **SG80**.

References

Doubouya. A. *et al.*, 2017. Assessing the Effectiveness of Monitoring Control and Surveillance of Illegal Fishing: The Case of West Africa. *Frontiers in Marine Science*. 4(50)

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	<60
Information gap indicator	More information sought

PI 3.2.4 – Monitoring and management performance evaluation

PI 3.2.4		There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives There is effective and timely review of the fishery-specific management system		
Scoring Issue		SG 60	SG 80	SG 100
a	Evaluation coverage			
	Guide post	There are mechanisms in place to evaluate some parts of the fishery-specific management system.	There are mechanisms in place to evaluate key parts of the fishery-specific management system.	There are mechanisms in place to evaluate all parts of the fishery-specific management system.
	Met?	No	No	No
Rationale				

There is currently no specific management plan for bonga and monitoring is known to be very limited in this fishery. There is thought to currently be insufficient evidence to score this and therefore will unlikely meet **SG60**.

		Internal and/or external review		
b	Guide post	The fishery-specific management system is subject to occasional internal review.	The fishery-specific management system is subject to regular internal and occasional external review.	The fishery-specific management system is subject to regular internal and external review.
	Met?	No	No	No
Rationale				

There is insufficient evidence to score this and therefore will unlikely meet **SG60**.

References

Draft scoring range	<60
Information gap indicator	More information sought

8 Appendices

8.1 Assessment information

8.1.1 Small-scale fisheries

Table 11 – Small-scale fisheries

Unit of Assessment (UoA)	Percentage of vessels with length <15m	Percentage of fishing activity completed within 12 nautical miles of shore
Bonga shad (<i>Ethmalosa fimbriata</i>) encircling gillnet fishery	Unknown	Unknown but likely to be high as the zone between 1nm-9nm is reserved for artisanal and bonga is a coastal species.

8.2 Evaluation processes and techniques

8.2.1 Site visits

The stakeholders were contacted through both emails phones calls conducted by Hannah Richardson and Chloe North between August and September 2020, and included the following:

- Department of Parks and Wildlife
- National Environment Agency
- RAMPAO
- Department of Fisheries
- NASCOM
- Greenpeace Africa
- University of Gambia

8.2.2 Recommendations for stakeholder participation in full assessment

All stakeholders contacted in this pre-assessment should participate in a full assessment.

8.1 Risk-Based Framework outputs –

8.1.1 Productivity Susceptibility Analysis (PSA)

Table 12 – PSA productivity attributes and scores		
Performance Indicator	2.3.1	
Productivity		
Scoring element (species)	Green Turtle (<i>Chelonia mydas</i>)	
Attribute	Rationale	Score
Average age at maturity	26-40 years depending on population (Seminoff 2004), although in the SE USA Goshe (2009) estimates it may be as high as 50 years	3
Average maximum age	Reproductive longevity estimated from an unimpacted population in Australia at 19 years on average (Seminoff 2004) – i.e. total life span would be estimated in the range 45-59 years	3
Fecundity	Three nests per female per season on average, with 100 eggs per nest (Seminoff 2004)	2
Average maximum size Not scored for invertebrates	There is negligible growth after maturity so average maximum size and average size at maturity are the same. Goshe (2009) gives a maximum size of ~95m straight carapace length, giving an overall size of ~1m.	2
Average size at maturity Not scored for invertebrates		2
Reproductive strategy	Demersal egg layer	2
Trophic level	Herbivorous – low	1
Density dependence Invertebrates only	N/A	1 / 2 / 3
Susceptibility		
Attribute	Rationale	Score
Areal Overlap	Unknown	3
Encounterability	Unknown	3
Selectivity of gear type	Unknown	3
Post capture mortality	Unknown	3
Catch (weight) Only where the scoring element is scored cumulatively	N/A	
PSA Score		3.69
MSC Score		<60

Table 13– PSA productivity attributes and scores

Performance Indicator	2.3.1	
Productivity		
Scoring element (species)	Humpbacked dolphin (<i>Sousa teuszii</i>)	
Attribute	Rationale	Score
Average age at maturity	Unknown – assume high risk	3
Average maximum age	Generation time estimated at 25 years (Collins et al. 2017), so maximum age must be higher.	3
Fecundity	Nearest relative, the Indo-Pacific humpback dolphin <i>S. chinensis</i> (Collins et al. 2017) has one calf every 5 years (Nolte et al. 2012)	3
Average maximum size Not scored for invertebrates	Unknown. <i>S. chinensis</i> reaches asymptotic length at 2.4-2.7m, with maximum recorded lengths 2.5m (female) and 2.8m (male) (Nolte 2012).	2
Average size at maturity Not scored for invertebrates	Unknown. Females of 2.5m are mature (Collins et al. 2017). In <i>S. chinensis</i> females reach maturity ~2.3m (Nolte 2012).	3
Reproductive strategy	Live birth	3
Trophic level	Piscivorous predators – high (Collins et al. 2017)	3
Density dependence Invertebrates only	N/A	1 / 2 / 3
Susceptibility		
Attribute	Rationale	Score
Areal Overlap	Unknown	3
Encounterability	Unknown	3
Selectivity of gear type	Unknown	3
Post capture mortality	Unknown	3
Catch (weight) Only where the scoring element is scored cumulatively	N/A	
PSA Score		4.14
MSC Score		<60

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10 Template information and copyright

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Template version control		
Version	Date of publication	Description of amendment
1.0	15 August 2011	Date of first release
1.1	31 October 2013	Updated in line with changes to CR v1.3
2.0	08 October 2014	Confirmed background sections (Section 3) as optional (use of 'may' statements) Modified Table 6.3 to create a simplified scoring sheet to be completed in place of full evaluation tables Made amendments to PIs based on Fishery Standard Review changes (e.g. removed original PIs 1.1.2, 3.1.4 and 3.2.4).
2.1	9 October 2017	Inclusion of optional full evaluation tables
3.0	17 December 2018	Release alongside Fisheries Certification Process v2.1
3.1	29 March 2019	Minor document changes for usability

A controlled document list of MSC program documents is available on the MSC website (msc.org)

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The Gambia West Africa mangrove oyster (*Crassostrea tulipa*) hand collection fishery pre- assessment

Marine Stewardship Council

GB2786

Final Report

10th February 2021

Submitted by

MRAG

For



West Africa mangrove oyster (*Crassostrea tulipa*)

Pre-Assessment Report

Conformity Assessment Body (CAB)	MRAG Limited
Fishery client	Marine Stewardship Council
Assessment Type	Pre-assessment
Authors	Hannah Richardson and Robert Wakeford
Date	10/02/2021

1 Contents

1	Contents.....	3
2	Glossary.....	5
3	Executive summary.....	6
4	Report details.....	8
4.1	Aims and constraints of the pre-assessment.....	8
4.2	Version details.....	8
5	Unit(s) of Assessment.....	8
5.1	Unit(s) of Assessment.....	8
6	Traceability.....	10
6.1	Traceability within the fishery.....	10
7	Pre-assessment results.....	11
7.1	Pre-assessment results overview.....	11
7.1.1	Overview.....	11
7.1.2	Recommendations.....	11
7.2	Summary of potential conditions by Principle.....	11
7.3	Summary of Performance Indicator level scores.....	12
7.4	Principle 1.....	17
7.4.1	Principle 1 background.....	17
7.4.2	Catch profiles.....	19
7.4.3	Total Allowable Catch (TAC) and catch data.....	20
7.4.4	Principle 1 Performance Indicator scores and rationales.....	20
PI 1.1.1	– Stock status.....	20
PI 1.1.2	– Stock rebuilding.....	22
PI 1.2.1	– Harvest strategy.....	23
PI 1.2.2	– Harvest control rules and tools.....	26
PI 1.2.3	– Information and monitoring.....	28
PI 1.2.4	– Assessment of stock status.....	30
7.5	Principle 2.....	32
7.5.1	Principle 2 background.....	32
7.5.2	Principle 2 Performance Indicator scores and rationales.....	34
PI 2.1.1	– Primary species outcome.....	34
PI 2.1.2	– Primary species management strategy.....	35
PI 2.1.3	– Primary species information.....	37
PI 2.2.1	– Secondary species outcome.....	39
PI 2.2.2	– Secondary species management strategy.....	41
PI 2.2.3	– Secondary species information.....	43
PI 2.3.1	– ETP species outcome.....	45
PI 2.3.2	– ETP species management strategy.....	47
PI 2.3.3	– ETP species information.....	49
PI 2.4.1	– Habitats outcome.....	50
PI 2.4.2	– Habitats management strategy.....	52

PI 2.4.3 – Habitats information	54
PI 2.5.1 – Ecosystem outcome	56
PI 2.5.2 – Ecosystem management strategy	57
PI 2.5.3 – Ecosystem information	59
7.6 Principle 3	61
7.6.1 Principle 3 background.....	61
7.6.2 Principle 3 Performance Indicator scores and rationales.....	64
PI 3.1.1 – Legal and/or customary framework.....	64
PI 3.1.2 – Consultation, roles and responsibilities.....	67
PI 3.1.3 – Long term objectives	70
PI 3.2.1 – Fishery-specific objectives	71
PI 3.2.2 – Decision-making processes	72
PI 3.2.3 – Compliance and enforcement	75
PI 3.2.4 – Monitoring and management performance evaluation.....	77
8 Appendices	78
8.1 Assessment information.....	78
8.1.1 Small-scale fisheries	78
8.2 Evaluation processes and techniques	79
8.2.1 Site visits	79
8.2.2 Recommendations for stakeholder participation in full assessment	79
8.1 Risk-Based Framework outputs.....	80
8.1.1 Consequence Analysis (CA)	80
8.1.2 Productivity Susceptibility Analysis (PSA).....	81
9 References.....	82
10 Template information and copyright.....	83

2 Glossary

Acronym	Definition
ATLAFCO	Ministerial Conference on Fisheries Cooperation Among African States Bordering the Atlantic Ocean
CAB	Conformity Assessment Body
CCRF	Code of Conduct for Responsible Fisheries
CECAF	Fishery Committee for the Eastern Central Atlantic
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CRC	Coastal Resources Centre
CSA	Consequence Spatial Analysis
DPWM	Department of Parks and Wildlife Management
ECOWAS	Economic Community of West African States
ETP	Endangered, Threatened or Protected Species
FAO	Food and Agricultural Organisation of the United Nations
FSQA	Food Safety and Quality Authority
GAMFIDA	Gambia Artisanal Fisheries Development Agency
GEF	Global Environment Facility
GMA	Gambia Maritime Administration
GMD	Gambia Dalasi
HCR	Harvest Control Rules
IUCN	International Union for Conservation of Nature
LME	Large Marine Ecosystem
MCS	Monitoring, Control and Surveillance
MOHSW	Ministry of Health and Social Welfare
MOTIE	Ministry of Trade, Industry, Regional Integration and Employment
MSC	Marine Stewardship Council
MSY	Maximum Sustainable Yield
NAAFO	National Association of Artisanal Fisheries Operators
NASCOM	National Sole fishery Co-management Committee
NEA	National Environment Agency
NGO	Non-Governmental Organisation
PESCAO	Improved regional fisheries governance in western Africa
PRI	Point where recruitment would be impaired
PSA	Productivity Susceptibility Analysis
PSMA	Port State Measures Agreement
RAMPAO	Regional Network of Marine Protected Areas in West Africa
RBF	Risk Based Framework
SICA	Scale Intensity Consequence Analysis
SRFC	Sub-Regional Fisheries Commission
TAC	Total Allowable Catch
TAGFC	Association of Gambian Fishing
TWNP	Tanbi Wetlands National Park
UNCLOS	United Nations Convention on the Law of the Sea
UNFSA	United Nations Fish Stock Agreement
USA	United States of America
VME	Vulnerable Marine Ecosystem

3 Executive summary

MRAG Ltd were commissioned by the MSC to undertake a range of pre-assessments in West Africa, analysing the stock status, impacts on the ecosystem and strength of management structures. The focus of this assessment was on the West African mangrove oyster (*Crassostrea tulipa*) fishery located in the Tanbi Wetlands Complex Reserve in The Gambia. The oysters are harvested by hand by the members of the TRY Oyster Woman's Association (henceforth TRY).

Due to the COVID-19 pandemic this pre-assessment was undertaken remotely without an opportunity to conduct a site visit. Therefore, scores and rationale are based on information provided by the client, stakeholder interviews and other literature available online. While the documentation available online contained some valuable information, it was largely from 2012/2013 and therefore not representative of the current situation. To ground truth information, interviews were conducted with a variety of stakeholders including:

- The Department of Fisheries
- The National Environment Agency
- RAMPAO
- Greenpeace Africa
- TRY Oyster Woman's Association
- Department of Parks and Wildlife Management
- University of Gambia
- NASCOM

The following provides an overview of the scoring and rationale for each of the three principles.

Principle 1

There is currently no stock assessment for *Crassostrea tulipa* and as a result a Risk Based Framework was used to determine the scoring under Principle 1. The Productivity and Susceptibility Analysis (PSA) and Consequence Analysis (CA) was informed by stakeholder consultation with an individual from the Department of Fisheries, who has extensive knowledge of the oyster fishery. The results of the RBF indicated that the stock is 'low risk'. It is advised that precaution is necessary when interpreting this score as qualitative evidence from the fishery does indicate a decreasing population size, change in geographical range and a decrease in size.

C.tulipa is managed through the Oyster and Cockle Co-Management Plan for the Tanbi Wetlands which sets out several management measures to ensure sustainability of the resources. This includes an 8-month closed season, community exclusive zones, size limits of harvested species (6 cm minimum size for oysters), permanent and closed seasons in open access zones and penalties and fines for violation of rules. Despite these restrictions there are no daily harvest quotas set, removals are not monitored and the number of harvesters is continually increasing with no plans to cap the fishing effort. In addition to the members of TRY, one stakeholder noted that non-members are also able to harvest in open areas however, according to other stakeholders this is not allowed.

The lack of monitoring in this fishery raises concern as there is no evidence to determine whether the harvest strategy is working and there are no harvest control rules in place. Stronger management measures were thought to be unlikely to be implemented due to a lack of livelihood alternatives.

Principle 2

There were no primary or secondary species identified in this UoA. Due to the nature of this fishery, impacts on ETP species are thought to be minimal. The West African manatee (*Trichechus senegalensis*) is an endangered marine mammal that is widely distributed along coastal creeks, mangroves, brackish and fresh water environments, including the Tanbi Wetlands. The West African manatee feeds primarily on vegetation but there is some evidence that suggests it can feed on estuarine molluscs in The Gambia, but it is unclear if this includes mangrove oyster. Therefore, removal of oysters may have an indirect effect on manatee by removing a food source but as their main reliance on vegetation means that this would likely be minimal.

This fishery is a hand harvest fishery and therefore there are possible impacts to the main habitat in this UoA which is the mangrove forest. Mangroves were categorised as a VME in this assessment and therefore were only assessed under this scoring issue. A primary goal of the TRY Association is to reduce the impact of harvesting activities on mangrove forests. Following this, TRY members no longer cut the mangrove root to remove the oyster but instead use small knives to break the oysters free from the roots. TRY members have also implemented a mangrove restoration effort, which has seen a substantial number of tree seedlings planted over a sizeable area. Stakeholder consultation suggests that the restoration programmes have been successful and the mangroves are in a good condition. This is

supported by research conducted in the area which indicates that there has been minimal human impact to the mangrove forest of Tanbi. There was anecdotal evidence of illegal harvesting of mangroves for fire wood and building materials but this was mainly attributed to individuals outside the UoA. Although the Tanbi Wetlands is well studied itself, monitoring and research into habitat impacts of this fishery is minimal due to a lack of financial support.

The main impact on the ecosystem will be the removal of oysters from the wild. Oysters provide important ecosystem functions as they are filter feeders and remove particulates from the water column. They also provide habitats for a variety of fish and invertebrates and act as a food source including their larvae which are predated by fish. There have currently been no studies or research into the impacts of this fishery on the ecosystem but stakeholder consultation suggests that the fishery is sustainable and the oysters are able to recuperate during the 8-month closure. This indicates that the fishery is unlikely to cause impacts to the ecosystem however, oysters are getting smaller and there is thought to be an impact on their population size and geographic range.

Principle 3

There is a good basis for governance in The Gambia that should be capable of delivering sustainable fisheries however, there are potentially issues with effectiveness due to financial constraints. Roles and responsibility are well defined within the country and while management is based on consultation with communities, resources users, government agencies and local authorities there was some evidence of a lack of transparency and not all decisions were made in conjunction with stakeholder input.

Within the fishery itself, objectives and management measures are set within the Co-Management Plan and are generally thought to be complied with. However, it is unclear whether decisions are based on the precautionary principle and although some issues are taken into account in management there are concerns over population size and geographic range which do not seem to be resulting in further management restrictions. This is largely attributed to a lack of alternatives in the region which mean reduced harvesting is not really an option for individuals.

4 Report details

4.1 Aims and constraints of the pre-assessment

The aim of the pre-assessment is to assess the performance of the oyster fishery to identify what improvements may need to be made to reach the level of a pass against the MSC standard. The MSC standard is considered the gold standard of sustainability in fisheries globally, and a pass against the standard allows the fishery to be considered sustainable at that point in time. The MSC standard can also be used as a tool on which to structure improvements to data and fishery management.

The focus of this pre-assessment was the hand collection fishery of the West African mangrove oyster in the Tanbi Wetlands Complex Reserve in The Gambia. This pre-assessment specifically focuses on members of the TRY Oyster Woman's Association.

Due to the current COVID-19 pandemic, site visits were not possible as originally planned. Therefore, all information was gathered by either remote interview or data available online. For this UoA, there was little information available online both in regards to the fishery and the biology of the species. Some information was found but this was largely produced between 2010-2013 and no more recent documents were available. Therefore, this fishery has been assessed and scored primarily on qualitative information provided by stakeholders.

One main point of confusion in this fishery is around who is able to harvest oysters from within Tanbi Wetlands. Some stakeholders stated that only members of the TRY Association are allowed to harvest but this was disputed by the Department of Parks and Wildlife who indicated that non-members are allowed to harvest in the open areas. This issue was not able to be resolved within this pre-assessment but would be important to understand if this fishery were to be further assessed.

This pre-assessment does not attempt to duplicate a full assessment against the MSC Fisheries Standard. A full assessment involves a group of assessment team members and public consultation stages that are not included in a pre-assessment. A pre-assessment provides a provisional assessment based on a limited set of information provided by the client.

4.2 Version details

Table 1– Fisheries program documents versions

Document	Version number
MSC Fisheries Certification Process	Version 2.2
MSC Fisheries Standard	Version 2.01
MSC General Certification Requirements	Version 2.3
MSC Pre-Assessment Reporting Template	Version 3.1

5 Unit(s) of Assessment

5.1 Unit(s) of Assessment

The West African mangrove oyster (*Crassostrea tulipa*) fishery is located at the mouth of the River Gambia, in the Tanbi Wetlands Complex. The focus of this pre-assessment are those oysters harvested by members of the TRY Oyster Woman's Association (TRY). There are currently thought to be approximately 700 members within TRY but this may increase as more people move into the wetlands. The oysters are gathered by hand and removed from the roots of the mangroves that grow throughout the wetland complex. The oysters are reached largely by dugout canoe during low tides but some woman still walk across the wetland to harvest the oysters.

This fishery is eligible for participation in the MSC certification programme and assessment as it is within the scope of the MSC Fishery Certification Requirement, as per the following determinations:

- The target species are eligible;
- Fishing operations do not use poisons or explosives;
- The fishery is not conducted under a controversial unilateral exemption to an international agreement;
- The client has not been successfully prosecuted for a forced labour violation in the last two years;
- The fishery is not subject of controversy and/or dispute; and
- The fishery is not an enhanced fishery.

TRY is beginning to pilot and implement aquaculture of the mangrove oyster. In 2014/2015, an aquaculture project was piloted in three communities through a Global Environment Facility (GEF) funded project. In the last two years, another project was implemented that chose 10-20 of the most active women in TRY and trained them in the relevant tools to farm the oysters. This project worked well and some households have continued to farm oyster and TRY is attempting to get more people involved. This pre-assessment however, focuses on the wild capture fishery in the Tanbi Wetlands only. A report provided by the TRY Association indicated that in 2019, 90% of the oysters in the Tanbi wetlands are wild harvested and 10% are farmed. If aquaculture continues to become an increasingly important source of oysters, then an enhanced bivalve assessment could be done in addition.

In addition to mangrove oyster, blood arc cockles (*Senilia senilis*) and blue crab (scientific name unknown) are also harvested in the wetlands by the same women who collect the oysters. The cockles are embedded within the sandbanks, and are collected by scraping the sand by hand. The cockles are harvested at different times of the year and by different gear to the oyster fishery and was identified as a separate UoA. It is therefore not further considered within this pre-assessment. Blue crabs are caught using mosquito nets tied around metal with bait attached. As this species is caught using a different gear type it was identified as a separate UoA and not considered further in this pre-assessment.

Table 2 – Unit(s) of Assessment (UoA)

UoA 1	Description
Species	West African mangrove oyster (<i>Crassostrea tulipa</i>)
Stock	Tanbi Wetlands Complex Reserve
Geographical area	The Gambia
Harvest method / gear	Hand Collection
Client group	TRY Oyster Woman's Association
Other eligible fishers	The TRY Oyster Woman's Association are the custodians of the Tanbi Wetland Complex, and consultation with TRY indicated that they have sole harvesting rights. However, this was contested by other stakeholders (The Department of Parks and Wildlife Management) who stated that non-members are also allowed to harvest within the wetlands. This issue was unresolved but would need to be determined if this fishery underwent further assessment.
Justification for choosing the Unit of Assessment	Pre-determined by client

6 Traceability

6.1 Traceability within the fishery

Processing of the oysters is often conducted by the same women that harvest them. Oysters are generally steamed or boiled in pans/drums for 30 minutes to an hour during which the shells open and the meat can be extracted. If oysters are smoked (which is rare), they are placed directly onto the burning fire or on a metal grill over a fire. The oysters are then split open and the meat extracted and marketed. The oyster shells are gathered and sold for cash for use in the production of white lime, brick making, the preparation of chicken feed and fertiliser (Ministry of Fisheries, Water Resources and National Assembly Matters, 2012).

The same women that harvest and process the oysters are also the same as those who sell them. The oysters are marketed in diverse places including the processing site. The main market points are in urban markets and along roadsides while some producers sell from one home to another. Dried oysters are sold at the weekly market in rural communities, locally referred to as “*loumos*”, which move between villages on a daily basis. In 2011, oysters were sold at approximately GMD 15 per 150 grams (around 50 US cents) (Ministry of Fisheries, Water Resources and National Assembly Matters, 2012).

There are very limited number of oysters which enter the international trade market. These oysters are exported by individuals who carry a few kilograms as gifts or are informally sold to close-circuit niche markets. The main export destination of the oysters is the USA and the UK, where buyers or recipient are usually Gambians. To increase the export market for oysters, more stringent sanitary requirements are needed to meet health standards and import rules (Ministry of Fisheries, Water Resources and National Assembly Matters, 2012).

The Cackle and Oyster Fishery Co-Management plan (Ministry of Fisheries, Water Resources and National Assembly Matters, 2012) states that the Management Committee is responsible for ensuring traceability of products from harvest areas to end consumers for any product sales intended for raw consumption. The Department of Fisheries is also required to establish a shellfish sanitation programme that may include setting traceability requirements for harvest, sale and distribution of products intended for raw consumption. Stakeholder consultation however, indicated that traceability is likely more informal. Oysters from different communities are noticeably different in terms of colour and taste and this is primarily how the harvest location of oysters are identified. This is possibly due to the different food availability in different regions of the wetland which may affect taste (Stakeholder Consultation, 2020). Also, to distinguish TRY members from other people selling shellfish products along the highway, members of TRY wear a red uniform (United Nations Development Programme, 2013).

The members of TRY are able to travel elsewhere in The Gambia to harvest oysters either during the Tanbi Wetlands closure period or if there are no more oysters towards the end of the open season (Stakeholder Consultation 2020). There is also thought to be some illegal harvesting occurring during the closed season (Stakeholder Consultation, 2020). This could therefore impact traceability within the fishery, increasing the risk of non-certified products becoming mixed with certified. There also does not appear to be a formal traceability system in place.

Table 3– Traceability within the fishery

Factor	Description
<p>Will the fishery use gears that are not part of the Unit of Certification (UoC)?</p> <p>If Yes, please describe:</p> <ul style="list-style-type: none"> - If this may occur on the same trip, on the same vessels, or during the same season; - How any risks are mitigated. 	<p>This is unlikely to occur as oysters are harvested by hand. Therefore, the use of other gear types is not thought to be an issue.</p>
<p>Will vessels in the UoC also fish outside the UoC geographic area?</p> <p>If Yes, please describe:</p> <ul style="list-style-type: none"> - If this may occur on the same trip; - How any risks are mitigated. 	<p>Stakeholder consultation indicated that members of TRY can harvest oysters outside the wetland, in other areas of The Gambia. This could lead to increased risk of non-certified products entering the supply chain.</p> <p>The traceability system in place is largely informal with local knowledge used to identify where the oysters have been harvested.</p>

<p>Do the fishery client members ever handle certified and non-certified products during any of the activities covered by the fishery certificate? This refers to both at-sea activities and on-land activities.</p> <ul style="list-style-type: none"> - Transport - Storage - Processing - Landing - Auction <p>If Yes, please describe how any risks are mitigated.</p>	<p>The same women that harvest the oysters are also those that process and sell the oysters. This is likely to reduce the risk of substitution or non-certified products becoming mixed in. However, as the members of TRY can harvest oysters from elsewhere a more formal system of traceability is required to ensure only those oysters harvested from the Tanbi Wetlands carry the MSC certification.</p>
<p>Does transshipment occur within the fishery?</p> <p>If Yes, please describe:</p> <ul style="list-style-type: none"> - If transshipment takes place at-sea, in port, or both; - If the transshipment vessel may handle product from outside the UoC; - How any risks are mitigated. 	<p>N/A</p>
<p>Are there any other risks of mixing or substitution between certified and non-certified fish?</p> <p>If Yes, please describe how any risks are mitigated.</p>	<p>No</p>

7 Pre-assessment results

7.1 Pre-assessment results overview

7.1.1 Overview

A Risk Based Framework (RBF) was conducted for Principle 1 as there is no stock assessment conducted for *Crassostrea tulipa* (see Section 8.1). While the results of the RBF indicated low risk, precaution is necessary when interpreting this score as qualitative evidence from the fishery does indicate a decreasing population size, change in geographical range and a decrease in size. The lack of monitoring of removals, control of fishing effort and no harvest limits means that this UoA will likely fail P1.

Although this fishery will likely have minimal impacts on 'bycatch' species, for ecosystem and habitats there is limited monitoring and research to provide quantitative evidence of impacts. The nature of the fishery means that mangroves are directly impacted during harvesting, although management measures are in place to mitigate impact. P2 is likely to fail due to limited information and monitoring in regards to environmental impacts.

Management measures are in place for this fishery through a Co-Management Plan and decision making is a participatory process. However, enforcement and monitoring are low due to a lack of funding and capacity. This means that this fishery is likely to fail P3.

7.1.2 Recommendations

Following this pre-assessment, the following recommendations are suggested:

- In general, more information is required to accurately score this fishery and it would benefit from a site visit to gain further insight into the operations of the fishery.
- A stock assessment should be conducted for the West African mangrove oyster if feasible.
- Eligible fishers should be defined.
- More monitoring is required to determine impacts of this UoA and compliance.
- Harvesting limits should be explored.

7.2 Summary of potential conditions by Principle

Table 4 – Summary of Performance Indicator level scores

Principle of the Fisheries Standard	Number of PIs with draft scoring ranges <60
Principle 1 – Stock status	3
Principle 2 – Minimising environmental impacts	2
Principle 3 – Effective management	1

7.3 Summary of Performance Indicator level scores

Table 5 – Summary of Performance Indicator level scores

Performance Indicator	Draft scoring range	Data deficient?
1.1.1 – Stock status	≥80	Yes
Rationale or key points		
As no stock assessment is conducted for <i>Crassostrea tulipa</i> , a CA and PSA were undertaken. This was informed by stakeholder consultation with an individual from the Department of Fisheries, who has extensive knowledge of the oyster fishery. The results of the PSA and CA indicate low risk largely due to the productivity of the oyster but some precaution is necessary when interpreting this score as qualitative evidence from the fishery does indicate a decreasing population size, change in geographical range and a decrease in size. This RBF was also only informed through consultation with one stakeholder.		
1.1.2 – Stock rebuilding	N/A	N/A
Rationale or key points		
As a PSA was conducted this is not assessed.		
1.2.1 – Harvest Strategy	<60	Yes
Rationale or key points		
There are several management measures in place to help ensure the sustainability of the oyster stock. This includes a closed season, community exclusive zones, size limits of harvested species (6 cm minimum size for oysters), permanent and closed seasons in open access zones and penalties and fines for violation of rules. However, there is no formal monitoring of the stock, no harvest limits are set and effort is not controlled. It is therefore unclear whether the harvest strategy is expected to meet stock management objectives. Consultation with stakeholders also indicated that the harvest strategy has not been reviewed for a couple of years due to limited funds.		
1.2.2 – Harvest control rules and tools	<60	Yes
Rationale or key points		
There are no harvest control rules in place currently within this fishery. Although technically there is the ability to close the fishery should there be concerns over stock status, this is very unlikely to occur due to the lack of livelihood alternatives for harvesters in TRY.		
1.2.3 – Information and monitoring	<60	Yes
Rationale or key points		

Some information on the biology of *C. tulipa* is known such as average age at maturity and average maximum age. The geographical distribution of oysters in the Tanbi Wetlands is also understood. However, data on removals is unknown as well as how this might impact the fishery over time. Information from the fishery was used to extend the seasonal closure which could suggest that some information is available to support the stock structure however, stakeholder consultation (2020) indicated that more information is needed and the fishery would benefit from monthly landings data, stock assessments and continual research.

1.2.4 – Assessment of stock status	≥80	No
Rationale or key points		
As a PSA was conducted, by default this scores SG80.		
2.1.1 – Primary Outcome	≥80	Yes
Rationale or key points		
No primary species were identified and therefore this will score SG100		
2.1.2 – Primary Management	≥80	No
Rationale or key points		
This is a hand collection fishery and therefore is unlikely to interact with other species. Therefore, measures or a partial strategy are not necessary and will likely meet SG80 .		
2.1.3 – Primary Information	60-79	Yes
Rationale or key points		
As this is a hand collection fishery targeting oysters there is minimal risk of bycatch and therefore information is thought to be sufficient and will likely meet SG60-79 .		
2.2.1 – Secondary Outcome	≥80	Yes
Rationale or key points		
Stakeholder consultation indicated that there are no secondary species in this fishery and will therefore meet SG100 .		
2.2.2 – Secondary Management	≥80	No
Rationale or key points		
This is a hand collection fishery and therefore is unlikely to interact with other species. Therefore, measures or a partial strategy are not necessary and will likely meet SG80 .		
2.2.3 – Secondary Information	60-79	Yes
Rationale or key points		
Stakeholder consultation indicated that there are no secondary species in this fishery and will therefore likely meet SG60-79 . Stakeholders reported that there are no incidences of commensal biofouling organisms attached to the oysters when they are harvested.		
2.3.1 – ETP Outcome	≥80	Yes

Rationale or key points		
<p>As this is hand collection fishery there are thought to be no direct impacts with ETP species. The Tanbi wetlands does support a population of endangered West African manatee (<i>Trichechus senegalensis</i>) which although primarily feeds on vegetation there is some evidence that suggests it can feed on estuarine molluscs in The Gambia. It is unclear if this includes mangrove oyster. To be precautionary the removal of oysters may have an indirect effect on manatee by removing a food source but their main reliance on vegetation means that this would likely be minimal. If interaction with manatee is considered a further risk then a PSA may be required.</p>		
2.3.2 – ETP Management	60 – 79	No
Rationale or key points		
<p>Although there is thought to be minimal impacts of this fishery on ETP species there is very little research or monitoring occurring. The fishery does have management measures in place to reduce pressure on oyster stocks which may indirectly reduce impact on manatee populations but these are not specific for ETP species.</p>		
2.3.3 – ETP Information	<60	Yes
Rationale or key points		
<p>There is insufficient evidence from stakeholder consultation or available literature to score this and therefore will unlikely meet SG60.</p>		
2.4.1 – Habitats Outcome	≥80	No
Rationale or key points		
<p>The most commonly encountered habitat is mangrove forest which is scored as a VME habitat. A primary goal of the TRY Association is to reduce the impact of harvesting activities on mangrove forests. Following this, TRY members no longer cut the mangrove root to remove the oyster but instead use small knives to break the oysters free. TRY members have also implemented a mangrove restoration effort, which has seen a substantial number of tree seedlings planted over a sizeable area. Stakeholder consultation suggests that the restoration programmes have been successful and the mangroves are in a good condition. This is supported by research conducted in the area which indicates that there has been minimal human impact to the mangrove forest of Tanbi.</p>		
2.4.2 – Habitats Management	60 – 79	No
Rationale or key points		
<p>Mangroves are managed through the Co-Management Plan that has been developed for the Tanbi Wetlands. These measures include a restoration programme for depleted areas and specific harvesting methods to reduce impact. The closed season was also extended to allow more time for the oyster beds to recover and in doing so will help to minimise impact on the mangroves.</p> <p>The Tanbi wetlands were designated as a RAMSAR site in 2007 and it is also a Special Management Area and a National Park under Gambian law. In addition to this, the National Environment Agency (NEA) are responsible for monitoring the health mangroves in The Gambia, especially where there is evidence of die back occurring.</p> <p>Despite management, there have been reported incidences of illegal activity within the Tanbi wetlands by people who chop down the mangroves for firewood and building materials. It is unclear if this occurs by members of TRY as most anecdotal evidence suggested this was conducted by individuals outside of the Association. However, this is thought to be rare and any violations are reported to the Department of Parks and Wildlife and individuals have previously been arrested although the extent of prosecution is unknown.</p>		
2.4.3 – Habitats Information	60-79	No
Rationale or key points		

The Tanbi Wetlands are well studied and are an important habitat which is protected in The Gambia. As this site was designated as a RAMSAR in 2007, there is information available on the main habitats in the area and habitats are described in scientific papers (e.g. Ceesay *et al.*, 2017; Ceesay *et al.*, 2016). However, a habitat map was not provided for this assessment and stakeholder consultation indicated that the number of members within the TRY Association is not monitored and the number of harvesters is increasing which means that there could be an unmonitored increase in risk.

2.5.1 – Ecosystems Outcome	60 – 79	No
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Rationale or key points

The main impact on the ecosystem will be the removal of oysters from the wild. There have currently been no studies or research into the impacts of this fishery on the ecosystem but stakeholder consultation suggests that the fishery is sustainable and the oysters are able to recuperate during the 8-month closure. This indicates that the fishery is unlikely to cause impacts to the ecosystem however, oysters are getting smaller and there is thought to be an impact on their population size and geographic range

2.5.2 – Ecosystems Management	60 – 79	No
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Rationale or key points

The management measures in place, through the Co-Management Plan, should help to limit the possible impacts on the ecosystem and are considered to act as a partial strategy to restrain impacts of the fishery on the ecosystem. Although stakeholders suggest that mangroves are now in good condition after their restoration and the oyster fishery is thought to be sustainable and have negligible impacts on the wider ecosystem, evidence is lacking to determine that poaching does not occur during the closed season and that mangroves are not illegally harvested

2.5.3 – Ecosystems Information	<60	No
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Rationale or key points

The Tanbi Wetlands appear to be well studied and as it is a Ramsar site there is sufficient evidence to broadly understand the key elements of the ecosystem however, there are no catch data associated with this fishery and no stock assessment conducted. There is also no research on the ecosystem impacts of this UoA.

3.1.1 – Legal and customary framework	60-79	No
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Rationale or key points

There is a good basis for governance in The Gambia that should be capable of delivering sustainable fisheries however, there are potentially issues with effectiveness due to financial constraints.

3.1.2 – Consultation, roles and responsibilities	60 – 79	No
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Rationale or key points

Roles and responsibilities appear to be clearly defined and stakeholder consultation indicated that management is based on consultation with communities, resources users, government agencies and local authorities. However, stakeholder consultation also indicated that decision making is not always entirely transparent and some decision are made without consultation.

3.1.3 – Long term objectives	≥80	No
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Rationale or key points

Long term objectives are explicit through the 2007 Fisheries Act which make reference to the precautionary and ecosystem-based approach. In addition to national management, there are various projects that attempt to use a regional and ecosystem approach to fishery management plans.

3.2.1 – Fishery specific objectives	Partial 80	No
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Rationale or key points		
Objectives for the fishery are set within the Co-Management Plan and are consistent with the outcomes expressed by the MSC, namely sustainable harvesting and the maintenance of a healthy and functioning ecosystem. Longer and stricter management measures however, are unlikely to be accepted until appropriate livelihood alternatives can be offered which may pose risk to achieving the outcomes of P1 and P2.		
3.2.2 – Decision making processes	60 – 79	No
Rationale or key points		
Decision making in the oyster fishery is entirely participatory and involves all stakeholders. It is likely to take into account serious issues although not all issues are addressed. For example, stakeholder consultation indicated that oysters are decreasing in size and their geographic range is shrinking however, these do not appear to be influencing management measures. It is also unclear if the precautionary approach is taken in this fishery and there is no reference made to in within the Co-Management Plan		
3.2.3 – Compliance and enforcement	<60	No
Rationale or key points		
Consultation (2020) indicated that although there is some monitoring undertaken in the wetlands, it is not often due to financial constraints and MCS is thought to be minimal. In general, harvesters are thought to comply with the management systems in place though there is the occasional incidence of non-compliance. There is also confusion as to whether non-members are allowed to harvest in the Tanbi Wetlands		
3.2.4 – Management performance evaluation	60 – 79	No
Rationale or key points		
The Co-Management plan is a living document and concerns can be raised and addressed at any point. As this fishery is based on community management there is thought to be a good exchange of information between stakeholders and there are opportunities for management to be discussed. The plan is formally meant to be reviewed annually and while this has occurred, due to a lack of funding there have been no reviews for the last two years		

7.4 Principle 1

7.4.1 Principle 1 background

Mangrove oyster is a common name that refers to several species of oyster. The West African mangrove oyster identified in the UoA is *Crassostrea tulipa*. This species of oyster is located across the Atlantic Ocean, from Mauritania/Senegal to Angola and from Venezuela to Brazil¹ (Figure 1).



Figure 1 Geographical range of *Crassostrea tulipa*. Source: IUCN (International Union for Conservation of Nature) 2019. *Crassostrea tulipa*. The IUCN Red List of Threatened Species. Version 2020-2 <https://www.iucnredlist.org/species/201098/2691199>

C. tulipa is commonly found in mangroves, protected bays, lagoons and estuaries with brackish water conditions. It often attaches to the roots and branches of mangroves in intertidal zones but also to rocks and other hard objects such as shells or stones on muddy sandy bottoms (Van Damme, 2020).

C. tulipa reaches sexual maturity approximately 120 days after settlement when it has a height of less than 20 mm. The oysters start off as male but as they get older develop into females. Spawning occurs as eggs and sperm are released into the water and the embryos develop into free-swimming trochophore larvae¹. The larvae eventually settle onto hard surfaces, such as mangrove roots. Once this occurs, they are known as spat (Ministry of Fisheries, Water Resources and National Assembly Matters, 2012). Studies undertaken in the Tanbi Estuary indicates that settlement occurs every month but there is a distinct maximum of spatfall in October and November following the rainy season as the salinity in the estuary rises at the onset of the dry season. Evidence suggests that mangrove oysters grow better in high salinity conditions but reproduce better in low salinity (Ministry of Fisheries, Water Resources and National Assembly Matters, 2012).

For this pre-assessment, the target stock is located in the Tanbi Wetlands Complex Reserve, The Gambia. The focus of this assessment is on the south bank of the wetlands, although stakeholder consultation indicated that another fishery exists on the northern bank, although this has no formal organisation (Stakeholder Consultation, 2020). Figure 2 provides an overview of the oyster harvesting communities within the wetland as of 2012. More recent data could not be identified for this pre-assessment.

Landing and processing sites are spread along the river estuary, tributaries (“*Bolongs*”) of the river and lagoons and in the wetland areas. The fishery is an important source of livelihoods for people in the area, especially for women who largely harvest, process and sell the oysters. Although this species has important commercial value, information on the fishery is limited. To date there is no stock assessment undertaken for *C. tulipa* in the Tanbi Wetland Complex and it is not part of the countrywide frame survey design and data collection effort of the Fisheries Department. In 2019, a pilot programme was initiated to look at catch of oysters in the mangrove across eight communities. In addition, in 2021 the Association is planning to undertake a training of trainers programme to be able to collect stock data to help inform development and implementation of management measures (Stakeholder Consultation, 2020).

¹ <https://www.sealifebase.ca/summary/Crassostrea-tulipa.html>



Figure 2 Tanbi Wetland Oyster Harvesting Communities in 2012. Source: The Cockle and Oyster Fishery Co-Management Plan for the Tanbi Special Management Area The Gambia.
https://www.crc.uri.edu/download/Oyster_Plan_Jan_2012_508_Signatures.pdf

Under the USAID/BaNafaa project a point of sale sampling protocol was conducted by TRY and preliminary results indicated that the oyster size was not declining significantly over the 4-month harvest season at most sites. However, since this study was undertaken the number of harvesters has increased and qualitative information from all stakeholders confirmed that oyster size is decreasing (USAID/BaNafaa, 2014).

In 2007, a community-based organisation called TRY was formed to tackle some of the social, economic and environmental challenges faced by women in the region. This included financial insecurity due to the seasonality of oyster harvesting, dangerous harvesting conditions, pressure on the fishery and damaging harvesting practices. In 2012, the Association consisted of 500 members across 15 communities however, stakeholder consultation (2020) suggested that the current membership is around 700 and there are no plans to cap or limit the number of members that can join. New family members of those in the wetland often arrive and want to join the Association, which makes membership hard to control. This could impact the stock as the level of effort is consistently increasing with no plans to restrict the number of people who can harvest through the TRY Association.

One of the main accomplishments of TRY was the development and implementation of the Oyster and Cockle Co-Management Plan for the Tanbi Wetlands National Park (TWNP), designated a “Special Management Area”, in collaboration with the Government of Gambia – including the Ministry of Fisheries, Water Resources and National Assembly Matters. The purpose of this plan is to ensure the sustainable management and development of the oyster (and cockle) fishery and enhanced benefits to those involved in the market value chain. The management plan sets out the various management measures for this fishery including community exclusive zones, size limits of harvested species, permanent and closed seasons in open access zones, penalties and fines for violation of rules and aquaculture development.

In 2011, the women decided to extend the closed season to an 8-month period to allow the oyster beds more time to recover, reproduce and grow to maturity (United Nations Development Programme, 2013). Following this extended

closure, there was a significant increase in the size of the oyster being harvested which led to a 30% increase in the market price. Due to these economic and environmental benefits, the longer closure period has been set within the Co-Management Plan.

Oysters are harvested during the six hours of diurnal low tide and the harvesters return at high tide as the oysters are then submerged and cannot be harvested. The women used unmotorized dug-out canoes, mostly 3-4m long, and paddle to the harvesting sites. Each canoe can only carry one or two people. Most women do not own their canoes and there are only a few in each community, so there is not enough for everyone to use at one time. As a result, some of the women walk considerable distances to the harvesting sites (Ministry of Fisheries, Water Resources and National Assembly Matters, 2012).

Within the co-management plan, the community-based management committees can establish daily quotas on harvests from individual community zones however, stakeholder consultation (2020) suggested that this is difficult to implement in practice. The harvest season is only four months long and harvesters have very few, if no, livelihood alternatives and therefore controlling the number of oysters removed per season is difficult. As a result, it does not appear that limits are placed on the fishery. Although size limits are stated within the Co-Management Plan in reality there are no measures in place to protect juvenile oysters (Stakeholder Consultation, 2020). Instead it is understood by harvesters that it is better to leave the smaller oysters as more money can be obtained from larger individuals. Harvesters understand the need to harvest sustainably in terms of size but this does not appear to be monitored or controlled in a formal way. Stakeholder Consultation (2020) indicated that at the beginning of the harvest season, the smaller oysters are left and then harvested towards the end of the season to allow them a chance to grow. If the oysters are still too small at the end of the season they are then left until next year although, there is anecdotal evidence that juveniles are still harvested.

Stakeholder consultation for the pre-assessment (2020) indicated that oysters, while in abundance are getting smaller. This information is collected qualitatively by talking with fishers, there was no quantitative data to support this. Stakeholder Consultation (2020) suggested that this could be due to effects of climate change such as desalination and changes to water temperature, but they were not sure of the exact reason. Other stakeholders stated that while climate change could be a factor in this, it is also due to the continued annual harvesting of the oysters.

One stakeholder, indicated that they thought the oyster fishery was currently not sustainable due to the high pressure on the stock and short duration of the closed season. While other stakeholders agreed that the closure period should be extended, they felt the stock was sustainable as the oyster population was able to recuperate quickly. However, they did also report on the decreasing size of the oyster and the increased time it was taking harvesters to reach oysters. Extended closure periods have been discussed within TRY, but without suitable alternative livelihoods these have so far not been adopted.

The harvesting of *C. tulipa* is done predominately by women in the Tanbi Wetlands National Park and the periphery oyster communities belonging to the Jola, Balanto and Manjago ethnic groups, although other ethnic groups are also involved (Cham & Touray, 2008 cited in Ministry of Fisheries, Water Resources and National Assembly Matters, 2012). The majority of harvesters are Gambian but some are migrants from southern Senegal.

There does not appear to be any formal harvest control rules in place, which is supported by the lack of information on stock status. Stakeholder Consultation (2020) indicated that they theoretically could close the fishery if there were concerns over the stock however, due to the lack of alternative livelihoods this would be unlikely and although this has been previously discussed it was not met with agreement by all stakeholders. There is also limited research or monitoring undertaken in this fishery due to limited funds and capacity. There is currently no stock assessment available to determine the likely status of the stock.

7.4.2 Catch profiles

Removals from this fishery are not monitored and therefore the catch profile is unknown.

7.4.3 Total Allowable Catch (TAC) and catch data

Although the Cockle and Oyster Co-Management Plan allows for the implementation of quota limits, this is currently not undertaken. As removals are also not monitored the below table cannot be completed.

Table 6 – Total Allowable Catch (TAC) and catch data

TAC	Year	Not available	Amount	Not available
UoA share of TAC	Year	Not available	Amount	Not available
UoA share of total TAC	Year	Not available	Amount	Not available
Total green weight catch by UoC	Year (most recent)	Not available	Amount	Not available
Total green weight catch by UoC	Year (second most recent)	Not available	Amount	Not available

7.4.4 Principle 1 Performance Indicator scores and rationales

PI 1.1.1 – Stock status

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue		SG 60	SG 80	SG 100
a	Stock status relative to recruitment impairment			
	Guide post	It is likely that the stock is above the point where recruitment would be impaired (PRI).	It is highly likely that the stock is above the PRI.	There is a high degree of certainty that the stock is above the PRI.
	Met?	N/A	N/A	N/A
Rationale				

There does not appear to be any information on stock status of *Crassostrea tulipa* and no stock assessment has been conducted. The IUCN Red List suggests that the global population of the species is common and is categorised as Least Concern but the overall population trend is unknown.

Information from stakeholder consultation indicated that harvesters are having to travel further to find oysters and they have been getting smaller in size (Stakeholder Consultation, 2020). Consultation (2020) indicated that the population can recover during the 8-month closure but the fishery would benefit from longer closed periods, such as a year or two rest period in between harvesting to allow the oysters to grow bigger. However, this would only be feasible if livelihood alternatives were established. Only one stakeholder suggested that the stock was not sustainable.

As there was no stock status or information available for this fishery a PSA and CA were undertaken (see section 8.1.2, Appendix). The PSA and CA were informed by stakeholder consultation with an individual from the Department of Fisheries, who has extensive knowledge of the oyster fishery. This was scored as 'low risk'.

Although the PSA indicates that this would likely meet **SG80** some precaution is necessary when interpreting this score as qualitative evidence from the fishery does indicate a decreasing population size, change in geographical range and a decrease in size. This is therefore unlikely to meet SG100.

Stock status in relation to achievement of Maximum Sustainable Yield (MSY)				
b	Guide post		The stock is at or fluctuating around a level consistent with MSY.	There is a high degree of certainty that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.
	Met?		N/A	N/A

Rationale

As there is no available stock assessment or indication of stock biomass this was scored using a PSA. The results of the PSA indicate the fishery would likely meet **SG80**. There is insufficient information to be able to score this to SG100.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Stock status relative to reference points

	Type of reference point	Value of reference point	Current stock status relative to reference point
Reference point used in scoring stock relative to PRI (SIa)	<i>Not available</i>	<i>Not available</i>	<i>Not available</i>
Reference point used in scoring stock relative to MSY (SIb)	<i>Not available</i>	<i>Not available</i>	<i>Not available</i>

Draft scoring range	≥80
Information gap indicator	More information sought
Data-deficient? (Risk-Based Framework needed)	Yes

PI 1.1.2 – Stock rebuilding

PI 1.1.2		Where the stock is reduced, there is evidence of stock rebuilding within a specified timeframe		
Scoring Issue		SG 60	SG 80	SG 100
a	Rebuilding timeframes			
	Guide post	A rebuilding timeframe is specified for the stock that is the shorter of 20 years or 2 times its generation time . For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.		The shortest practicable rebuilding timeframe is specified which does not exceed one generation time for the stock.
	Met?	-NA		-NA
Rationale				

As the RBF was used to score PI1.1.1 this PI is not scored.

b	Rebuilding evaluation			
	Guide post	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within the specified timeframe.	There is evidence that the rebuilding strategies are rebuilding stocks, or it is likely based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe .	There is strong evidence that the rebuilding strategies are rebuilding stocks, or it is highly likely based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe .
	Met?	NA	NA	NA
Rationale				

As the RBF was used to score PI1.1.1 this PI is not scored.

References

Draft scoring range	NA
Information gap indicator	More information sought / Information sufficient to score PI

PI 1.2.1 – Harvest strategy

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Scoring Issue		SG 60	SG 80	SG 100
a	Harvest strategy design			
	Guide post	The harvest strategy is expected to achieve stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in PI 1.1.1 SG80.
	Met?	No	No	No
Rationale				

Under the co-management plan, there are several management measures in place to ensure sustainability of the resources. Although within the management plan there are provisions to set daily quotas on harvest from individual community zones, stakeholder consultation indicates that this does not occur (Stakeholder Consultation, 2020). The restriction of the harvesting season to a four-month period combined with very limited or no alternative livelihoods, means enforcement of harvesting restrictions is also difficult. Other management measures are in place, such as community exclusive zones, size limits of harvested species (6 cm minimum size for oysters), permanent and closed seasons in open access zones and penalties and fines for violation of rules.

There is no formal monitoring of the stock, but information obtained from stakeholder consultation indicated that sometimes the size and number of oysters being harvested is checked by the TRY Association. Stakeholder Consultation (2020) indicated that regular monitoring does not occur and there is inadequate organisation of the fishery.

In addition to no harvest limits or monitoring of removals, the number of members of TRY is constantly increasing, with currently around 700 members. There are no plans to cap the number of harvesters and therefore this could result in increased pressure on oyster stocks in the Tanbi Wetlands. In addition to the members of TRY, one stakeholder noted that non-members are also able to harvest in open areas however, according to other stakeholders this is not allowed.

It is therefore unclear whether the harvest strategy is expected to meet stock management objectives as although the PSA indicated the stock is achieving SG80, qualitative information suggests there are some issues within the stock. This is unlikely to meet **SG60**.

b	Harvest strategy evaluation			
	Guide post	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	Met?	No	No	No
Rationale				

As there is no continual monitoring in place and insufficient funds means that research on the fishery is limited there is likely to be insufficient information to determine if that harvest strategy is working. Currently only qualitative information from stakeholders is available.

Although oyster size and population abundance are thought to be decreasing, the majority of stakeholders indicated that the stock is healthy as although it depletes during the harvest season it is able to recuperate during the 8-month

closed season (Stakeholder Consultation, 2020). Only one stakeholder indicated that the stock was not at a sustainable level. The oysters, although harvesters are travelling further to find them, are still thought to be abundant around the wetland. However, consultation did indicate that the fishery would benefit from longer closure or rest periods in between harvesting seasons, such as a one/two-year closures. However, again this would only be feasible if alternative livelihoods were available.

Quantitative evidence is required to be certain that no long-term impacts are occurring and as a result this is unlikely to meet **SG60**. There is also qualitative evidence that there is impact to the oyster stock which may suggest the harvest strategy is not working.

c	Harvest strategy monitoring			
	Guide post	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Met?	No		
Rationale				

Stakeholder consultation suggests that regular monitoring is not in place to determine whether the harvest strategy is working. This is due to limited funds and/or capacity amongst all stakeholders involved in this fishery. The occasional study has been conducted, such a market sampling, but this is infrequent and dependent on funding.

This is unlikely to meet **SG60**.

d	Harvest strategy review			
	Guide post			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			No
Rationale				

There is no evidence to show the harvest strategy is periodically reviewed as stakeholder consultation (2020) indicated that this has not occurred recently due to limited funds. This is unlikely to meet **SG100**.

e	Shark finning			
	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	NA	NA	NA
Rationale				

N.A as sharks are not a target species.

f	Review of alternative measures			
	Guide post	There has been a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock, and they are implemented, as appropriate.
	Met?	NA	NA	NA

Rationale

N/A as there is no unwanted catch of target stock.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	<60
Information gap indicator	Information sufficient

PI 1.2.2 – Harvest control rules and tools

PI 1.2.2		There are well defined and effective harvest control rules (HCRs) in place		
Scoring Issue		SG 60	SG 80	SG 100
a	HCRs design and application			
	Guide post	Generally understood HCRs are in place or available that are expected to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached.	Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	The HCRs are expected to keep the stock fluctuating at or above a target level consistent with MSY, or another more appropriate level taking into account the ecological role of the stock, most of the time.
	Met?	No	No	No
Rationale				

There are no harvest control rules in place currently within this fishery. Although technically there is the ability to close the fishery should there be concerns over status of stock, this is very unlikely to occur. Due to the lack of alternatives for harvesters in TRY, it would be very difficult to get agreement for a full closure. There are plans in place to train individuals to collect stock data so that if there is concern over the health of the stock additional management measures can be brought in. Decisions in this fishery are entirely participatory and therefore any additional measures would need to get agreement from communities involved. There are effort restrictions in place, due to the 8-month closed seasons but those able to fish and the amount taken during the open season is not controlled.

This is unlikely to meet **SG60**.

b	HCRs robustness to uncertainty			
	Guide post		The HCRs are likely to be robust to the main uncertainties.	The HCRs take account of a wide range of uncertainties including the ecological role of the stock, and there is evidence that the HCRs are robust to the main uncertainties.
	Met?		No	No
Rationale				

As no HCR exists this will not meet **SG80**.

c	HCRs evaluation			
	Guide post	There is some evidence that tools used or available to implement HCRs are appropriate and effective in controlling exploitation.	Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.	Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the HCRs.
	Met?	No	No	No
Rationale				

As no HCR exists this will not meet **SG60**.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	<60
Information gap indicator	Information sufficient to score PI

PI 1.2.3 – Information and monitoring

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue		SG 60	SG 80	SG 100
a	Range of information			
	Guide post	Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data are available to support the harvest strategy.	A comprehensive range of information (on stock structure, stock productivity, fleet composition, stock abundance, UoA removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
	Met?	Yes	No	No
Rationale				

Some information on the biology of *C. tulipa* is known such as average age at maturity and average maximum age. The geographical distribution of oysters in the Tanbi Wetlands is also understood. Although regular monitoring does not occur, there have been one-off studies such as market sampling when funding has been available. The approximate number of members of the TRY Association is also known. However, data on removals is unknown as well as how this might impact the fishery over time. Information from the fishery was used to extend the seasonal closure which could suggest that some information is available to support the stock structure however stakeholder consultation (2020) indicated that more information is needed and the fishery would benefit from monthly landings data, stock assessments and continual research.

This is likely to meet **SG60**.

b	Monitoring			
	Guide post	Stock abundance and UoA removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and UoA removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule , and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.	All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.
	Met?	No	No	No
Rationale				

Stakeholder Consultation (2020) suggested that removals are not monitored from the fishery. Sometimes hauls are monitored and a pilot programme was introduced last year which looked at catch across eight communities. However, monitoring is infrequent and only occurs when funding is available.

This is unlikely to meet **SG60**.

c	Comprehensiveness of information			
	Guide post		There is good information on all other fishery removals from the stock.	

Met?		No	
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Rationale

There is some confusion around this point within the fishery. Some stakeholders indicated that only members of the TRY Association are allowed to harvest oysters within the wetlands, whereas the Department of Parks and Wildlife stated that non-members are also allowed to harvest in open areas. Either way no information is collected on fishery removals.

This is unlikely to meet **SG80**

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	<60
Information gap indicator	More information sought
Data-deficient? (Risk-Based Framework needed)	-

PI 1.2.4 – Assessment of stock status

PI 1.2.4		There is an adequate assessment of the stock status		
Scoring Issue		SG 60	SG 80	SG 100
a	Appropriateness of assessment to stock under consideration			
	Guide post		The assessment is appropriate for the stock and for the harvest control rule.	The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA.
	Met?		NA	NA
Rationale				

As the RBF was used to score PI1.1.1, a default score of 80 shall be awarded

b	Assessment approach			
	Guide post	The assessment estimates stock status relative to generic reference points appropriate to the species category.	The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.	
	Met?	NA	NA	
Rationale				

As the RBF was used to score PI1.1.1, a default score of 80 shall be awarded

c	Uncertainty in the assessment			
	Guide post	The assessment identifies major sources of uncertainty.	The assessment takes uncertainty into account.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.
	Met?	NA	NA	
Rationale				

As the RBF was used to score PI1.1.1, a default score of 80 shall be awarded

d	Evaluation of assessment			
	Guide post			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?			
Rationale				

As the RBF was used to score PI1.1.1, a default score of 80 shall be awarded

e	Peer review of assessment			
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	Guide post		The assessment of stock status is subject to peer review.	The assessment has been internally and externally peer reviewed.
	Met?		NA	

Rationale

As the RBF was used to score PI1.1.1, a default score of 80 shall be awarded

References

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

7.5 Principle 2

7.5.1 Principle 2 background

This fishery is based in the Tanbi Wetlands National Park in The Gambia. It is a mangrove swamp, approximately 6,304 hectares in size and fronts the Atlantic Ocean to the north and the Gambia River to the east. It is located at the mouth of the River Gambia, and occupies the southern bank of the estuary. In 2007, the Tanbi Wetlands was designated as a RAMSAR site due to its high biodiversity and rare ecosystems which support valuable marine resources. In addition to being a RAMSAR, the area is also declared a special management area, solely for the purpose of community-based management of the oyster and cockle fisheries.

The area is characterised by a network of channels (*Bolongs*) and a chain of lagoons run between Cape Creek and Oyster Creek Bridge. The area is largely estuarine, though in some areas it can become fully saline on the northern fringe during flood tides, and there are numerous freshwater flushes during the rainy season.

The wetland consists of several species of mangrove including *Rhizophora mangle*, *R. harrisoni*, *R. racemosa*, *Avicennia africana*, *Laguncularia racemosa*, *Annona glabra* and West Indian Alder (*Conocarpus erectus*)². It is home to several vulnerable species including the African manatee (*Trichechus senegalensis*) and the African Clawless otter (*Aonyx capensis*). The West African manatee is listed on the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Appendix I and also on Appendix 1 of the Convention on Migratory Species. It is listed as vulnerable on the IUCN Red List. The shade of the mangroves also provides an important breeding ground for the shrimp *Panaeus notialis* in the Western African Marine Eco-region². As a RAMSAR site it is also notable for its bird population and the area acts as one of the main staging posts on the Palearctic migration³.

The wetland is an estuarine and intertidal forest primarily of low mangrove forest, with a complex of vegetation types on its northern boundary and along the mangrove fringing reef³. Mangroves are important ecosystems which provide functions such as coastal stabilisation, fish breeding and nursery grounds. The Tanbi Wetland in particular is extremely important to many species of birds, mammals and fish as well as providing important functions in relation to climate change, flood control, shoreline stabilisation and sediment and nutrient retention³.

The Tanbi Wetlands Complex consist of five major wetland types³:

- Estuarine waters
- Intertidal mud, sand or salt flats
- Intertidal marshes
- Intertidal forested wetlands: including mangrove swamp which covers 4,800 ha out of 6,300 ha.
- Coastal brackish/saline lagoons

The area is bordered by 12 villages and the population has grown rapidly since the 1960s. In 2003, the population was thought to be at approximately 177,285. This increase in population has thought to have changed the landscape with lowland ecosystems and natural waterways the most affected, including sedimentation of the mangrove system. Many around the wetland are dependent on the resources either directly or indirectly. This includes oyster and cockle collection by woman, shrimp fishing and mangrove cutting (Ministry of Fisheries, Water Resources and National Assembly Matters, 2012).

As this is a hand collection fishery, it is very targeted and the impacts on any primary, secondary or ETP species is likely to be minimal or not occur at all. This assessment found that there were no primary species. Information from stakeholders indicated that there were also no secondary species, such as biofouling organisms, associated with this fishery. No direct interaction with ETP species was considered as stakeholders reported no interaction with other species. However, catch data would need to be provided for this fishery to score higher.

As the oyster grow wild on the mangroves, the main habitat impact is the cutting of the mangrove however, since the implementation of the Co-Management Plan the fishery aims to ensure the health and functioning of the mangrove ecology by protecting the oyster habitats. There are management measures in place to protect the mangroves while oysters are being removed and a programme has been implemented to support mangrove restoration. This has resulted in over 53,500 mangrove seedlings planted through various funding initiatives (United Nations Development Programme, 2013). The communities involved also agree to undertake joint monitoring, control and surveillance activities within the Tanbi Wetland National Park with the Department of Parks and Wildlife Management. Stakeholder consultation (2020) indicated that the mangroves in the communities of the Tanbi Wetlands are healthy and are replanted in areas where depletion has occurred. Each community has a committee that is involved in replanting the mangroves. In addition, the Co-Management Plan also implemented rules to protect the mangroves by promoting the use of special tools to harvest the mangroves instead of knives which previously caused damage.

² <https://rsis.ramsar.org/ris/1657>

³ <https://rsis.ramsar.org/RISapp/files/RISrep/GM1657RIS.pdf>

There was some qualitative evidence of mangroves being cut down for roofing and fuel and some areas where die back is occurring. Cutting the mangroves is thought to largely be conducted by people outside of this UoA but more understanding of this is needed.

The main impact to the ecosystem will be the removal of wild oysters and the impact that could have on the trophic structure. Oysters are also ecosystem engineers and as filter feeders, help to remove particulates from the water column. While oysters are not a top predator, they may provide food for other species. For example, there is some evidence that manatees feed on the oysters and therefore their removal might have an impact. However, it is unlikely to have a large impact as manatee primarily feed on vegetation and therefore do not depend on the oysters.

Table 7 – Scoring elements

Component	Scoring elements	Designation	Data-deficient
No primary species	-	-	
No secondary species	-	-	
No direct effect on ETP species considered as hand targeted fishery. There is a possible indirect effect on manatee that was considered.	-	-	Yes

7.5.2 Principle 2 Performance Indicator scores and rationales

PI 2.1.1 – Primary species outcome

PI 2.1.1		The UoA aims to maintain primary species above the point where recruitment would be impaired (PRI) and does not hinder recovery of primary species if they are below the PRI		
Scoring Issue		SG 60	SG 80	SG 100
a	Main primary species stock status			
	Guide post	<p>Main primary species are likely to be above the PRI.</p> <p>OR</p> <p>If the species is below the PRI, the UoA has measures in place that are expected to ensure that the UoA does not hinder recovery and rebuilding.</p>	<p>Main primary species are highly likely to be above the PRI.</p> <p>OR</p> <p>If the species is below the PRI, there is either evidence of recovery or a demonstrably effective strategy in place between all MSC UoAs which categorise this species as main, to ensure that they collectively do not hinder recovery and rebuilding.</p>	<p>There is a high degree of certainty that main primary species are above the PRI and are fluctuating around a level consistent with MSY.</p>
	Met?	Yes	Yes	Yes
Rationale				

No primary species were identified and therefore this will score **SG100**

b	Minor primary species stock status			
	Guide post			<p>Minor primary species are highly likely to be above the PRI.</p> <p>OR</p> <p>If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species.</p>
	Met?			Yes
Rationale				

No primary species were identified and therefore this will score **SG100**.

References

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI
Data-deficient? (Risk-Based Framework needed)	No

PI 2.1.2 – Primary species management strategy

PI 2.1.2		There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are measures in place for the UoA, if necessary, that are expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are likely to be above the PRI.	There is a partial strategy in place for the UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the PRI.	There is a strategy in place for the UoA for managing main and minor primary species.
	Met?	Yes	Yes	No
Rationale				

This is a hand collection fishery and therefore is unlikely to interact with other species. Therefore, measures or a partial strategy are not necessary and will likely meet **SG80**. To meet SG100 a strategy will need to be in place regardless.

b	Management strategy evaluation			
	Guide post	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.
	Met?	Yes	Yes	No
Rationale				

As this is a hand collection fishery the risk of catching non-target species is very low and a management strategy is not necessary. However, to score SG100 an effective plan should be in place in case primary species begin to be caught.

c	Management strategy implementation			
	Guide post		There is some evidence that the measures/partial strategy is being implemented successfully .	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its overall objective as set out in scoring issue (a) .
	Met?		Yes	No
Rationale				

As this is a hand collection fishery the risk of catching non-target species is very low so implementation of a management strategy is not necessary. However, to score SG100 an effective plan should be in place in case primary species begin to be caught.

d	Shark finning			
	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	NA	NA	NA
Rationale				

Scoring Issue need not be scored as no unwanted catches of Primary species.

e	Review of alternative measures			
	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all primary species, and they are implemented, as appropriate.
	Met?	NA	NA	NA
Rationale				

Scoring Issue need not be scored as no unwanted catches of Primary species.

References

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

PI 2.1.3 – Primary species information

PI 2.1.3		Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impact on main primary species			
	Guide post	Qualitative information is adequate to estimate the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main primary species.	Some quantitative information is available and is adequate to assess the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for main primary species.	Quantitative information is available and is adequate to assess with a high degree of certainty the impact of the UoA on main primary species with respect to status.
	Met?	Yes	No	No
Rationale				

As this is a hand collection fishery targeting oysters there is minimal risk of bycatch but as catch data are not available this is unlikely to meet SG80. As this has been scored on qualitative information only, **SG60** is met.

b	Information adequacy for assessment of impact on minor primary species			
	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.
	Met?			No
Rationale				

As this is a hand collection fishery targeting oysters there is thought to be little risk of bycatch however, further evidence is sought and possible site visit to confirm no primary species are impacted in this UoA.

c	Information adequacy for management strategy			
	Guide post	Information is adequate to support measures to manage main primary species.	Information is adequate to support a partial strategy to manage main primary species.	Information is adequate to support a strategy to manage all primary species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	Yes	Yes	No
Rationale				

As this is a hand collection fishery targeting oysters there is thought to be little risk of bycatch however, further evidence is sought and possible site visit to confirm no primary species are impacted in this UoA and meet SG100.

References

Draft scoring range

60-79

Information gap indicator

Information sufficient to score PI

PI 2.2.1 – Secondary species outcome

PI 2.2.1		The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit		
Scoring Issue		SG 60	SG 80	SG 100
a	Main secondary species stock status			
	Guide post	<p>Main secondary species are likely to be above biologically based limits.</p> <p>OR</p> <p>If below biologically based limits, there are measures in place expected to ensure that the UoA does not hinder recovery and rebuilding.</p>	<p>Main secondary species are highly likely to be above biologically based limits.</p> <p>OR</p> <p>If below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding.</p> <p>AND</p> <p>Where catches of a main secondary species outside of biological limits are considerable, there is either evidence of recovery or a, demonstrably effective strategy in place between those MSC UoAs that have considerable catches of the species, to ensure that they collectively do not hinder recovery and rebuilding.</p>	<p>There is a high degree of certainty that main secondary species are above biologically based limits.</p>
	Met?	Yes	Yes	Yes
Rationale				

Stakeholder consultation indicated that there are no secondary species in this fishery and will therefore meet **SG100**.

b	Minor secondary species stock status			
	Guide post			<p>Minor secondary species are highly likely to be above biologically based limits.</p> <p>OR</p> <p>If below biologically based limits', there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species</p>
	Met?			Yes
Rationale				

Stakeholder consultation indicated that there are no secondary species in this fishery and will therefore meet **SG100**.

References

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI
Data-deficient? (Risk-Based Framework needed)	No

PI 2.2.2 – Secondary species management strategy

PI 2.2.2		There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are measures in place, if necessary, which are expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a partial strategy in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a strategy in place for the UoA for managing main and minor secondary species.
	Met?	Yes	Yes	No
Rationale				

This is a hand collection fishery and therefore is unlikely to interact with other species. Therefore, measures or a partial strategy are not necessary and will likely meet **SG80**. To meet SG100 a strategy will need to be in place regardless.

b	Management strategy evaluation			
	Guide post	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.
	Met?	Yes	Yes	No
Rationale				

As this is a hand collection fishery the risk of catching non-target species is very low and a management strategy is not necessary. However, to score SG100 an effective plan should be in place in case primary species begin to be caught.

c	Management strategy implementation			
	Guide post		There is some evidence that the measures/partial strategy is being implemented successfully .	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) .
	Met?		Yes	Yes
Rationale				

As this is a hand collection fishery the risk of catching non-target species is very low so implementation of a management strategy is not necessary. However, to score SG100 an effective plan should be in place in case primary species begin to be caught.

d	Shark finning
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	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	NA	NA	NA
Rationale				

Sharks are not caught in this fishery and therefore this is N/A

	Review of alternative measures to minimise mortality of unwanted catch			
e	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main secondary species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main secondary species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all secondary species, and they are implemented, as appropriate.
	Met?	NA	NA	NA
Rationale				

There is no unwanted catch in this fishery and therefore this is N/A

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

PI 2.2.3 – Secondary species information

PI 2.2.3		Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts on main secondary species			
	Guide post	Qualitative information is adequate to estimate the impact of the UoA on the main secondary species with respect to status. OR If RBF is used to score PI 2.2.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species.	Some quantitative information is available and adequate to assess the impact of the UoA on main secondary species with respect to status. OR If RBF is used to score PI 2.2.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.	Quantitative information is available and adequate to assess with a high degree of certainty the impact of the UoA on main secondary species with respect to status.
	Met?	Yes	No	No
Rationale				

Stakeholder consultation indicated that there are no secondary species in this fishery however, as catch data are not available to support this a score of **SG60** is likely as only qualitative evidence is available. Stakeholders reported that there are no incidences of commensal biofouling organisms attached to the oysters when they are harvested. Further evidence is sought and possible site visit to confirm no species are impacted in this UoA.

b	Information adequacy for assessment of impacts on minor secondary species			
	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
	Met?			No
Rationale				

There is no quantitative evidence to estimate the impact on minor species and therefore this is unlikely to meet SG100.

c	Information adequacy for management strategy			
	Guide post	Information is adequate to support measures to manage main secondary species.	Information is adequate to support a partial strategy to manage main secondary species.	Information is adequate to support a strategy to manage all secondary species, and evaluate with a high degree of certainty whether the strategy is achieving its objective .
	Met?	Yes	Yes	No
Rationale				

Stakeholder consultation indicated that there are no secondary species in this fishery and will likely meet **SG80** but quantitative evidence would be required to meet SG100.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	60-79
Information gap indicator	Information sufficient to score PI

PI 2.3.1 – ETP species outcome

PI 2.3.1		The UoA meets national and international requirements for the protection of ETP species The UoA does not hinder recovery of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
a	Effects of the UoA on population/stock within national or international limits, where applicable			
	Guide post	Where national and/or international requirements set limits for ETP species, the effects of the UoA on the population/ stock are known and likely to be within these limits.	Where national and/or international requirements set limits for ETP species, the combined effects of the MSC UoAs on the population /stock are known and highly likely to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a high degree of certainty that the combined effects of the MSC UoAs are within these limits.
	Met?	NA	NA	NA
Rationale				

N/A

Although legislation exists in The Gambia for ETP species such as turtles and cetaceans there are no catch limits specified and therefore this is N/A.

b	Direct effects			
	Guide post	Known direct effects of the UoA are likely to not hinder recovery of ETP species.	Direct effects of the UoA are highly likely to not hinder recovery of ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species.
	Met?	Yes	Yes	Yes
Rationale				

As this is a targeted hand collection fishery there are not thought to be any direct impacts on ETP species. This therefore is likely to meet **SG100**.

c	Indirect effects			
	Guide post		Indirect effects have been considered for the UoA and are thought to be highly likely to not create unacceptable impacts.	There is a high degree of confidence that there are no significant detrimental indirect effects of the UoA on ETP species.
	Met?		Yes	No
Rationale				

The West African manatee (*Trichechus senegalensis*) is an endangered marine mammal that is widely distributed along coastal creeks, mangroves, brackish and fresh water environments, including the Tanbi Wetlands. Fewer than 10,000 are thought to remain and the number is declining due to habitat conversion, loss of mangroves, hunting pressure and pollution (Diagne. 2015; Lee *et al.*, 2009). The West African manatee feeds primarily on vegetation but there is some evidence that suggests it can feed on estuarine molluscs in The Gambia⁴, but it is unclear if this includes mangrove oyster. Therefore, removal of oysters may have an indirect effect on manatee by removing a food source but as their main reliance on vegetation means that this would likely be minimal. If interaction with manatee is considered a further risk then a PSA may be required.

⁴ <https://www.iucnredlist.org/species/22104/97168578>

More research is required on the impact of oyster removal on ETP species in the region but based on information available for this pre-assessment this is highly likely to meet **SG80**. Further information is needed to score SG100.

References

Diagne, L. 2015. *Trichechus senegalensis* (errata version published in 2016). *The IUCN Red List of Threatened Species* 2015: e.T22104A97168578. Available at <https://dx.doi.org/10.2305/IUCN.UK.2015-4.RLTS.T22104A81904980.en>. [Accessed 28 October 2020].

Barnett. L.K., Emss. C., Jallow. A., Cham. A. & Mortimer.J.A. 2004. The distribution and conservation status of marine turtles in The Gambia, West Africa: a first assessment. *ORXY*. 38(2).

Lee. V., Tobey. J., Castro. K., Crawford. B., Ibrahima. M., Drammeh. O. & Vaidyanathan. T. 2009. Marine Biodiversity Assets and Threats Assessment, Gambia-Senegal Sustainable Fisheries Project, Coastal Resources Center, University of Rhode Island. pp 50

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI
Data-deficient? (Risk-Based Framework needed)	No

PI 2.3.2 – ETP species management strategy

PI 2.3.2	<p>The UoA has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> - meet national and international requirements; - ensure the UoA does not hinder recovery of ETP species. <p>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species</p>		
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Scoring Issue	SG 60	SG 80	SG 100
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Management strategy in place (national and international requirements)				
a	Guide post	There are measures in place that minimise the UoA-related mortality of ETP species, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a comprehensive strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to achieve above national and international requirements for the protection of ETP species.
	Met?	NA	NA	NA

Rationale

N/A

Management strategy in place (alternative)				
b	Guide post	There are measures in place that are expected to ensure the UoA does not hinder the recovery of ETP species.	There is a strategy in place that is expected to ensure the UoA does not hinder the recovery of ETP species.	There is a comprehensive strategy in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species.
	Met?	Yes	No	No

Rationale

Although there is thought to be minimal impacts of this fishery on ETP species there is very little research or monitoring occurring. The fishery does have management measures in place to reduce pressure on oyster stocks which may indirectly reduce impact on manatee populations but evidence suggests that the oyster population is declining. The measures are likely to not hinder ETP species recovery though, especially as they do not constitute the main food source for manatee. This is likely to meet **SG60** as although some measures are in place these are not specific for ETP species.

Management strategy evaluation				
c	Guide post	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is an objective basis for confidence that the measures/strategy will work, based on information directly about the fishery and/or the species involved.	The strategy/comprehensive strategy is mainly based on information directly about the fishery and/or species involved, and a quantitative analysis supports high confidence that the strategy will work.
	Met?	Yes	No	No

Rationale

The impact on manatee is thought to be minimal but there is no research undertaken to demonstrate that there are no effects on ETP species within the wetlands. Therefore, this is likely to meet **SG60** until more information directly from this fishery can be obtained.

Management strategy implementation				
d	Guide post		There is some evidence that the measures/strategy is being implemented successfully.	There is clear evidence that the strategy/comprehensive strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) or (b).
	Met?		No	No
Rationale				

There is insufficient evidence to show that the measures are being implemented successfully and will be unlikely meet **SG80**.

Review of alternative measures to minimize mortality of ETP species				
e	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.
	Met?	N/A	N/A	N/A
Rationale				

N/A as there is no unwanted catch of ETP species in this fishery.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	60-79
Information gap indicator	More information sought

PI 2.3.3 – ETP species information

PI 2.3.3	Relevant information is collected to support the management of UoA impacts on ETP species, including:		
	<ul style="list-style-type: none"> - Information for the development of the management strategy; - Information to assess the effectiveness of the management strategy; and - Information to determine the outcome status of ETP species 		
Scoring Issue	SG 60	SG 80	SG 100
Information adequacy for assessment of impacts			
a	Guide post	Qualitative information is adequate to estimate the UoA related mortality on ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for ETP species.	Some quantitative information is adequate to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for ETP species.
	Met?	No	No
Rationale			

There is insufficient evidence from stakeholder consultation or available literature to score this and therefore will unlikely meet **SG60**.

Information adequacy for management strategy			
b	Guide post	Information is adequate to support measures to manage the impacts on ETP species.	Information is adequate to measure trends and support a strategy to manage impacts on ETP species.
	Met?	No	No
Rationale			

There is insufficient evidence from stakeholder consultation or available literature to score this and therefore will unlikely meet **SG60**.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range

<60

Information gap indicator

More information sought

PI 2.4.1 – Habitats outcome

PI 2.4.1		The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates		
Scoring Issue		SG 60	SG 80	SG 100
Commonly encountered habitat status				
a	Guide post	The UoA is unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.
	Met?	Yes	Yes	Yes
Rationale				

The most commonly encountered habitat is mangrove forest which is scored as a VME habitat. This by default therefore scores **SG100**.

VME habitat status				
b	Guide post	The UoA is unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.
	Met?	Yes	Yes	No
Rationale				

The Tanbi Wetlands is part of the Western African Marine ecoregion and provides important functions in relation to climate change, flood control, shoreline stabilisation and sediment and nutrient retention⁵. The area is predominately mangrove forest consisting of several species including *Rhizophora mangle*, *R. harrisoni*, *R. racemosa*, *Avicennia africana*, *Laguncularia racemosa*, *Annona glabra* and *West Indian Alder Conocarpus erectus*⁶. The area is an important pathway for fish, birds and dolphin species such as Atlantic Humpbacked dolphins (*Sousa teuszii*) and bottle-nosed dolphins (*Tursiops truncatus*) which are reliant on the fish that have their nurseries amongst the mangroves of Tanbi.

A primary goal of the TRY Association is to reduce the impact of harvesting activities on mangrove forests. Following this, TRY members no longer cut the mangrove root to remove the oyster but instead use small knives to break the oysters free from the roots. TRY members have also implemented a mangrove restoration effort, which has seen a substantial number of tree seedlings planted over a sizeable area (United Nations Development Programme, 2013). Within the co-management plan, it explicitly states the mangrove must be preserved when harvesting the oysters.

Although canoes are mainly used to reach harvesting sites, some women do still walk through the wetland to harvest oysters. Consultation (2020) indicated that this does not cause any impact to the mangroves as women walk through muddy sections avoiding the mangroves and there are no incidences of mangroves being cut to form new routes.

There is thought to be some cutting down of mangroves in the Tanbi wetlands to make firewood for fish processing and for building materials. This is mainly thought to occur though by people outside of TRY. There is also some die back occurring in the wetlands but this was attributed to climate change rather than the fishery (Stakeholder Consultation, 2020).

⁵ <https://rsis.ramsar.org/RISapp/files/RISrep/GM1657RIS.pdf>

⁶ <https://rsis.ramsar.org/ris/1657>

For the conservation of the mangroves, the communities agree to undertake joint monitoring, control and surveillance activities within the Tanbi Wetland National Park with the Department of Parks and Wildlife Management and engage in mangrove reforestation activities in communities where mangroves are being depleted.

Stakeholder consultation suggests that the restoration programmes have been successful and the mangroves are in a good condition. This is supported by research conducted in the area which indicates that there has been minimal human impact to the mangrove forest of Tanbi. A study in 2017 (Ceesay *et al.*, 2017) also determined that the low percentage of depleted mangrove cover in the Tanbi Wetlands indicates nil/negligible human impacts on the mangroves. It also states that over the last couple of decades, conservation efforts have intensified in and around the coastal zones of The Gambia.

This is therefore likely to score **SG80** as more information would be required to meet SG100.

C	Minor habitat status		
	Guide post		There is evidence that the UoA is highly unlikely to reduce structure and function of the minor habitats to a point where there would be serious or irreversible harm.
	Met?		No
Rationale			

The area is primarily mangrove forest (~80%). Apart from the mangroves themselves, the area also consists of mangrove mud rich in organic matter as well as other sediments types such as fine textured sand, silts and clay. Halophytic herbs also grow around the inland edges of the forest including *Philoferus vermicularis*, *Ipomea pes-caprae*, *Sesuvium portulacastrum*, *Vernonia chlorati* and *Blumea aurita*⁷. There was insufficient information provided to determine whether this the UoA is unlikely to reduce the structure and function of minor habitats and will therefore not meet **SG100**.

References

Ceesay.A., Dibi. N., Njie. E., Wolff. M. & Koné. T. 2017. Mangrove Vegetation Dynamics of the Tanbi Wetland National Park in The Gambia. *Environment and Ecology Research* 5(2): 145-160,

United Nations Development Programme. 2013. TRY Oyster Women’s Association, The Gambia. Equator Initiative Case Study Series. New York, NY.

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI
Data-deficient? (Risk-Based Framework needed)	No

⁷ <https://rsis.ramsar.org/RISapp/files/RISrep/GM1657RIS.pdf>

PI 2.4.2 – Habitats management strategy

PI 2.4.2		There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a strategy in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.
	Met?	Yes	Yes	No
Rationale				

Mangroves are managed through the Co-Management Plan that has been developed for the Tanbi Wetlands. These measures include a restoration programme for depleted areas and specific harvesting methods to reduce impact. The closed season was also extended to allow more time for the oyster beds to recover and in doing so will help to minimise impact on the mangroves.

The Tanbi wetlands were designated as a RAMSAR site in 2007 and it is also a Special Management Area and a National Park under Gambian law.

In addition to this, the National Environment Agency (NEA) are responsible for monitoring the health mangroves in The Gambia, especially where there is evidence of die back occurring.

Combined, the measures in place for mangrove restoration and ongoing monitoring by NEA is deemed a partial strategy that is expected to meet the Habitat Outcome 80 level or above and therefore sufficient to meet **SG80**. There is no evidence of a strategy for all non-MSC fisheries on habitats as there is some evidence that mangroves are being cut down by people outside of the TRY Association.

b	Management strategy evaluation			
	Guide post	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).	There is some objective basis for confidence that the measures/partial strategy will work, based on information directly about the UoA and/or habitats involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or habitats involved.
	Met?	Yes	Yes	No
Rationale				

The mangroves within the Tanbi Wetlands are thought to be healthy and in abundance (Stakeholder Consultation, 2020). Consultation with a stakeholder said that there is an area of mangrove die back in the Tanbi Wetlands but this is attributed to climate change rather than fishery activities. A study in 2017 (Ceesay *et al.*, 2017) also determined that the low percentage of depleted mangrove cover in the Tanbi Wetlands indicates nil/negligible human impacts on the mangroves. It also states that over the last couple of decades, conservation efforts have intensified in and around the coastal zones of The Gambia. The main reason for lack of rejuvenation and stunted growth in the wetland was attributed to long-term hyper salinity rather than human disturbance.

As information is available directly from the UoA this is likely to meet **SG80** but as there is anecdotal evidence of mangroves still being cut down, although likely by non-TRY members this will not meet SG100.

c	Management strategy implementation			
	Guide post		There is some quantitative evidence that the	There is clear quantitative evidence that the partial

			measures/partial strategy is being implemented successfully.	strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).
	Met?		Yes	No

Rationale

There have been several re-seeding projects within the Tanbi Wetlands and the good coverage and state of the wetland indicates that there is evidence that the management of the habitat is being implemented successfully. Some quantitative evidence of the low percentage of depleted mangroves is available in Ceesay *et al.*, (2017). More recent information was determined through stakeholder consultations. This is therefore, likely to meet **SG80**.

Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs				
d	Guide post	There is qualitative evidence that the UoA complies with its management requirements to protect VMEs.	There is some quantitative evidence that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.	There is clear quantitative evidence that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.
		Yes	No	No

Rationale

There have been reported incidences of illegal activity within the Tanbi wetlands by people who chop down the mangroves for firewood and building materials. However, this is thought to be rare and any violations are reported to the Department of Parks and Wildlife and individuals have previously been arrested although the extent of prosecution is unknown (Stakeholder Consultation, 2020). This suggests that generally the UoA complies with both its management requirements to protect VMEs and protection measures afforded to VMEs by other non-MSC fisheries, but there is little quantitative evidence to support this. Therefore, this is likely to meet **SG60**.

References

Ceesay. A., Dibi. N.H., Njie. E., Wolff. M. & Koné. T. 2017. Mangrove Vegetation Dynamics of the Tanbi Wetland National Park in The Gambia. *Environment and Ecology Research* 5(2): 145-160, 2017

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	60-79
Information gap indicator	Information sufficient to score PI

PI 2.4.3 – Habitats information

PI 2.4.3		Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guide post	<p>The types and distribution of the main habitats are broadly understood.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA: Qualitative information is adequate to estimate the types and distribution of the main habitats.</p>	<p>The nature, distribution and vulnerability of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA: Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.</p>	<p>The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.</p>
	Met?	Yes	Yes	No
Rationale				

The Tanbi Wetlands are well studied and are an important habitat which is protected in The Gambia. As this site was designated as a RAMSAR in 2007, there is information available on the main habitats in the area and habitats are described in scientific papers (e.g. Ceesay *et al.*, 2017; Ceesay *et al.*, 2016). However, a habitat map was not provided for this assessment.

This is likely to meet **SG80** as the nature, distribution and vulnerability of the main habitats in the UoA area are known but it is unclear whether this is applicable to all habitats.

b	Information adequacy for assessment of impacts			
	Guide post	<p>Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA: Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.</p>	<p>Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA: Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.</p>	<p>The physical impacts of the gear on all habitats have been quantified fully.</p>
	Met?	Yes	Yes	No
Rationale				

This fishery is a hand collection fishery and therefore the mangroves are directly impacted during the harvesting process. The timing and location of use of the fishing gear is well known as the fishery only operates during a 4-month period. Certain tributaries are also assigned to specific communities that have exclusive rights to harvest in that area and so therefore the spatial extent of interaction is thought to be known.

This is likely to meet **SG80** and there is sufficient evidence that a CSA is not required. However, there was insufficient evidence to determine if the physical impacts on all habitats has been quantified fully.

C	Monitoring		
	Guide post		Adequate information continues to be collected to detect any increase in risk to the main habitats.
	Met?		No
Rationale			

Stakeholder consultation indicated that the number of members within the TRY Association is not entirely monitored and the number of harvesters is increasing. Stakeholder Consultation (2020) also indicated that non-members harvest oysters from within the wetlands as well as cut down mangroves for fuel and roofing material but the extent of this is unknown. The status of the mangroves is monitored by the NEA and the DPWM but this is unlikely to meet **SG80** as information on the number of resources users is not monitored or controlled. There were also some debate on the degree of impact that climate change is having on the mangroves in contrast to the impact from harvesters.

References

Ceesay. A., Dibi. N.H., Njie. E., Wolff. M. & Koné. T. 2017. Mangrove Vegetation Dynamics of the Tanbi Wetland National Park in The Gambia. *Environment and Ecology Research* 5(2): 145-160, 2017

Ceesay. A., Wolff. M., Nije. E., Kah. M. & Kone. T. 2016. Adapting to the Inevitable: The Case of Tanbi Wetland National Park, The Gambia. In W.L. Filho et al. (eds.), *Climate Change Adaptation, Resilience and Hazards, Climate Change Management*, DOI 10.1007/978-3-319-39880-8_16

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	60-79
Information gap indicator	More information sought

PI 2.5.1 – Ecosystem outcome

PI 2.5.1		The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	Ecosystem status			
	Guide post	The UoA is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is evidence that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
	Met?	Yes	No	No
Rationale				

The main impact on the ecosystem will be the removal of oysters from the wild. Oysters provide important ecosystem functions as they are filter feeders and remove particulates from the water column. They also provide habitats for a variety of fish and invertebrates and act as a food source including their larvae which are predated by fish. The other ecosystem impact could result from destruction or damage to the mangroves themselves but this is thought to be minimal within the UoA.

There have currently been no studies or research into the impacts of this fishery on the ecosystem but stakeholder consultation suggests that the fishery is sustainable and the oysters are able to recuperate during the 8-month closure. This indicates that the fishery is unlikely to cause impacts to the ecosystem however, oysters are getting smaller and there is thought to be an impact on their population size and geographic range. If this trend continues this could cause an impact to the wider ecosystem and the other species that depend on them. It is also important to note that one stakeholder indicated that the stock was not sustainable.

This is likely to meet **SG60** as it is unlikely that the UoA will disrupt the structure and function of the ecosystem if the harvesting is sustainable but more research into long term impacts is required.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	60-79
Information gap indicator	More information sought
Data-deficient? (Risk-Based Framework needed)	Yes- a SICA might be worth undertaking to better understand the distribution of fishing pressure

PI 2.5.2 – Ecosystem management strategy

PI 2.5.2		There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are measures in place, if necessary which take into account the potential impacts of the UoA on key elements of the ecosystem.	There is a partial strategy in place, if necessary, which takes into account available information and is expected to restrain impacts of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	There is a strategy that consists of a plan , in place which contains measures to address all main impacts of the UoA on the ecosystem, and at least some of these measures are in place.
	Met?	Yes	Yes	No
Rationale				

The management measures in place, through the Co-Management Plan, should help to limit the possible impacts on the ecosystem. This includes gear restrictions and in particular the closed season, allowing the oysters to recuperate for an 8-month period and protection and restoration of the mangroves. Combined, these two elements are considered to act as a partial strategy to restrain impacts of the fishery on the ecosystem. The Tanbi is also managed and protected by many stakeholders, including the DPWM, DoF, NEA, TRY and the Department of Forestry. It is a Ramsar site and an Area of Special Management which offers further protection.

This is likely to meet **SG80** as a partial strategy is in place but further information is needed to ensure there are no ecosystem impacts due to the important role that oyster play in the system.

b	Management strategy evaluation			
	Guide post	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar UoAs/ ecosystems).	There is some objective basis for confidence that the measures/ partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved.	Testing supports high confidence that the partial strategy/ strategy will work, based on information directly about the UoA and/or ecosystem involved.
	Met?	Yes	Yes	No
Rationale				

The partial strategy is likely to work as there is no bycatch or thought to be any direct or indirect impact on the wider ecosystem or other species. The mangroves are also well protected and monitored and harvesting practices are aimed to conserve them. Harvesting by hand is also likely to have less impact than mobile gear.

This is likely to meet **SG80** as there is some objective basis from stakeholder consultation that the partial strategy is working but testing is required to ensure a high confidence that measures are working as some illegal activity does occur in the wetland.

c	Management strategy implementation			
	Guide post		There is some evidence that the measures/partial strategy is being implemented successfully .	There is clear evidence that the partial strategy/strategy is being implemented successfully and is

				achieving its objective as set out in scoring issue (a).
	Met?		No	No
Rationale				

Although stakeholders suggest that mangroves are now in good condition after their restoration and the oyster fishery is thought to be sustainable and have negligible impacts on the wider ecosystem, evidence is lacking to determine that poaching does not occur during the closed season and that mangroves are not illegally harvested. Anecdotal evidence collected indicates that both of these activities occur but the extent is unknown. Therefore, this is unlikely to meet SG80 as there is insufficient evidence to show that the partial strategy is implemented successfully.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	60-79
Information gap indicator	More information sought

PI 2.5.3 – Ecosystem information

PI 2.5.3		There is adequate knowledge of the impacts of the UoA on the ecosystem		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guide post	Information is adequate to identify the key elements of the ecosystem.	Information is adequate to broadly understand the key elements of the ecosystem.	
	Met?	Yes	Yes	
Rationale				

The Tanbi Wetlands appear to be well studied and as it is a Ramsar site there is sufficient evidence to broadly understand the key elements of the ecosystem. This is therefore likely to meet **SG80**. However, it should be noted that no information was provided by stakeholders or available in literature to determine the specific impact of this UoA on the ecosystem.

b	Investigation of UoA impacts			
	Guide post	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but have not been investigated in detail .	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and some have been investigated in detail .	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and have been investigated in detail .
	Met?	No	No	No
Rationale				

There are no catch data associated with this fishery and no stock assessment conducted. There is also no research on the ecosystem impacts of this UoA. Therefore, this is unlikely to meet **SG60**.

c	Understanding of component functions			
	Guide post		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are known .	The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the ecosystem are understood .
	Met?		Yes	No
Rationale				

As the Tanbi Wetlands are a RAMSAR site and there are several papers published on the area, the main functions of the components in the ecosystem are likely known and will meet **SG80**. Further evidence is required to meet SG100 to ensure that impacts are fully understood, especially on ETP species.

d	Information relevance			
	Guide post		Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.	Adequate information is available on the impacts of the UoA on the components and elements to allow the main consequences for the ecosystem to be inferred.

Met?		No	No
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Rationale

There is no information on stock status, the amount of effort or number of removals from this fishery and therefore this is unlikely to meet **SG80**.

e	Monitoring		
	Guide post		Adequate data continue to be collected to detect any increase in risk level.
	Met?		No

Information is adequate to support the development of strategies to manage ecosystem impacts.

Rationale

Consultation with stakeholders indicated that monitoring in this fishery is minimal due to limited funds. Removals are not monitored and neither is fishing effort so this is unlikely to meet **SG80** as there is no system in place to monitor an increase in risk level.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	<60
Information gap indicator	More information sought

7.6 Principle 3

7.6.1 Principle 3 background

At the international level, The Gambia is party to many conventions including United Nations Convention on the Law of the Sea (UNCLOS), United Nations Fish Stock Agreement (UNFSA), Code of Conduct for Responsible Fisheries (CCRF) and Port State Measures Agreement (PSMA.) The Gambia was also one of the founding members of the Economic Community of West African States (ECOWAS) and Sub-Region Fisheries Commission (SRFC). It is a member of FAO, Fishery Committee for the Eastern Central Atlantic (CECAF) and Ministerial Conference on Fisheries Cooperation Among African States Bordering the Atlantic Ocean (ATLAFCO) and is a signatory of the Convention on Biodiversity and the International Union for the Conservation of Nature, amongst others⁸.

At the regional level, the Sub-Regional Fisheries Commission (SRFC) is an inter-governmental fisheries cooperation consisting of seven members across west Africa: Cabo Verde, The Gambia, Guinea, Guinea-Bissau, Mauritania, Senegal and Sierra Leone. Its purpose is to harmonise the national policies of its Members on the preservation, conservation and exploitation of fisheries resources and strengthen cooperation⁹. It is important to note that the SRFC does not have any regulatory power.

At the national level, policy implementation and management of fisheries in The Gambia is the responsibility of the Department of Fisheries (DoF), which lies within the Ministry of Fisheries, Water Resources and National Assembly Matters (Tobey *et al.* 2009) (See Figure 3). The policy, legal and management framework is provided for by the Fisheries and Aquaculture Policy (2018 prepared with FAO support), 2007 Fisheries Act, 2008 Fisheries Regulations, Fisheries Strategy (drafted and also prepared with FAO support), and Fisheries Management Plans for oyster and cockle and sole and catfish. The aim of the Act is “to provide for the conservation, management, sustainable utilisation and development of fisheries and aquaculture in the fisheries waters and in the territory of The Gambia”. The act describes the administrative responsibilities for the sector, basic structures, its scope, rights and responsibilities of its staff and designated committees, licensing arrangements for fishing and aquaculture and prohibitions amongst other things (Ministry of Environment, Climate Change and Natural Resources, undated). The main management measures include fishing zones for different sizes of vessels, fishing gear restrictions, minimum landing sizes of fish, and two artisanal sector management plans for sole, and cockles/oysters. However, there are no limits on the number of vessels or fishing licenses/authorisations in either the artisanal or industrial sectors (MacFayden *et al.*, 2018).

⁸ <https://www.mofwr.gm/partnerships-agreements>

⁹ <http://spsrpf.org/en/presentation#Mandate>

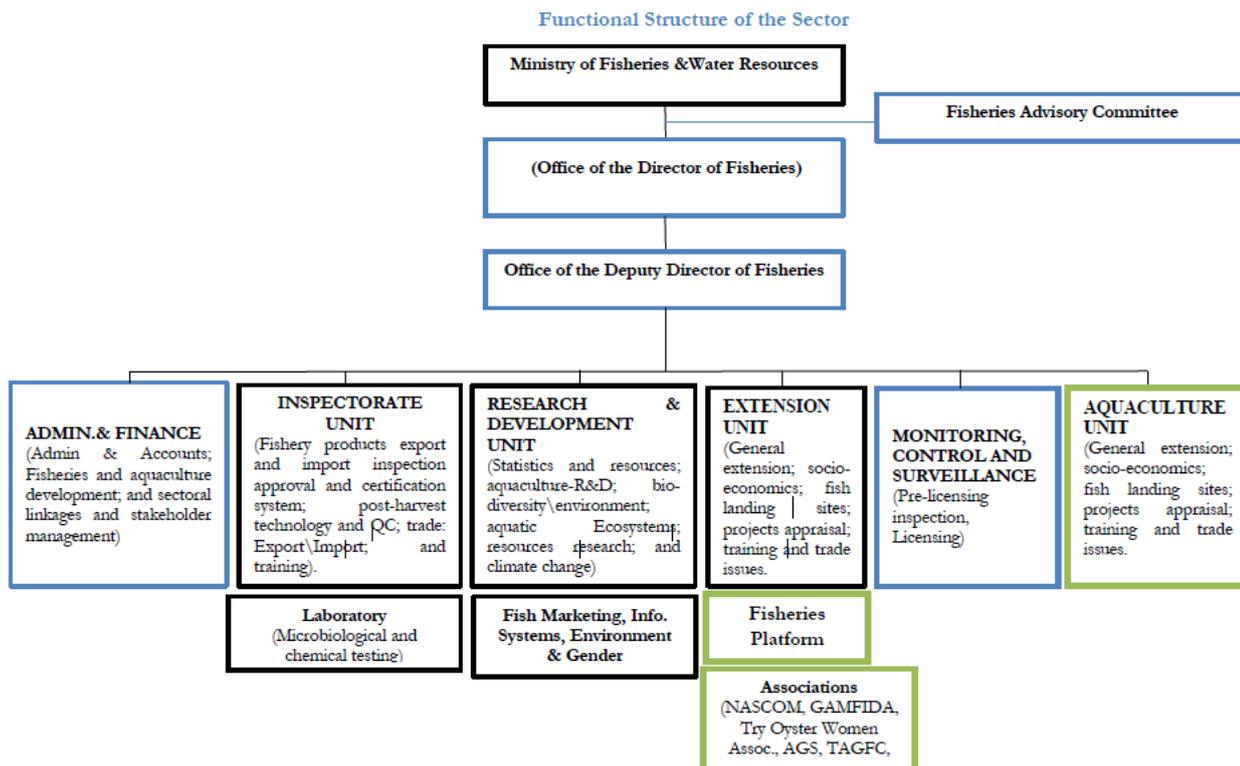


Figure 3 Functional structure of the Ministry of Fisheries and Water Resources. Source: Ministry of Environment, Climate Change and Natural Resources, undated

To support the DoF, a Fisheries Advisory Committee was established made up of several key stakeholders including the Ministry of Environment, Climate Change, Water, Wildlife, Forestry and Fisheries; Ministry of Trade, Industry, Regional Integration and Employment (MOTIE); Ministry of Lands and Regional Government (MoLRG); Ministry of Health and Social Welfare (MOHSW); Gambia Navy; Gambia Maritime Administration (GMA); National Environment Agency (NEA); and one representative each from the industrial, artisanal and aquaculture sectors (Ministry of Environment, Climate Change and Natural Resources. Undated). Community Fisheries Centres were also mandated to provide oversight of the sector and decentralised co-management. In addition, The Gambia has a bilateral agreement with Senegal, which has been in place since 1982. This agreement allows fishers to fish in either country provided they abide by the laws of the country where they are fishing (Tobey *et al.* 2009).

Monitoring, Control and Surveillance (MCS) is the responsibility of the DPWM as the Tanbi Wetlands is designated as a protected area in The Gambia. However, other stakeholders assist in MCS activities and the women of TRY often monitor and enforce rules themselves. Stakeholder Consultation (2020) indicated that monitoring is infrequent due to a lack of funds.

This fishery under assessment is managed through the Cockle and Oyster Fishery co-management plan of The Gambia. This plan has been specifically developed for the Tanbi Wetlands National Park and covers all the marine and intertidal waters. The area is also designated as a Special Management Area through the Fisheries Act 2007, under Article 14 which allows the Minister of Fisheries, Water Resources and National Assembly Matters to declare Special Management Areas for purposes of community-based management¹⁰.

The Tanbi Wetlands National Park is under the responsibility of the Department of Parks and Wildlife Management; the Department of Forestry has responsibility over the mangroves; the Department of Fisheries has responsibility over the fisheries resources including oysters and cockles; and the National Environment Agency is the umbrella agency for all environmental management matters which includes the management of national parks and all other areas of the country. Through approval of the co-management plan, the TRY Association has exclusive rights to harvest oysters in the wetlands and are responsible for the management in collaboration with other stakeholders including governmental and non-governmental organisations. The plan was developed through a participatory process including community

¹⁰ <http://extwprlegs1.fao.org/docs/pdf/gam77403.pdf>

meetings, participatory rural appraisals, workshops, study tours and regional exchanges, collaborative research and participation from local government agencies and other government institutions.

The Co-Management plan details the relevant institutions responsible for management and provides their roles and responsibilities in detail. This includes the creation of several committees including a Management Committee, a Community Based Management Committee, and Tanbi Advisory Committee. The Department of Fisheries role is to conduct annual audits of the plan and determine, along with the Department of Parks and Wildlife Management whether management objectives are being met. They must also assist TRY in enforcing management rules and the implementation of the management measures themselves. The Department of Parks and Wildlife Management, Department of Forestry and National Environment Agency must also assist the TRY Association in enforcing and implementing management rules, assist in undertaking annual audits, monitor habitat quality and conduct research in the area to aide management and also on the impacts of climate change.

Although roles and responsibilities are provided in the Co-Management Plan, the extent to which activities are carried out in practice are limited. There is thought to be very little monitoring or research occurring in this fishery and the women harvesters largely monitoring and enforce rules themselves. The management plan is a living document that aims to use on-going research and regular review to adjust the plan and respond to new information and changing conditions (CRC, 2014). Although there is evidence that this has occurred, a lack of funding in recent years has meant that annual reviews have not happened and research in the area is limited (Stakeholder Consultation, 2020).

The Co-Management Plan sets out several objectives which are based on biological, ecological, social and economic issues. The management issues were identified through a collaborative process with representatives from each community, local leaders, legislative representatives, municipalities, and key Government agencies including Department of Fisheries, Department of Parks and Wildlife Management, Department of Forestry, and National Environment Agency. Once management measures were defined, training workshops were conducted to discuss co-management concepts. The measures adopted underwent a process involving Participatory Rural Appraisals at each community, a validation workshop and a consolidation workshop to which village heads (*Alkalos*), Municipalities, elected Councillors and concerned Government agencies/institutions attended.

Management measures include size restrictions, closed seasons, gear restrictions and promotion of a shifting harvesting system. In addition, there are also Community Exclusive Use zones which are designated for individual oyster communities, whereby access is restricted and additional management measures can be implemented as necessary. Areas outside of Community Exclusive Use Zones are open to harvesting by all members of the TRY Association. The Association may restrict access to non-members or allow access under certain conditions in these zones. The rules are thought to be largely complied with and the TRY Association has established penalties and fines for violation of the rules. This largely involves monetary fines which vary according to offence as well as seizure and sale of canoe if fines are not paid. The harvesters are thought to understand the importance in maintaining the sustainability of the fishery and therefore adhere to the rules but there are incidences of encroachment, catching of juveniles and cutting down of mangroves. There is no quantitative evidence to support how frequently this occurs.

Stakeholder consultation (2020) indicated that management measures are monitored to determine if they are working. The harvests are monitored by looking at individual hauls to infer whether the measures are working based on the size and quantity of the harvests. The mangroves are also policed to ensure that intruders are not damaging the mangroves. If this occurs, it is reported to the Parks and Wildlife Department, although this thought to be infrequent. Other stakeholders indicated that monitoring is very infrequent.

Decision making in the TRY Association is entirely participatory. Each community has a committee that attends meeting along with the head of the community, who then report back. If necessary, all community members can then attend a meeting to debate the issue. Any disputes are reported to the TRY Association however, conflict is rare (Stakeholder Consultation, 2020). If there are any disputes that cannot be handled by the Association, the issue is brought to the attention of the other stakeholders.

7.6.2 Principle 3 Performance Indicator scores and rationales

PI 3.1.1 – Legal and/or customary framework

PI 3.1.1		The management system exists within an appropriate legal and/or customary framework which ensures that it:		
		<ul style="list-style-type: none"> - Is capable of delivering sustainability in the UoA(s); - Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and - Incorporates an appropriate dispute resolution framework 		
Scoring Issue		SG 60	SG 80	SG 100
a	Compatibility of laws or standards with effective management			
	Guide post	There is an effective national legal system and a framework for cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and organised and effective cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and binding procedures governing cooperation with other parties which delivers management outcomes consistent with MSC Principles 1 and 2.
	Met?	Yes	No	No
Rationale				

At the international level, The Gambia is party to many conventions as noted above, while at the regional level the Sub-Regional Fisheries Commission (SRFC) aims to harmonise the policies of its Members on the preservation, conservation and exploitation of fisheries resources and strengthen cooperation¹¹.

At the national level, policy implementation and management of fisheries in The Gambia is the responsibility of the Department of Fisheries (DoF), which lies within the Ministry of Fisheries, Water Resources and National Assembly Matters (Tobey *et al.* 2009). The policy, legal and management framework is provided for by the Fisheries and Aquaculture Policy (2018 prepared with FAO support), 2007 Fisheries Act, 2008 Fisheries Regulations, Fisheries Strategy (drafted and also prepared with FAO support), and two Fisheries Management Plans. The aim of the Act is “to provide for the conservation, management, sustainable utilisation and development of fisheries and aquaculture in the fisheries waters and in the territory of The Gambia”. The act describes the administrative responsibilities for the sector, basic structures, its scope, rights and responsibilities of its staff and designated committees, licensing arrangements for fishing and aquaculture and prohibitions amongst other things (Fisheries and Aquaculture Sector Strategy). The main management measures include fishing zones for different sizes of vessels, fishing gear restrictions, minimum landing sizes of fish, and two artisanal sector management plans for sole, and cockles/oysters. However, there are no limits on the number of vessels or fishing licenses/authorisations in either the artisanal or industrial sectors (MacFayden *et al.*, 2018).

To support the DoF, a Fisheries Advisory Committee was established made up of several key stakeholders including the Ministry of Environment, Climate Change, Water, Wildlife, Forestry and Fisheries; Ministry of Trade, Industry, Regional Integration and Employment (MOTIE); Ministry of Lands and Regional Government (MoLRG); Ministry of Health and Social Welfare (MOHSW); Gambia Navy; Gambia Maritime Administration (GMA); National Environment Agency (NEA); and one representative each from the industrial, artisanal and aquaculture sectors (Ministry of Environment, Climate Change and Natural Resources, undated). Community Fisheries Centres were also mandated to provide oversight of the sector and decentralised co-management. In addition, The Gambia has a bilateral agreement with Senegal, which has been in place since 1982. This agreement allows fishers to fish in either country provided they abide by the laws of the country where they are fishing (Tobey *et al.* 2009).

There is a good basis for governance in The Gambia that should be capable of delivering sustainable fisheries however, there are potentially issues with effectiveness due to financial constraints. This is noted by Tobey *et al.* (2009) and MacFayden *et al.* (2018). For examples inadequate budgets in the DoF mean that it is difficult to implement the provisions within the fisheries regulation. Therefore, this is likely to meet **SG60** but not SG80.

¹¹ <http://spcsrp.org/en/presentation#Mandate>

Resolution of disputes				
b	Guide post	The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the UoA.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective .
	Met?	Yes	No	No
Rationale				

There appears to be some mechanisms in place in regards to disputes as reported by stakeholders in this assessment. For example, the Environmental and Coastal Working Group which was established through the NEA consists of around 20 members from different institutions and deals with issues relating to the marine and coastal environment. Disputes are also reported to the TRY Association (Stakeholder Consultation, 2020). Beyond this not much information was found during this assessment. As such, this is likely to meet **SG60** but further information is needed.

Respect for rights				
c	Guide post	The management system has a mechanism to generally respect the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to observe the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
	Met?	Yes	Yes	No
Rationale				

Gambia has a history of prioritising artisanal fisheries and, in management terms, has created examples of small-scale fishery co-management. In the 1980s Gambia created an initiative of Community Fishing Centres (CFCs), which got external funding to build some small-scale facilities. The Government eventually devolved management responsibility of the CFCs to communities and the fishing sector to create a structure for co-management (Tobey *et al.*, 2009). These CFCs are now managed by the villagers themselves, with the DoF providing support and guidance if required.

In addition to CFCs, under the Fisheries Act 2007, the Secretary of State may designate a Special Management Area, such as the Tanbi Wetlands, for the purposes of community-based management and application of conservation and management measures and artisanal or subsistence fishing operations.

Overall, this is likely to meet **SG80** as more evidence would be required to score higher.

References

MacFayden. G., Caillart. B. & Defaux. V. 2018. Ex ante evaluation study of a Sustainable Fisheries Partnership Agreement between the European Union and the Republic of The Gambia. Luxembourg: Publications Office of the European Union, 2018. doi: 10.2771/905549

Ministry of Environment, Climate Change and Natural Resources. Undated. Fisheries and Aquaculture Sector Strategy 2017-2021.

Tobey. J., Castro. K., Lee. V., Drammeh. O., Ibrahima. M., Crawford. B. & Vaidyanathan. T. 2009. An Overview of Marine Fisheries in the Gambia and preliminary Governance Baseline, *Coastal Resources Center*, University of Rhode Island. pp.26.

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	60-79
Information gap indicator	Information sufficient to score PI

PI 3.1.2 – Consultation, roles and responsibilities

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties		
Scoring Issue		SG 60	SG 80	SG 100
a	Roles and responsibilities			
	Guide post	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are generally understood .	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction.
	Met?	Yes	Yes	No
Rationale				

In the execution of its functions, the Department of State is supported by two technical Departments: Fisheries Department and Water Resources Department. These institutions were established by Government to regulate the use of Fisheries and Water resources and assure their effective and efficient management on a sustainable basis. The Department of State has responsibility to make policy pronouncements and the technical Departments have responsibility to implement policies.

The Fisheries Department has the responsibility of planning, managing and developing strategies for the advancement of the sector. It is also responsible for research, providing scientific advice, assistance and service to fisheries operators and all stakeholders. The Department has five main structures (i.e. Administration and Directorate, Research and Development, Inspectorate and Quality Control, Monitoring, Control and Surveillance (MCS) and Extension).

Under the National Environment Agency is the Natural Resources Working Group, which deals with the joint administration of fisheries and other natural resources¹². In addition, The National Association of Artisanal Fisheries Operators (NAAFO) is a national organization created and recognized by Government of The Gambia to coordinate the affiliation of Artisanal Fisheries association's country wide. NAAFO was formed in 2004 to better represent and defend the interests of all groups of the artisanal fishery (Tobey *et al.*, 2009). In 1997, The Gambian Artisanal Fisheries Development Association, was established, which aims to promote the development of artisanal fishing, strengthen cooperation and resolve conflicts.

The Department of Parks and Wildlife is responsible for the management and protection of MPAs in The Gambia. It serves as the focal institute for several biodiversity and conservation related international agreements.

The Coastal and Marine Environment Working Group is made up of 20 members from various institutions. The aim of the group is to formulate, review and revise policies relating to all coastal, marine and fluvial activities. This group provides opportunity for all those affected to be involved in decision making. This group meets on a quarterly basis but can also arrange ad hoc meetings for urgent issues (Stakeholder Consultation, 2020).

As noted in 3.1.1, there are also several fisheries co-management and Community Fisheries Centres which help to organise the fishing industry into user group associations to address common concerns and interests.

Roles and responsibilities appear to be clearly defined and this is therefore likely to meet **SG80**. It is not clear if this extends to all areas and therefore is unlikely to meet SG100.

b	Consultation processes			
	Guide post	The management system includes consultation processes that obtain relevant information from the main affected parties, including local knowledge, to	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management

¹² <https://www.mofwr.gm/partnerships-agreements>

		inform the management system.	system demonstrates consideration of the information obtained.	system demonstrates consideration of the information and explains how it is used or not used.
	Met?	Yes	No	No

Rationale

Stakeholder consultation indicated that management is based on consultation with communities, resources users, government agencies and local authorities. This is specifically demonstrated in the community-based fisheries such as the TRY Oyster Association. However, within other fisheries, such as the bonga shad artisanal fishery there were some suggestion that fishers were not involved in the decision-making process, for example the night time closures. This is therefore likely to meet **SG60** but more information is required to support this. This should include further consultation with resources users such as fishers, which was not possible due to the current COVID-19 pandemic.

	Participation			
C	Guide post		The consultation process provides opportunity for all interested and affected parties to be involved.	The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement.
	Met?		Yes	No

Rationale

The DoF has partnership with several other organisations in Gambia, including the National Environment Agency (NEA), National Association of Artisanal Fisheries Operators (NAAFO), Gambia Artisanal Fisheries Development Agency (GAMFIDA), Food Safety and Quality Authority (FSQA), Gambian Navy and the Gambian Maritime Agency. It also has connection with other community-based groups such as National Sole fishery Co-management Committee (NASCOM) and TRY Association which work in collaboration with the DoF.

The Fisheries Act allows for devolution of fisheries management responsibilities, which has been exercised through the creation of community fisheries centres and fishery advisory committees. It has also empowered local communities to form fisheries professional organisations, namely NAAFO, TRY Association, Association of Gambian Fishing Companies (TAGFC) and GAMFIDA. These associations help to provide non-governmental stakeholders with representation in the fisheries sector governance process (Ragusa, 2014)

Coastal and Marine Environment Working Group is made up of 20 members from various institutions. The aim of the group is to formulate, review and revise policies relating to all coastal, marine and fluvial activities. This group provides opportunity for all those affected to be involved in decision making. This group meets on a quarterly basis but can also arrange ad hoc meetings for urgent issues.

According to government departments all decisions are made through a participatory process allowing consultation and participation from all resource users and stakeholders. This is therefore likely to meet **SG80** but more information should be sought from the fishers themselves as well as other stakeholders such as factory owners, to ensure all parties are consulted and to score SG100.

References

Department of Fisheries. 2018. Fisheries and Aquaculture Policy of The Gambia. Government of The Gambia Ministry of Fisheries, Water Resources and National Assembly Matter

Ragusa. G. 2014. Overview of the Fisheries Sector in the Gambia. *Fisheries and Aquaculture Journal*. 5:3, DOI: 10.4172/ 2150-3508.1000107

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range

60-79

PI 3.1.3 – Long term objectives

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Fisheries Standard, and incorporates the precautionary approach		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guide post	Long-term objectives to guide decision-making, consistent with the MSC Fisheries Standard and the precautionary approach, are implicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach are explicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach, are explicit within and required by management policy.
	Met?	Yes	Yes	No
Rationale				

The 2007 Fisheries Act makes explicit reference to the need for long-term conservation and sustainable utilisation of aquatic living resources and the application of the precautionary approach for conservation, management and development of fisheries and aquaculture. It also makes reference to an ecosystem-based approach by ensuring that the aquatic ecosystem is conserved as a whole, including species targeted, those not targeted and their associated or dependent species.

In addition to national management, there are various projects that attempt to use a regional and ecosystem approach to fishery management plans, such as the work that CECAF carries out and the Canary Current LME project and the EAF Nansen Project which gathers data and supports the implementation of an ecosystem approach to the management of fisheries in West Africa. The project 'Improved regional fisheries governance in western Africa (PESCAO)' is run by the European Commission between 2017 – 2022 in 13 West African countries including Gambia. The overall objective is to 'enhance the contribution of fisheries resources to sustainable development, food security and poverty alleviation in west Africa'. The specific objective is to improve regional fisheries governance in the region through better coordination of national fisheries policies.

This is therefore likely to meet **SG80**.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range

≥80

Information gap indicator

Information sufficient to score PI

PI 3.2.1 – Fishery-specific objectives

PI 3.2.1		The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guide post	Objectives , which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are implicit within the fishery-specific management system.	Short and long-term objectives , which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery-specific management system.	Well defined and measurable short and long-term objectives , which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery-specific management system.
	Met?	Yes	Partial	No
Rationale				

Objectives for the fishery are set within the Co-Management Plan and are consistent with the outcomes expressed by the MSC, namely sustainable harvesting and the maintenance of a healthy and functioning ecosystem. These management measures are understood by harvesters and are generally adhered to as they understand the importance of ensuring the sustainability of the fishery and also that they can gain greater income from larger oysters. However, there is some concern over the decreasing population and geographic range of the oysters, as noted by stakeholder consultation (2020). Longer and stricter management measures are unlikely to be accepted until appropriate livelihood alternatives can be offered which may pose risk to achieving the outcomes of P1 and P2.

This is therefore likely to partially meet **SG80** as the objectives are explicit but due to the nature of the fishery and those involved, economic and social objectives are also important to consider

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range

Partial 80

Information gap indicator

Information sufficient to score PI

PI 3.2.2 – Decision-making processes

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery		
Scoring Issue		SG 60	SG 80	SG 100
a	Decision-making processes			
	Guide post	There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	
	Met?	Yes	Yes	
Rationale				

Decision making in the oyster fishery is entirely participatory and involves all stakeholders. Consultation (2020) indicated that if necessary, a meeting is called with each committee from every community. The head of each community also attends and then reports back to the community. If necessary, all members can attend a second meeting at the TRY office to debate issues. There is evidence that this has occurred when the decision was made to extend the closure period to allow longer for oysters to recover in between harvesting, which is still in place. Within the Co-Management plan institutional arrangements are described for each stakeholder which include the need for approval for substantive changes in the plan or objectives of the plan and review of all rule changes.

This is likely to meet **SG80**.

Responsiveness of decision-making processes					
b	Guide post	Decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	
	Met?	Yes	No	No	
Rationale					

Decision making does appear to take into account serious issues, such as extending the closure season to allow oysters to recover and the restriction on harvesting techniques to protect the mangroves. Other issues taken into account include the provision of more efficient processing and cooking methods of the oysters to limit the use of mangroves for fuel. Although these issues have been taken into account, other issues such as the decreasing size in oyster and their geographical range do not appear to be influencing management measures. There is also limited monitoring, research and evaluation occurring in this fishery which might suggest not all important issues are identified.

This is therefore likely to meet **SG60**.

Use of precautionary approach	
c	Decision-making processes use the precautionary approach and are based on best available information.

Met?		No	
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Rationale

It is unclear if the precautionary approach is taken in this fishery and there is no reference made to in within the Co-Management Plan. While management has improved in the fishery and the oyster stock is thought to be sustainable, increasing closures and other restrictions are met with opposition due to the lack of alternatives for harvesters if the oyster fishery were to close for longer periods. Evidence suggests that the oyster population and geographic range is decreasing which could warrant further management. Limited quantitative information is collected for this fishery to help inform the decision-making process and evidence is largely inferred from stakeholder consultation. This is therefore unlikely to meet **SG80**.

Accountability and transparency of management system and decision-making process

d	Guide post	Some information on the fishery's performance and management action is generally available on request to stakeholders.	Information on the fishery's performance and management action is available on request , and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Formal reporting to all interested stakeholders provides comprehensive information on the fishery's performance and management actions and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?	Yes	No	No

Rationale

As stated above, the decision-making process is entirely participatory. This means that the harvesters themselves have a key role in developing and implementing management measures, in addition to other stakeholders such as the DoF and DPWM. However, as formal reporting does not occur information on fishery performance and management action is not available but largely because it does not exist rather than due to a lack of transparency. The Co-Management plan is available online but other information or research on this fishery is not readily available. This is therefore likely to meet **SG60**.

Approach to disputes

e	Guide post	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.
	Met?	Yes	Yes	No

Rationale

No apparent ongoing legal disputes in this fishery therefore, it is likely to meet **SG80** but it is not clear whether the system proactively avoids disputes.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	60-79
Information gap indicator	Information sufficient to score PI

PI 3.2.3 – Compliance and enforcement

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with		
Scoring Issue		SG 60	SG 80	SG 100
a	MCS implementation			
	Guide post	Monitoring, control and surveillance mechanisms exist, and are implemented in the fishery and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance system has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A comprehensive monitoring, control and surveillance system has been implemented in the fishery and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	Met?	No	No	No
Rationale				

As the Tanbi Wetlands is a National Park it falls under the jurisdiction of the DPWM and so MCS is run by this department. Consultation (2020) indicated that although there is some monitoring undertaken in the wetlands, it is not often due to financial constraints. Further consultation (2020) supported this view and stated that MCS is minimal. A patrol vessel used to operate in the area to monitor the fishery however, this no longer occurs.

There is minimal evidence that fishery removals are monitored. Consultation (2020) indicated that people from neighbouring countries migrate into the wetland to join family members and want to harvest oysters which makes it difficult to monitor harvesting effort and the exact number of TRY members.

This is therefore unlikely to meet **SG60**.

		Sanctions		
b	Guide post	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence.
	Met?	Yes	No	No
Rationale				

Through the Co-Management plan, penalties and sanctions exist for violation of management measures. Stakeholder consultation demonstrated evidence of this occurring, and provided incidences of penalties being applied to illegal harvesting of mangroves and oysters, although this is minimal as compliance is high. Monitoring and patrol is limited in the Tanbi Wetlands due to insufficient funding and stakeholder consultation suggested that sometimes people are afraid to report violations. It is therefore not clear if all violations get reported but for those that do, sanctions appear to be applied. It is unknown if they provide an effective deterrence.

This is likely to meet **SG60**.

		Compliance		
c	Guide post	Fishers are generally thought to comply with the management system for the fishery under assessment, including, when required, providing information of	Some evidence exists to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to	There is a high degree of confidence that fishers comply with the management system under assessment, including, providing information of importance to
	Met?	Yes	No	No
Rationale				

		importance to the effective management of the fishery.	the effective management of the fishery.	the effective management of the fishery.
	Met?	Yes	Yes	No
Rationale				

In general, harvesters are thought to comply with the management systems in place. This is largely attributed to the women of TRY understanding the need to follow sustainable practices to maintain their livelihoods and ensure higher prices for oysters. There is the odd instance of illegal activity, such as harvesting in the closed season and damage to mangroves, but stakeholder consultation indicated that this was minimal. An area of concern though is by harvesters outside the TRY Association. There is confusion as to whether non-members are allowed to harvest in the Tanbi Wetlands. Therefore, it is unclear if this activity is illegal as such and would need to be understood.

This is likely to meet **SG80**.

	Systematic non-compliance			
d	Guide post		There is no evidence of systematic non-compliance.	
	Met?		Yes	
Rationale				

There was no evidence of systematic non-compliance in this fishery, although this is based on qualitative evidence from stakeholder consultation. This is likely to meet **SG80**.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	<60
Information gap indicator	More information sought

PI 3.2.4 – Monitoring and management performance evaluation

PI 3.2.4		There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives There is effective and timely review of the fishery-specific management system		
Scoring Issue		SG 60	SG 80	SG 100
a	Evaluation coverage			
	Guide post	There are mechanisms in place to evaluate some parts of the fishery-specific management system.	There are mechanisms in place to evaluate key parts of the fishery-specific management system.	There are mechanisms in place to evaluate all parts of the fishery-specific management system.
	Met?	Yes	No	No
Rationale				

The Co-Management plan is a living document and concerns can be raised and addressed at any point. As this fishery is based on community management there is thought to be a good exchange of information between stakeholders and there are opportunities for management to be discussed. Consultation (2020) also indicated that some data on the fishery are collected but this is done qualitatively by talking to fishers.

In addition, the plan is formally meant to be reviewed annually and while this has occurred, due to a lack of funding there have been no reviews for the last two years. Data collection, research and MCS appear to be driven by funding, which has not been sufficient recently to maintain regular monitoring of the fishery.

This suggests that there are some mechanisms in place to evaluate the performance of the fishery but this is largely qualitative. This is therefore likely to score **SG60**.

Internal and/or external review				
b	Guide post	The fishery-specific management system is subject to occasional internal review.	The fishery-specific management system is subject to regular internal and occasional external review.	The fishery-specific management system is subject to regular internal and external review.
	Met?	Yes	No	No
Rationale				

The Co-Management plan is subject to internal review. Although this is supposed to occur annually, there have been no reviews for the last two years due to a lack of funding.

This is therefore likely to meet **SG60**.

References

Stakeholder Consultation. 2020. Remote consultation undertaken by MRAG consultants with a variety of stakeholders in West Africa between July and November 2020.

Draft scoring range	60-79
Information gap indicator	Information sufficient to score PI

8 Appendices

8.1 Assessment information

8.1.1 Small-scale fisheries

Table 8 – Small-scale fisheries

Unit of Assessment (UoA)	Percentage of vessels with length <15m	Percentage of fishing activity completed within 12 nautical miles of shore
Mangrove Oyster hand collection	Unknown but vessels are rarely used in this fishery. Most harvesting is undertaken on foot.	Fishing occurs within a Wetland

8.2 Evaluation processes and techniques

8.2.1 Site visits

The stakeholders were contacted through both emails phones calls conducted by Hannah Richardson and Chloe North between August and September 2020, and included the following:

- TRY Oyster Woman's Association (TRY)
- Department of Parks and Wildlife
- National Environment Agency
- RAMPAO
- Department of Fisheries)
- NASCOM (National Sole fishery Co-management Committee
- Greenpeace Africa

8.2.2 Recommendations for stakeholder participation in full assessment

All stakeholders contacted in this pre-assessment should participate in a full assessment. In addition, it would be beneficial to get further information from resource users including the members of TRY.

8.1 Risk-Based Framework outputs

8.1.1 Consequence Analysis (CA)

Table 9 – CA scoring template			
	Scoring element	Consequence subcomponents	Consequence score
Principle 1: Stock status outcome	<i>Crassostrea tulipa</i>	Population size	80
		Reproductive capacity	
		Age/size/sex structure	
		Geographic range	
Rationale for most vulnerable subcomponent	Stakeholder consultation indicated the population size was the most important subcomponent. This does then also impact geographic range as the oysters closest to shore are targeted first. As a result, harvesters are now having to travel further to find oysters.		
Rationale for consequence score	Possible detectable change was selected as the most appropriate by the stakeholder. Although there are impacts, the oysters are thought to be able to recover during the closed season meaning that in the long term the fishery is sustainable		

8.1.2 Productivity Susceptibility Analysis (PSA)

Table 10 – PSA productivity attributes and scores		
Performance Indicator	PI 1.1.1	
Productivity		
Scoring element (species)	<i>Crassostrea tulipa</i>	
Attribute	Rationale	Score
Average age at maturity	Four months	1
Average maximum age	Two years	1
Fecundity	>20,000 eggs	1
Average maximum size Not scored for invertebrates	N/A	1 / 2 / 3
Average size at maturity Not scored for invertebrates	N/A	1 / 2 / 3
Reproductive strategy	Broadcast spawner	1
Trophic level	<2.75	1
Density dependence Invertebrates only	Compensatory dynamics	1
Susceptibility		
Attribute	Rationale	Score
Areal Overlap	Oysters are found across the entire Tanbi Wetlands and are harvested in all areas.	3
Encounterability	As the mangrove oyster is the target species this is scored as high susceptibility by default. In addition, this is a hand collection fishery and therefore highly targeted.	3
Selectivity of gear type	It was indicated that juveniles are caught in this fishery, especially towards the end of the season when all the bigger individuals have already been harvested. Stakeholder consultation indicated that it would be less than 50% per harvest but under a precautionary approach, medium susceptibility was chosen.	2
Post capture mortality	Oyster is a retained species	3
Catch (weight) Only where the scoring element is scored cumulatively	N/A	1 / 2 / 3
PSA Score		2.53
MSC Score		≥80

9 References

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10 Template information and copyright

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Template version control		
Version	Date of publication	Description of amendment
1.0	15 August 2011	Date of first release
1.1	31 October 2013	Updated in line with changes to CR v1.3
2.0	08 October 2014	Confirmed background sections (Section 3) as optional (use of 'may' statements) Modified Table 6.3 to create a simplified scoring sheet to be completed in place of full evaluation tables Made amendments to PIs based on Fishery Standard Review changes (e.g. removed original PIs 1.1.2, 3.1.4 and 3.2.4).
2.1	9 October 2017	Inclusion of optional full evaluation tables
3.0	17 December 2018	Release alongside Fisheries Certification Process v2.1
3.1	29 March 2019	Minor document changes for usability

A controlled document list of MSC program documents is available on the MSC website (msc.org)

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MSC Fisheries Improvement Action Plan



Versions published or superseded documents

Version no.	Date	Document name	Description of amendment
1.0	07/10/2009	msc-fishery-improvement-action-plan-template.xlsx	– N/A – new document
1.0	2013	msc-fishery-improvement-action-plan-overview-template.docx	– N/A – new document
1.0	22/11/2013	Fisheries Improvement Action Plan Template.docx	– N/A – new document
2.0	30/09/2019	ITM Fisheries Improvement Action Plan Template.docx	– Combination of v1.0 overview and reporting templates in single document, specifically for ITM
2.1	23/07/2020	MSC Fisheries Improvement Action Plan Template.docx	<ul style="list-style-type: none"> – Template updated to be applicable to all FIPs not just ITM – Contact email changed from standards@msc.org to globalaccessibility@msc.org – BMT hyperlink updated – Introduction and Overview updated – Version tracker added – Added additional document table

MSC Scheme and supporting documents applicable to, or referenced, in this template

MSC Benchmarking and Tracking Tool (BMT) v3.0 - (31 July 2019)
 In-Transition to MSC (ITM) Program Requirements and Guidance – Pilot v1.0 (30 September 2019)
 MSC Pre-Assessment Reporting Template v2.1 (9 October 2017)
 MSC Pre-Assessment Reporting template v3.1 (29 March 2019)

MSC Fisheries Improvement Action Plan



MSC Scheme and supporting documents applicable to, or referenced, in this template

MSC Pre-Assessment Reporting template v3.2 (25 March 2020)

MSC Guidance for using the Benchmarking and Tracking Tool (BMT) v2.0 (2014)

MSC Fisheries Improvement Action Plan



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MSC Fisheries Improvement Action Plan



Introduction and Overview

Many fisheries are making the improvements necessary to move towards sustainability with the goal of achieving MSC Certification. These efforts, often termed Fishery Improvement Projects (FIPs), use different approaches to identify actions that need to be taken to improve the fishery. One of the most common ways of documenting and reporting the progress that is being made over time against these actions is by developing 'Work Plans' or 'Improvement Action Plans'. Most of FIPs involve multiple stakeholders and therefore a consistent method of documenting actions and progress is vital to ensure that the Action Plan delivers a level of performance consistent with meeting the MSC Fisheries Standard. The Action Plan should capture and report all necessary information in a practical way that is easily understood by all those involved or interested in the FIP.

The purpose of this template is to ensure quality and consistency in developing improvement action plans for fisheries working towards meeting the MSC Fisheries Standard and achieving MSC Certification. It can also be used to provide the information needed to use the [MSC's Benchmarking and Tracking Tool \(BMT\)](#).

This template is designed to be used by any fisheries engaged in a credible fisheries improvement project, but in particularly fisheries in the [In-Transition to MSC \(ITM\) Program](#) and in partial fulfilment of the [ITM Program Requirements and Guidance - Pilot](#). It should be used together with the ITM Eligibility and Progress Reporting Templates and the BMT. The Action Plan should be developed after the fishery has undergone an MSC Pre-Assessment using the current version of the MSC Pre-Assessment Template. The Pre-Assessment should be ideally conducted by an accredited Conformity Assessment Body (CAB) for it to meet the ITM eligibility requirements.

The Action Plan report should document all actions at least at a Performance Indicator level, needed to improve the fishery to be at a level that is likely consistent with a conditional pass against the MSC Standard (≥ 80 draft scoring range) using the tables below.

MSC Fisheries Improvement Action Plan



Table 1a: Action Plan Overview

Fishery name:	The Gambia catfish demersal gillnet fishery	Fishery location:	The Gambia and Senegal EEZs
Fishing method/gear:	Demersal gillnet	Fishery in ITM program? (Applicant/Yes/No):	No
Start date (expected):	End date (anticipated month/year of entering Full Assessment):		
2022	2026		
Project leaders (organisation/individual responsible for Action Plan):	Improvements recommended by (meeting/group that supported the development):		
TBD	TBD		
FIP Coordinator/ ITM Project Manager (name, affiliation and position if applicable):	Action Plan developed by (consultant or person):		
TBD	Hannah Richardson and Robert Wakeford MRAG		
Overview of the Action Plan (Add/delete as appropriate):			
<p>Principle 1</p> <p>Improved data collection is required for this fishery to help support an updated stock assessment. This will allow for improved assessment of stock status and provide a firm basis for management of the stock, both in The Gambia and in the region. As it will take time to collect sufficient data to support a regional stock assessment, in the interim, data needs to be collected to conduct an RBF considering the limited data currently available.</p> <p>Principle 2</p> <p>Need to collect data to determine and, where possible quantify, the impacts of the fishery on ecosystem components including secondary species, ETP species and habitat. Once potential impacts of the fishery are better understood, management measures can be implemented if required.</p>			

MSC Fisheries Improvement Action Plan



Principle 3

The current sole complex co-management plan should be reviewed to determine suitability for catfish and ensure appropriate management measures are implemented for the catfish fishery that are commensurate with the scale and intensity of the fishery. Enhanced MCS is required to ensure that management measures are complied with and are effective. Regional collaboration and management are also required due to the shared nature of the stock with Senegal.

Chain of Custody/Traceability

There could be some risk to traceability due to the transboundary nature of the stock and the access agreement with Senegal. As vessels are allowed to fish catfish within Senegalese waters there is an increased risk of substitution or mixing. It is unclear if there are any mitigation measures in place to reduce this risk but this would be necessary to ensure a transparent supply chain.

Note: Resources (Time) refers to the anticipated length of the specific Task.

References (document/s on which the Action Plan was based):

Pre-Assessment Report
Stakeholder Consultation

Table 1b: Action Plan Overview Performance Indicator detail – Optional

Performance Indicator (PI)	Action ID and Name	Timescale
1.1.1 Stock status	A3- Review and update the Gambia Sole Complex Co-Management Plan.	4 years
	A5- Improve stock assessment methodology.	4 years
1.2.1 Harvest Strategy	A1- Improve data collection for catfish fishery, including catch and effort.	2 years
	A3- Review and update the Gambia Sole Complex Co-Management Plan.	4 years
	A4- Improved Monitoring, Control and Surveillance	5 years
	A5- Improve stock assessment methodology.	4 years
1.2.2 Harvest control rules and tools	A1- Improve data collection for catfish fishery, including catch and effort.	2 years
	A3- Review and update the Gambia Sole Complex Co-Management Plan.	4 years
	A4- Improved Monitoring, Control and Surveillance.	5 years

MSC Fisheries Improvement Action Plan



Performance Indicator (PI)	Action ID and Name	Timescale
	A5- Improve stock assessment methodology.	4 years
1.2.3 Information and monitoring	A1- Improve data collection for catfish fishery, including catch and effort. A3- Review and update the Gambia Sole Complex Co-Management Plan. A4- Improved Monitoring, Control and Surveillance A5- Improve stock assessment methodology.	2 years 4 years 5 years 4 years
2.2.1 Secondary species outcome	A2- Ensure that the fishery is managed consistent with ecosystem requirements	4 years
2.2.2 Secondary species management	A2- Ensure that the fishery is managed consistent with ecosystem requirements A3- Review and update the Gambia Sole Complex Co-Management Plan. A4- Improved Monitoring, Control and Surveillance.	4 years 4 years 5 years
2.2.3. Secondary species Information & monitoring	A1- Improve data collection for catfish fishery, including catch and effort. A2- Ensure that the fishery is managed consistent with ecosystem requirements A4- Improved Monitoring, Control and Surveillance.	2 years 4 years 5 years
2.3.1 ETP species Outcome	A2- Ensure that the fishery is managed consistent with ecosystem requirements	4 years
2.3.2 ETP species management	A2- Ensure that the fishery is managed consistent with ecosystem requirements A3- Review and update the Gambia Sole Complex Co-Management Plan A4- Improved Monitoring, Control and Surveillance.	4 years 4 years 5 years
2.3.3 ETP Species Information & monitoring	A2- Ensure that the fishery is managed consistent with ecosystem requirements A4- Improved Monitoring, Control and Surveillance.	4 years 5 years
2.4.1 Habitats Outcome	A2- Ensure that the fishery is managed consistent with ecosystem requirements	4 years
2.4.2 Habitat management strategy	A2- Ensure that the fishery is managed consistent with ecosystem requirements	4 years

MSC Fisheries Improvement Action Plan



Performance Indicator (PI)	Action ID and Name	Timescale
	A3- Review and update the Gambia Sole Complex Co-Management Plan	4 years
	A4- Improved Monitoring, Control and Surveillance	5 years
2.4.3 Habitat information	A2- Ensure that the fishery is managed consistent with ecosystem requirements	4 years
	A4- Improved Monitoring, Control and Surveillance	5 years
2.5.1 Ecosystem outcome	A2- Ensure that the fishery is managed consistent with ecosystem requirements	4 years
2.5.2 Ecosystem management strategy	A2- Ensure that the fishery is managed consistent with ecosystem requirements.	4 years
	A3- Review and update the Gambia Sole Complex Co-Management Plan	4 years
	A4- Improved Monitoring, Control and Surveillance	5 years
2.5.3 Ecosystem information	A2- Ensure that the fishery is managed consistent with ecosystem requirements.	4 years
	A4- Improved Monitoring, Control and Surveillance	5 years
3.1.1 Legal and/or customary framework	A3- Review and update the Gambia Sole Complex Co-Management Plan	4 years
	A4- Improved Monitoring, Control and Surveillance	5 years
3.1.2 Consultation, roles & responsibilities	A3- Review and update the Gambia Sole Complex Co-Management Plan.	4 years
3.2.1 Fishery-specific objectives	A3- Review and update the Gambia Sole Complex Co-Management Plan.	4 years
3.2.2 Decision-making processes	A3- Review and update the Gambia Sole Complex Co-Management Plan.	4 years
3.2.3 Compliance & enforcement	A3- Review and update the Gambia Sole Complex Co-Management Plan.	4 years
	A4- Improved Monitoring, Control and Surveillance	5 years
3.2.4 Monitoring and management performance evaluation	A3- Review and update the Gambia Sole Complex Co-Management Plan.	4 years

Actions at Performance Indicator and/or Scoring Issue level

Table 2a. Performance Indicator Action Plan table for Action 1 [A1]

Action ID no	A1					
Action name	Improve data collection for catfish fishery, including catch and effort.					
Action summary	In the long term, the data available for stock assessment from Gambia needs to meet CECAF sampling requirements and should be sufficient for robust stock assessments. In the interim, data needs to be collected to conduct an RBF considering the limited data currently available.					
Performance Indicator(s) and/or Scoring Issue(s)	PI 1.2.1 PI 1.2.2 PI 1.2.3 PI 2.2.3					
Date of completion	2023					
Task/s No.	Responsible – Action lead	Responsible – Action partners	Resources – Cost	Resources – Time	Date of completion	Evidence of completion
A1-1 Coordinate with other demersal fisheries in the region, specifically the Senegalese sole and catfish fishery to ensure that data collection is consistent across the region and appropriate for the stock assessment methodology. As the targeted stock ranges from Gambia to Senegal and assessed at a regional scale (by CECAF), data collection methodology must be harmonised to ensure consistency in the type of data collected across countries (e.g., vessel characteristics,	Department of Fisheries	Regional partners in neighbouring countries Fishery Committee for the Eastern Central Atlantic (CECAF) FIP Participants National Sole Co-Management Committee (NASCOM)/ Landing Site Co-Management	Medium cost (>EUR 25,000 and <EUR 250,000)	More than 12 months	June 2023	Evidence of collaboration and knowledge sharing such as meeting minutes and workshop agendas.

MSC Fisheries Improvement Action Plan



measure of fishing effort (trips/hours/days), are fish lengths measured as fork length or total length, do they use the same maturity scales etc).		Committee (LACOM) Sub Regional Fisheries Commission (SRFC)				
A1-2 Review current status of biological data collection such as length and maturity measurements in Gambia to ensure it is sufficient to conduct adequate stock assessments and determine selectivity of the gear. Further data on migration and spawning patterns will also help inform development of effective management measures (e.g., closed areas / seasons).	Department of Fisheries	NASCOM/ LACOM	Low cost (<EUR 25,000)	6-12 months	June 2023	Data collection protocol of biological data. Reports detailing data collected.
A1-3 Develop a Standing Operating Procedures for data collection appropriate for the scale and intensity of the fishery (to include boat frame survey, catch (incl. species ID), effort and biological data). This should consider the transboundary nature of the fishery and catches that are landed in Senegal.	Department of Fisheries	NASCOM/ LACOM Regional partners	Medium cost (>EUR 25,000 and <EUR 250,000)	6-12 months	December 2023	Standard Operating procedure developed for how removals and effort are monitored and recorded and accompanying data set.

MSC Fisheries Improvement Action Plan



<p>A1-4 Understand susceptibility of catfish in order to inform RBF. This should be conducted at a regional scale to include Senegal due to the shared nature of the stock. New information should be fed into the PSA to inform outcome.</p>	<p>NASCOM/LACOM</p>	<p>Department of fisheries Regional partners</p>	<p>Low cost (<EUR 25,000)</p>	<p>6-12 months</p>	<p>June 2023</p>	<p>RBF updated for catfish.</p>
<p>A1-5 Conduct a training needs assessment</p>	<p>Department of Fisheries</p>	<p>NASCOM/ LACOM</p>	<p>Low cost (<EUR 25,000)</p>	<p>Less than 6 months</p>	<p>January 2023</p>	<p>Training needs report.</p>
<p>A1-6 Where gaps exist, implement training to improve quality of data collection and analysis.</p>	<p>Department of Fisheries</p>	<p>NASCOM/ LACOM</p>	<p>Low (EUR 25,000) – Medium (>EUR 25,000 and <EUR 250,0000)</p>	<p>6-12 months</p>	<p>December 2023</p>	<p>List of stakeholders selected for training. Training documents. Evidence of training (e.g., attendance records, meeting minutes).</p>

MSC Fisheries Improvement Action Plan



Table 2b. Performance Indicator Action Plan table for Action 2 [A2]

Action ID no	A2					
Action name	Ensure that the fishery is managed consistent with ecosystem requirements					
Action summary	Ensure the fishery is not having a significant impact on the ecosystem, including important ecosystem components including secondary species, ETP species and habitats. Although this fishery is unlikely to cause significant ecosystem impacts, data are needed to identify and quantify these interactions.					
Performance Indicator(s) and/or Scoring Issue(s)	PI 2.2.1 PI 2.2.2 PI 2.2.3 PI 2.3.1 PI 2.3.2 PI 2.3.3 PI 2.4.1 PI 2.4.2 PI 2.4.3 PI 2.5.1 PI 2.5.2 PI 2.5.3					
Date of completion	2025					
Task/s No.	Responsible – Action lead	Responsible – Action partners	Resources – Cost	Resources – Time	Date of completion	Evidence of completion
A2-1 Determine fishing footprint (spatial and seasonal) as well as location of migrant fishers. This could be collected through a mapping exercise with fishers.	Department of Fisheries	NASCOM / LACOM	Low cost (<EUR 25,000)	6-12 months	January 2023	Map showing spatial footprint of the fishery.
A2-2 Create habitat map of the fishing area with A2-1 to determine any impacts with habitats from the fishery.	Department of Fisheries	NASCOM / LACOM University of Gambia	Low cost (<EUR 25,000)	6-12 months	June 2023	Map showing habitat maps of the fishery.

MSC Fisheries Improvement Action Plan



A2-3 If necessary, set additional management measures consistent with habitat objectives.	Department of Fisheries	NASCOM / LACOM	Medium cost (>EUR 25,000 and <EUR 250,000)	6-12 months	December 2023	Report outlining new management measures, if required.
A2-4 Determine the effects of fishing catfish on the ecosystem, such as impacts on predator species. This could be done, for example, through sampling or monitoring of key indicator species from fisheries independent surveys or CPUE series data taking into account seasonality.	University of Gambia	FIP Participants Artisanal fishers NASCOM / LACOM	Medium cost (>EUR 25,000 and <EUR 250,000)	More than 12 months	June 2024	Study report.
A2-5 Assess current management measures to determine if effective at controlling ecosystem impacts. If necessary, implement additional effective management measures to reduce ecosystem impacts.	Department of Fisheries	NASCOM / LACOM	Medium cost (>EUR 25,000 and <EUR 250,000)	6-12 months	June 2025	Report outlining new management measures, if required.
A2-6 Conduct training on species identification and create species ID guides, including sharks and other ETP species.	Department of Fisheries	NASCOM / LACOM	Low cost (<EUR 25,000)	Less than 6 months	June 2023	Species ID guides.
A2-7 Analyse catch data from artisanal demersal gillnet	NASCOM / LACOM	FIP Participants Artisanal fishers	Low cost (<EUR 25,000)	Less than 6 months	December 2023	Catch data report disaggregated by gear type.

MSC Fisheries Improvement Action Plan



fishery to determine level of interaction with non-target species (Pre-assessment used data from 2016).		Department of Fisheries				
A2-8 Disaggregate catch data by gear type to determine impact of the fishery on elasmobranchs. This may require a new method of reporting (e.g., introduction of logbooks for artisanal fleet).	Department of Fisheries	FIP Participants Artisanal fishers NASCOM / LACOM	Low cost (<EUR 25,000)	Less than 6 months	December 2023	Report on disaggregated catch data.
A2-9 Review data on secondary species to determine impact. An RBF workshop might be needed to determine productivity and susceptibility of secondary species.	NASCOM/LACOM	Department of Fisheries FIP Participants Artisanal fishers	Low cost (<EUR 25,000)	Less than 6 months	June 2024	Report on impact of fishery on secondary species.
A2-10 Evaluate and review impacts on non-target species and if necessary, implements additional management measures	NASCOM/LACOM	Department of Fisheries FIP Participants Artisanal fishers	Medium cost (>EUR 25,000 and <EUR 250,000)	6-12 months	January 2025	Report on impact of fishery on secondary species and mitigating measures, if required.
A2-11 Determine if shark finning is occurring within the fishery. This is most likely possible through a research study at landing sites to determine whether sharks are landed with or without fins.	Department of Fisheries	FIP Participants Artisanal fishers NASCOM / LACOM	Low cost (<EUR 25,000)	More than 12 months	December 2023	Study report.

MSC Fisheries Improvement Action Plan



A2-12 Evaluate occurrence of shark finning and if necessary, set additional management measures which should include routine monitoring.	Department of Fisheries	NASCOM/ LACOM	Medium cost (>EUR 25,000 and <EUR 250,000)	6-12 months	June 2024	Report on proposed management measures if required.
A2-13 Understand, and where possible, quantify the impact of the fishery on ETP species (dolphins, turtles and Blackchin guitarfish (<i>Rhinobatos cemiculus</i>)). This could be done, for example, through an RBF workshop with stakeholders or by requesting fishermen to record all interactions with ETP species.	NASCOM/LACOM	Department of Fisheries	Low cost (<EUR 25,000)	More than 12 months	June 2025	Study report on impact of the fishery on ETP species.
A2-14 Evaluate impact of interaction with ETP species and if necessary, set additional management measures and routine monitoring.	NASCOM/LACOM	FIP Participants Artisanal fishers Department of Fisheries	Medium cost (>EUR 25,000 and <EUR 250,000)	6-12 months	December 2025	Report on proposed management measures if required.
A2-15 Conduct capacity needs assessment to identify resources needed to analyse data on sharks and ETP species.	Department of Fisheries		Low cost (<EUR 25,000)	6-12 months	December 2022	Capacity needs report.
A2-16 If necessary, identify resources required to fill capacity gaps.	Department of Fisheries		Low (EUR 25,000) – Medium (>EUR 25,000 and <EUR 250,000)	6-12 months	June 2023	Identification of resources.

MSC Fisheries Improvement Action Plan



A2-17 Determine the impact of ghost gear from the fishery. This should determine if net loss occurs and if so, where, when, why and how often.	Department of Fisheries	NASCOM/LACOM	Medium cost (>EUR 25,000 and <EUR 250,000)	More than 12 months	June 2025	Study report of ghost gear impacts.
A2-18 Evaluate impact of ghost gear and if necessary, set additional management measures.	Department of Fisheries	NASCOM/LACOM	Medium cost (>EUR 25,000 and <EUR 250,000)	6-12 months	December 2025	Report on proposed management measures if required.

MSC Fisheries Improvement Action Plan



Table 2c. Performance Indicator Action Plan table for Action [A3]

Action ID no	A3					
Action name	Review and update the Gambia sole complex co-management plan.					
Action summary	Ensure an updated sole complex co-management plan is available and implemented that is inclusive and appropriate for catfish species. The sole complex co-management plan should set out clear objectives for the fishery and ecosystem, along with appropriate management measures and actions to ensure that these objectives are met.					
Performance Indicator(s) and/or Scoring Issue(s)	PI 1.1.1 PI 1.2.1 PI 1.2.2 PI 1.2.3 PI 2.2.2 PI 2.3.2 PI 2.4.2 PI 2.5.2 PI 3.1.1 PI 3.1.2 PI 3.2.1 PI 3.2.2 PI 3.2.3 PI 3.2.4					
Date of completion	2025					
Task/s No.	Responsible – Action lead	Responsible – Action partners	Resources – Cost	Resources - Time	Date of completion	Evidence of completion
A3-1 Review status of the current sole complex co-management plan and identify any gaps or additional management measures that may be required for catfish. This should include an effective harvest strategy to ensure the stock is fished sustainably.	NASCOM/LACOM	Department of Fisheries GAMFIDA	Low cost (<EUR 25,000)	More than 12 months	June 2025	Evidence of stakeholder consultation and participation in the review of the Management Plan. Revised Management Plan.

MSC Fisheries Improvement Action Plan



<p>Consultation is key in the preparation stage.</p> <p>The plan should clearly outline consultation and decision-making procedures and actively encourage participation. The plan should be based on the precautionary approach.</p>						
<p>A3-2 Ensure the sole complex co-management plan is harmonised with Senegal in regards to policies and regulations.</p>	Department of Fisheries	NASCOM/LACOM GAMFIDA	Low cost (<EUR 25,000)	More than 12 months	June 2025	Evidence of harmonisation included within the management plan.
<p>A3-3 Implement revised sole complex co-management plan. This should include a robust communication plan to allow for a participatory approach and ensure findings are disseminated both locally and regionally.</p>	NASCOM/LACOM Department of Fisheries		Medium cost (>EUR 25,000 and < EUR 250,000)	6-12 months	December 2025	Evidence of activities being implemented through periodic reporting.
<p>A3-4 Establish a national Working Group to evaluate progress against sole complex co-management plan objectives on a regular basis and adjust activities if necessary. This evaluation process should include a disputes mechanism</p>	NASCOM/LACOM	Regional partners Artisanal fishers Research NGOs Department of Fisheries	Medium cost (>EUR 25,000 and < EUR 250,000)	6-12 months	December 2025 (ongoing)	Evaluation reports.

MSC Fisheries Improvement Action Plan



at the national and regional level.						
A3-5 Support regional collaboration in implementation and review of the management plan through periodic workshops.	Department of Fisheries	NASCOM/LACOM	Low cost (<EUR 25,000)	6-12 months	December 2025 (ongoing)	Evidence of regular meetings e.g., meeting minutes, reports.

MSC Fisheries Improvement Action Plan



Table 2d. Performance Indicator Action Plan table for Action 4 [A4]

Action ID no	A4					
Action name	Improved Monitoring, Control and Surveillance					
Action summary	Ensure good compliance of the fishery with management measures both within the Gambia and regionally.					
Performance Indicator(s) and/or Scoring Issue(s)	PI 1.2.1 PI 1.2.2 PI 1.2.3 PI 2.2.2 PI 2.2.3 PI 2.3.2 PI 2.3.3 PI 2.4.2 PI 2.4.3 PI 2.5.2 PI 2.5.3 PI 3.1.1 PI 3.2.3					
Date of completion	2026					
Task/s No.	Responsible – Action lead	Responsible – Action partners	Resources – Cost	Resources - Time	Date of completion	Evidence of completion
A4-1 Review current MCS strategy and risk assessment to ensure enforcement of harvest strategy (including closed season and minimum mesh size) and control of fishing effort are aligned with sustainability of the fishery. This should consider a two-step process consisting of registering artisanal vessels and then licensing them. Registering vessels will help	Department of Fisheries	Navy NASCOM/LACOM	Medium cost (>EUR 25,000 and < EUR 250,000)	Over 12 months	June 2025	Evidence of review such as consultation meetings and drafting of updated MCS strategies.

MSC Fisheries Improvement Action Plan



to understand the number of boats after which licensing can be implemented to control the fishery. This will need to be conducted in harmonisation with Senegal.						
<p>A4-2 Evaluate effectiveness of the MCS strategy (including effectiveness of closed areas) and identify where gaps or weaknesses may exist.</p> <p>This should include collection of data on number of inspections, number of infringements and number of prosecutions to determine if management measures are effect and complied with as well as whether sanctions are an effective deterrent.</p>	Department of Fisheries	Navy NASCOM/LACOM	Medium cost (>EUR 25,000 and < EUR 250,000)	6-12 months	December 2025	MCS Strategy.
<p>A4-3 Where gaps exist, identify capacity and resources needed to improve MCS strategy and possible methods to do this (e.g., training in developing funding proposals). Where necessary, implement changes to MCS strategy</p>	Department of Fisheries	Navy NASCOM/LACOM	Medium cost (>EUR 25,000 and < EUR 250,000)	Over 12 months	June 2026	Needs Assessment Study Report.

MSC Fisheries Improvement Action Plan



A4-4 Engage with neighbouring countries (Senegal) on issues and enforcement of MCS due to shared nature of the stock and the Fisheries Access Agreement that is in place between the two countries.	Department of Fisheries	Navy NASCOM/LACOM	Low cost (<EUR 25,000)	6-12 months	December 2025 (ongoing)	Evidence of consultation such as workshop minutes or meeting reports.
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MSC Fisheries Improvement Action Plan



Table 2e. Performance Indicator Action Plan table for Action 5 [A5]

Action ID no	A5					
Action name	Improve stock assessment methodology.					
Action summary	CECAF should be able to conduct a regional-level assessment that can quantify uncertainty in the assessment.					
Performance Indicator(s) and/or Scoring Issue(s)	PI 1.1.1 PI 1.2.1 PI 1.2.2 PI 1.2.3					
Date of completion	2025					
Task/s No.	Responsible – Action lead	Responsible – Action partners	Resources – Cost	Resources - Time	Date of completion	Evidence of completion
A5-1 Ensure national attendance at CECAF meetings to support demersal Working Group to develop new assessment methodologies and methods of quantifying uncertainty. This should also include the use of appropriate target reference points.	Department of Fisheries	CECAF University of Gambia	Medium cost (>EUR 25,000 and < EUR 250,000)	Over 12 months	January 2025	Evidence of attendance.
A5-2 Attendance of national working group at CECAF preparatory meetings	Department of Fisheries	CECAF	Medium cost (>EUR 25,000 and < EUR 250,000)	Over 12 months	January 2025	Evidence of attendance.
A5-3 Review data on stock delineation	Department of Fisheries	NASCOM/ LACOM	Low cost (<EUR 25,000)	6-12 Months	January 2023	Report on stock delineation.
A5-4 If necessary, collect further data to determine stock boundaries to help support stock assessment.	Department of Fisheries	NASCOM/ LACOM University of Gambia	Medium cost (>EUR 25,000 and < EUR 250,000)	More than 12 months	December 2024	Report on stock delineation.

MSC Fisheries Improvement Action Plan



A5-5 Consider development and implementation of a regional harvest control strategy considering the transboundary nature of the fishery.	Department of Fisheries	NASCOM/ LACOM University of Gambia	Low cost (<EUR 25,000)	More than 12 months	December 2025	Regional HCR report.
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Action timescales and progress report

Table 3: Evaluation against Action Plan Timescale Year X (complete a table for each year after Year 1)

Action ID and Name	Date of completion expected	Progress / outcome this year	Revised date of completion (if required)

MSC Fisheries Improvement Action Plan



Table 4a. Action plan score change table for Principle 1 Performance Indicators

[This should correspond with the Benchmarking and Tracking Tool]

Performance Indicator	Draft Scoring Range [Pre-Assessment] Year 0	Action(s) IDs [If improvement is needed]	Expected PI draft scoring range change							
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
1.1.1 Stock Status	<60	A3, A5	<60	60-79	60-79	≥80	≥80			
1.2.1 Harvest Strategy	60-79	A1, A3, A4, A5	60-79	60-79	60-79	60-79	≥80			
1.2.2 Harvest control rules and tools	60-79	A1, A3, A4, A5	60-79	60-79	60-79	60-79	≥80			
1.2.3 Information and monitoring	60-79	A1, A3, A4, A5	60-79	60-79	60-79	60-79	≥80			

Table 4b. Action plan score change table for Principle 2 Performance Indicators

Performance Indicator	Draft Scoring Range Year 0	Action(s) IDs	Expected PI draft scoring range change							
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
2.2.1 Secondary species outcome	<60	A2	<60	60-79	60-79	≥80	≥80			
2.2.2 Secondary species management	<60	A2, A3, A4	<60	60-79	60-79	60-79	≥80			

MSC Fisheries Improvement Action Plan



2.2.3. Secondary species Information & monitoring	<60	A1, A2, A4	<60	60-79	60-79	60-79	≥80			
2.3.1 ETP species Outcome	<60	A2	<60	60-79	60-79	≥80	≥80			
2.3.2 ETP species management	<60	A2, A3, A4	<60	60-79	60-79	60-79	≥80			
2.3.3 ETP Species Information & monitoring	<60	A2, A4	<60	60-79	60-79	60-79	≥80			
2.4.1 Habitats Outcome	60-79	A2	60-79	≥80	≥80	≥80	≥80			
2.4.2 Habitat management strategy	<60	A2, A3, A4	<60	60-79	60-79	60-79	≥80			
2.4.3 Habitat information	<60	A2, A4	<60	60-79	60-79	60-79	≥80			
2.5.1 Ecosystem outcome	60-79	A2	60-79	60-79	60-79	60-79	60-79			
2.5.2 Ecosystem management strategy	60-79	A2, A3, A4	60-79	60-79	60-79	60-79	60-79			
2.5.3 Ecosystem information	60-79	A2, A4	60-79	60-79	60-79	60-79	60-79			

Table 4c. Action plan score change table for Principle 3 Performance Indicators

Performance Indicator	Draft Scoring Range Year 0	Action(s) IDs	Expected PI draft scoring range change							
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
3.1.1 Legal and/or customary framework	60-79	A3, A4	60-79	60-79	60-79	60-79	≥80			
3.1.2 Consultation, roles & responsibilities	60-79	A3	60-79	60-79	60-79	60-79	≥80			

MSC Fisheries Improvement Action Plan



3.2.1 Fishery-specific objectives	60-79	A3	60-79	60-79	60-79	≥80	≥80			
3.2.2 Decision-making processes	<60	A3	<60	60-79	60-79	≥80	≥80			
3.2.3 Compliance & enforcement	<60	A3, A4	<60	60-79	60-79	60-79	60-79			
3.2.4 Monitoring and management performance evaluation	<60	A3	<60	60-79	60-79	60-79	≥80			

MSC Fisheries Improvement Action Plan

Versions published or superseded documents

Version no.	Date	Document name	Description of amendment
1.0	07/10/2009	msc-fishery-improvement-action-plan-template.xlsx	– N/A – new document
1.0	2013	msc-fishery-improvement-action-plan-overview-template.docx	– N/A – new document
1.0	22/11/2013	Fisheries Improvement Action Plan Template.docx	– N/A – new document
2.0	30/09/2019	ITM Fisheries Improvement Action Plan Template.docx	– Combination of v1.0 overview and reporting templates in single document, specifically for ITM
2.1	23/07/2020	MSC Fisheries Improvement Action Plan Template.docx	<ul style="list-style-type: none"> – Template updated to be applicable to all FIPs not just ITM – Contact email changed from standards@msc.org to globalaccessibility@msc.org – BMT hyperlink updated – Introduction and Overview updated – Version tracker added – Added additional document table

MSC Scheme and supporting documents applicable to, or referenced, in this template

MSC Benchmarking and Tracking Tool (BMT) v3.0 - (31 July 2019)

In-Transition to MSC (ITM) Program Requirements and Guidance – Pilot v1.0 (30 September 2019)

MSC Pre-Assessment Reporting Template v2.1 (9 October 2017)

MSC Pre-Assessment Reporting template v3.1 (29 March 2019)

MSC Pre-Assessment Reporting template v3.2 (25 March 2020)

MSC Fisheries Improvement Action Plan



MSC Scheme and supporting documents applicable to, or referenced, in this template

MSC Guidance for using the Benchmarking and Tracking Tool (BMT) v2.0 (2014)

MSC Fisheries Improvement Action Plan



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Introduction and Overview

Many fisheries are making the improvements necessary to move towards sustainability with the goal of achieving MSC Certification. These efforts, often termed Fishery Improvement Projects (FIPs), use different approaches to identify actions that need to be taken to improve the fishery. One of the most common ways of documenting and reporting the progress that is being made over time against these actions is by developing 'Work Plans' or 'Improvement Action Plans'. Most of FIPs involve multiple stakeholders and therefore a consistent method of documenting actions and progress is vital to ensure that the Action Plan delivers a level of performance consistent with meeting the MSC Fisheries Standard. The Action Plan should capture and report all necessary information in a practical way that is easily understood by all those involved or interested in the FIP.

The purpose of this template is to ensure quality and consistency in developing improvement action plans for fisheries working towards meeting the MSC Fisheries Standard and achieving MSC Certification. It can also be used to provide the information needed to use the [MSC's Benchmarking and Tracking Tool \(BMT\)](#).

This template is designed to be used by any fisheries engaged in a credible fisheries improvement project, but in particular fisheries in the [In-Transition to MSC \(ITM\) Program](#) and in partial fulfilment of the [ITM Program Requirements and Guidance - Pilot](#). It should be used together with the ITM Eligibility and Progress Reporting Templates and the BMT. The Action Plan should be developed after the fishery has undergone an MSC Pre-Assessment using the current version of the MSC Pre-Assessment Template. The Pre-Assessment should be ideally conducted by an accredited Conformity Assessment Body (CAB) for it to meet the ITM eligibility requirements.

The Action Plan report should document all actions at least at a Performance Indicator level, needed to improve the fishery to be at a level that is likely consistent with a conditional pass against the MSC Standard (≥ 80 draft scoring range) using the tables below.

MSC Fisheries Improvement Action Plan



Table 1a: Action Plan Overview

Fishery name:	Gambia bonga shad (<i>Ethmalosa fimbriata</i>) encircling gillnet	Fishery location:	The Gambia EEZ- inshore North-West African northern stock
Fishing method/gear:	Encircling gillnet	Fishery in ITM program? (Applicant/Yes/No):	No
Start date (expected):	End date (anticipated month/year of entering Full Assessment):		
2022	2026		
Project leaders (organisation/individual responsible for Action Plan):	Improvements recommended by (meeting/group that supported the development):		
To confirm	To confirm		
FIP Coordinator/ ITM Project Manager (name, affiliation and position if applicable):	Action Plan developed by (consultant or person):		
To confirm	Hannah Richardson and Robert Wakeford MRAG		
Overview of the Action Plan (Add/delete as appropriate):			
<p>Principle 1 Improved data collection is required for this fishery to help support an updated, and more appropriate, stock assessment accompanied by relevant target reference points. Additional data will allow for improved assessment of stock status and provide a firm basis for management of the stock, both in The Gambia and in the wider region.</p> <p>Principle 2 Need to collect data to determine and, where possible quantify, the impacts of the fishery on ecosystem components including primary and secondary species, ETP species and habitat. Once potential impacts of the fishery are better understood, management measures can be implemented if required.</p>			

MSC Fisheries Improvement Action Plan

Principle 3

The small pelagic management plan should be reviewed and updated to ensure appropriate management measures are implemented for the bonga fishery that are commensurate with the scale and intensity of the fishery. Enhanced MCS is also required to ensure that management measures are complied with and are effective. Regional collaboration and management are required due to the shared nature of the stock with Senegal.

Chain of Custody/Traceability

Due to the lack of a licensing scheme and incomplete vessel registration, there are some concerns as regards to traceability as it may be unclear where the fish are caught, landed and by whom due to the transboundary nature of bonga and fishers. Vessel licensing would help to ensure transparency along the supply chain.

Note: Resources (Time) refers to the anticipated length of the specific Task.

References (document/s on which the Action Plan was based):

Pre-Assessment Report
Stakeholder consultation

Table 1b: Action Plan Overview Performance Indicator detail – Optional

Performance Indicator (PI)	Action ID and Name	Timescale
1.1.1 Stock status	A3 - Support updating and implementation of a Small Pelagics Management Plan.	4 years
	A5 - Improve stock assessment methodology.	4 years
1.1.2 Stock rebuilding	A3 - Support updating and implementation of a Small Pelagics Management Plan.	4 years
	A4 - Improved Monitoring, Control and Surveillance	5 years
	A5 - Improve stock assessment methodology.	4 years
1.2.1 Harvest Strategy	A1 - Improve data collection on catch and effort for small pelagic fishery.	4 years
	A3 - Support updating and implementation of a Small Pelagics Management Plan.	4 years
	A4 - Improved Monitoring, Control and Surveillance.	5 years
	A5 - Improve stock assessment methodology.	4 years
1.2.2 Harvest control rules and tools	A1 - Improve data collection on catch and effort for small pelagic fishery.	4 years

MSC Fisheries Improvement Action Plan



Performance Indicator (PI)	Action ID and Name	Timescale
	A3 - Support updating and implementation of a Small Pelagics Management Plan.	4 years
	A4 - Improved Monitoring, Control and Surveillance.	5 years
	A5 - Improve stock assessment methodology.	4 years
1.2.3 Information and monitoring	A1 - Improve data collection on catch and effort for small pelagic fishery.	4 years
	A3 - Support updating and implementation of a Small Pelagics Management Plan.	4 years
	A4 - Improved Monitoring, Control and Surveillance.	5 years
	A5 - Improve stock assessment methodology.	4 years
1.2.4 Assessment of stock status	A1 - Improve data collection on catch and effort for small pelagic fishery.	4 years
	A5 - Improve stock assessment methodology.	4 Years
2.1.1 Primary species outcome	A2 - Ensure that the fishery is managed consistent with ecosystem requirements.	4 years
2.1.2 Primary species management	A2 - Ensure that the fishery is managed consistent with ecosystem requirements.	4 years
	A3 - Support updating and implementation of a Small Pelagics Management Plan.	4 years
	A4 - Improved Monitoring, Control and Surveillance	5 years
2.1.3 Primary species Information & monitoring	A1 - Improve data collection for catfish fishery, including catch and effort	4 years
	A2 - Ensure that the fishery is managed consistent with ecosystem requirements.	4 years
	A4 - Improved Monitoring, Control and Surveillance.	5 years
2.2.2 Secondary species management	A2 - Ensure that the fishery is managed consistent with ecosystem requirements.	4 years
	A3 - Support updating and implementation of a Small Pelagics Management Plan.	4 years
	A4 - Improved Monitoring, Control and Surveillance.	5 years
2.3.1 ETP species Outcome	A2 - Ensure that the fishery is managed consistent with ecosystem requirements.	4 years
2.3.2 ETP species management	A2 - Ensure that the fishery is managed consistent with	4 years

MSC Fisheries Improvement Action Plan



Performance Indicator (PI)	Action ID and Name	Timescale
	ecosystem requirements. A3 - Support updating and implementation of a Small Pelagics Management Plan. A4 - Improved Monitoring, Control and Surveillance.	4 years 5 years
2.3.3 ETP Species Information & monitoring	A1 - Improve data collection for catfish fishery, including catch and effort. A2 - Ensure that the fishery is managed consistent with ecosystem requirements. A4 - Improved Monitoring, Control and Surveillance.	4 years 4 years 5 years
2.4.2 Habitat management strategy	A2 - Ensure that the fishery is managed consistent with ecosystem requirements. A4 - Improved Monitoring, Control and Surveillance.	4 years 5 years
2.4.3 Habitat information	A2 - Ensure that the fishery is managed consistent with ecosystem requirements. A4 - Improved Monitoring, Control and Surveillance	4 years 5 years
2.5.1 Ecosystem outcome	A2 - Ensure that the fishery is managed consistent with ecosystem requirements.	4 years
2.5.2 Ecosystem management strategy	A2 - Ensure that the fishery is managed consistent with ecosystem requirements. A4 - Improved Monitoring, Control and Surveillance	4 years 3 years
2.5.3 Ecosystem information	A2 - Ensure that the fishery is managed consistent with ecosystem requirements. A4 - Improved Monitoring, Control and Surveillance.	4 years 5 years
3.1.1 Legal and/or customary framework	A3 - Support updating and implementation of a Small Pelagics Management Plan. A4 - Improved Monitoring, Control and Surveillance.	4 years 5 years
3.1.2 Consultation, roles & responsibilities	A3 - Support updating and implementation of a Small Pelagics Management Plan.	4 years
3.2.1 Fishery-specific objectives	A3 - Support updating and implementation of a Small Pelagics Management Plan.	4 years
3.2.2 Decision-making processes	A3 - Support updating and implementation of a Small Pelagics Management Plan.	4 years

MSC Fisheries Improvement Action Plan



Performance Indicator (PI)	Action ID and Name	Timescale
3.2.3 Compliance & enforcement	A3 - Support updating and implementation of a Small Pelagics Management Plan.	4 years
	A4 - Improved Monitoring, Control and Surveillance.	5 years
3.2.4 Monitoring and management performance evaluation	A3 - Support updating and implementation of a Small Pelagics Management Plan.	4 years

MSC Fisheries Improvement Action Plan

Actions at Performance Indicator and/or Scoring Issue level

Table 2a. Performance Indicator Action Plan table for Action 1 [A1]

Action ID no	A1					
Action name	Improve data collection on catch and effort for small pelagic fishery.					
Action summary	The data available for stock assessment from Gambia should meet CECAF sampling requirements and be sufficient for robust stock assessments. Improved data will allow for improved assessment of stock status and provide a firm basis for management of these stocks, both in The Gambia and in the wider region. This should include fisheries independent and dependent data.					
Performance Indicator(s) and/or Scoring Issue(s)	PI 1.2.1 PI 1.2.2 PI 1.2.3 PI 1.2.4 PI 2.1.3 PI 2.3.3					
Date of completion	2025					
Task/s No.	Responsible – Action lead	Responsible – Action partners	Resources – Cost	Resources - Time	Date of completion	Evidence of completion
A1-1 Coordinate with other small pelagic fisheries in the region, specifically the Senegalese small pelagic fishery to ensure that data collection is consistent across the region and appropriate for the stock assessment methodology. As the targeted stock ranges from Mauritania to Senegal and assessed at a regional scale (by CECAF) data collection methodology must be harmonised to ensure consistency in the type (incl.	Department of Fisheries	Regional partners in neighbouring countries Fishery Committee for the Eastern Central Atlantic (CECAF) FIP Participants Sub Regional Fisheries Commission (SRFC)	Medium cost (>EUR 25,000 and <EUR 250,000)	More than 12 months	June 2023	Evidence of collaboration and knowledge sharing such as meeting minutes and workshop agendas.

MSC Fisheries Improvement Action Plan



units) of data collected across countries (e.g., vessel characteristics, measure of fishing effort (trips/hours/days), are fish lengths measured as fork length or total length, do they use the same maturity scales etc).						
A1-2 Review current status of biological data collection for bonga (e.g., length, size and age structure) in Gambia to ensure it is sufficient to conduct adequate stock assessments.	Department of Fisheries	FIP Participants	Low cost (<EUR 25,000)	6-12 months	December 2022	Report providing review of current biological data collection system and identified gaps.
A1-3 Develop a Standing Operating Procedures for data collection that is appropriate for the scale and intensity of the fishery (should include boat frame survey, catch (incl. species ID), effort and biological data). This should consider the transboundary nature of the fishery and catches that are landed in Senegal and catches from Senegal waters landed in the Gambia.	Department of Fisheries	FIP Participants	Medium cost (>EUR 25,000 and <EUR 250,000)	6-12 months	June 2023	Standard Operating procedure developed for how removals and effort are monitored and recorded and accompanying data set.

MSC Fisheries Improvement Action Plan

<p>A1-4 Due to shallow nature of the fishery identify alternative methods to support offshore acoustic surveys and stock assessment. This may include a mixture of fisheries dependent and independent data collection.</p>	<p>Department of Fisheries</p>	<p>University of Gambia FIP Participants</p>	<p>Medium cost (>EUR 25,000 and <EUR 250,000)</p>	<p>More than 12 months</p>	<p>December 2025</p>	<p>Report on methodology identified. Survey report.</p>
<p>A1-5 Conduct a training needs assessment</p>	<p>Department of Fisheries</p>	<p>FIP Participants</p>	<p>Low cost (<EUR 25,000)</p>	<p>Less than 6 months</p>	<p>January 2023</p>	<p>Training needs report.</p>
<p>A1-6 Where gaps exist, implement training to improve quality of data collection and analysis.</p>	<p>Department of Fisheries</p>	<p>FIP Participants</p>	<p>Low (EUR 25,000) – Medium (>EUR 25,000 and <EUR 250,000)</p>	<p>6-12 months</p>	<p>December 2023</p>	<p>List of stakeholders selected for training. Training documents. Evidence of training (e.g., attendance records, meeting minutes).</p>

MSC Fisheries Improvement Action Plan



Table 2b. Performance Indicator Action Plan table for Action 2 [A2]

Action ID no	A2					
Action name	Ensure that the fishery is managed consistent with ecosystem requirements					
Action summary	Ensure the fishery is not having a significant impact on the ecosystem, including important ecosystem components such as primary species, ETP species and habitats. Although this fishery is unlikely to cause significant ecosystem impacts, data are needed to identify and quantify these interactions.					
Performance Indicator(s) and/or Scoring Issue(s)	PI 2.1.1 PI 2.1.2 PI 2.1.3 PI 2.2.2 PI 2.3.1 PI 2.3.2 PI 2.3.3 PI 2.4.2 PI 2.4.3 PI 2.5.1 PI 2.5.2 PI 2.5.3					
Date of completion	2025					
Task/s No.	Responsible – Action lead	Responsible – Action partners	Resources – Cost	Resources – Time	Date of completion	Evidence of completion
A2-1 Determine footprint of the fishery (spatial and seasonal) as well as location of migrant fishers. This could be collected through a mapping exercise with fishers.	Department of Fisheries	Artisanal fishers	Low cost (<EUR 25,000)	6-12 months	January 2023	Map showing spatial footprint of the fishery.
A2-2 Create habitat map of the fishing area with A2-1 to determine any impacts with habitats from the fishery.	Department of Fisheries	NASCOM / LACOM University of Gambia	Low cost (<EUR 25,000)	6-12 months	June 2023	Map showing habitats in the UoA.

MSC Fisheries Improvement Action Plan



A2-3 If necessary, set additional management measures consistent with habitat objectives.	Department of Fisheries	Artisanal fishers	Medium cost (>EUR 25,000 and <EUR 250,000)	6-12 months	December 2023	Report outlining new management measures, if required.
A2-4 Conduct training on species identification and create species ID guides, including sharks and other ETP species.	Department of Fisheries	NASCOM / LACOM	Low cost (<EUR 25,000)	Less than 6 months	June 2023	Species ID guides.
A2-5 Analyse recent catch data from artisanal encircling gillnet fishery to determine interaction with non-target species (Pre-assessment used data from 2016).	Department of Fisheries	Artisanal fishers	Low cost (<EUR 25,000)	Less than 6 months	December 2023	Catch data report disaggregated by gear type.
A2-6 Disaggregate catch data by gear type to determine impact of the fishery on elasmobranchs. This may require a new method of reporting (e.g., introduction of logbooks for artisanal fleet).	Department of Fisheries	FIP Participants Artisanal fishers	Low cost (<EUR 25,000)	Less than 6 months	December 2023	Disaggregated catch data are available.
A2-7 Evaluate impacts on non-target species and if necessary, set additional management measures.	Department of Fisheries	Artisanal fishers	Medium cost (>EUR 25,000 and <EUR 250,000)	More than 12 months	June 2024	Report outlining new management measures, if required.
A2-8 Determine the effects of fishing bonga (a key low trophic species) on the ecosystem, such as impacts	University of Gambia	FIP Participants Artisanal fishers	Medium cost (>EUR 25,000 and <EUR 250,000)	More than 12 months	December 2024	Study report.

MSC Fisheries Improvement Action Plan



on predator species. This could be done, for example, through sampling or monitoring of key indicator species from fisheries independent surveys or CPUE series data taking into account seasonality.						
A2-9 Assess current management measures to determine if effective at controlling ecosystem impacts. If necessary, implement additional effective management measures to reduce ecosystem impacts.	Department of Fisheries	FIP Participants Artisanal fishers	Medium cost (>EUR 25,000 and <EUR 250,000)	6-12 months	June 2025	Report detailing management measures, if required.
A2-10 Determine if shark finning is occurring within the fishery. This is most likely possible through a research study at landing sites to determine whether sharks are landed with or without fins.	University of Gambia / Research Institute	FIP Participants Artisanal fishers	Low cost (<EUR 25,000)	More than 12 months	December 2023	Study report.
A2-11 Evaluate occurrence of shark finning and if necessary, set additional management measures which should include routine monitoring.	Department of Fisheries	FIP Participants Artisanal fishers	Medium cost (>EUR 25,000 and <EUR 250,000)	6-12 months	June 2024	Report on proposed management measures if required.
A2-12 Understand, and where possible, quantify the impact of the fishery on dolphins and	Department of Fisheries	FIP Participants Artisanal fishers	Medium cost (>EUR 25,000 and <EUR 250,000)	More than 12 months	December 2023	Study report.

MSC Fisheries Improvement Action Plan



turtles, including seasonal variability. This could be done, for example, through an RBF workshop with stakeholders or by requesting fishermen to record all interactions with ETP species.						
A2-13 Evaluate impact of interaction with ETP species and if necessary, set additional management measures and routine monitoring.	Department of Fisheries	FIP Participants Artisanal fishers	Medium cost (>EUR 25,000 and <EUR 250,000)	6-12 months	January 2024	Report on proposed management measures if required.
A2-14 Determine the impact of ghost gear from the fishery. This should determine if net loss occurs and if so, where, when, why and how often.	Department of Fisheries	FIP Participants Artisanal fishers	Medium cost (>EUR 25,000 and <EUR 250,000)	More than 12 months	June 2025	Study report.
A2-15 Evaluate impact of ghost gear and if necessary, set additional management measures.	Department of Fisheries	FIP Participants Artisanal fishers	Medium cost (>EUR 25,000 and <EUR 250,000)	6-12 months	December 2025	Report on proposed management measures if required.
A2-16 Conduct capacity needs assessment to identify resources needed to analyse data on sharks and ETP species.	Department of Fisheries		Low cost (<EUR 25,000)	6-12 months	December 2022	Capacity needs report.
A2-17 If necessary, identify resources required to fill capacity gaps.	Department of Fisheries		Low (EUR 25,000) – Medium (>EUR 25,000 and <EUR 250,000)	6-12 months	June 2023	Identification of resources.

MSC Fisheries Improvement Action Plan



Table 2c. Performance Indicator Action Plan table for Action 3 [A3]

Action ID no	A3					
Action name	Support updating and implementation of a small pelagics management plan.					
Action summary	The Management Plan should set out clear objectives for the fishery and ecosystem, along with appropriate management measures (including a harvest control rule) and actions to ensure that these objectives are met. Due to the current status of the stock, a rebuilding plan will need to be implemented.					
Performance Indicator(s) and/or Scoring Issue(s)	PI 1.1.1 PI 1.1.2 PI 1.2.1 PI 1.2.2 PI 1.2.3 PI 2.1.2 PI 2.2.2 PI 2.3.2 PI 3.1.1 PI 3.1.2 PI 3.2.1 PI 3.2.2 PI 3.2.3 PI 3.2.4					
Date of completion	2025					
Task/s No.	Responsible – Action lead	Responsible – Action partners	Resources – Cost	Resources – Time	Date of completion	Evidence of completion
A3-1 Review status of the current national small pelagics management plan and identify any gaps or additional management measures that may be required. This should include an effective harvest strategy to ensure the stock is fished sustainably as well as demonstrated coherence with other plans at a regional level.	Department of Fisheries	GAMFIDA Regional partners Artisanal fishers	Low cost (<EUR 25,000)	More than 12 months	June 2024	Evidence of stakeholder consultation and participation in the review of the Management Plan. Revised Management Plan.

MSC Fisheries Improvement Action Plan



<p>Consultation is key in the preparation stage.</p> <p>The plan should clearly outline consultation and decision-making procedures and actively encourage participation. The plan should be based on the precautionary approach.</p>						
<p>A3-2 Include within the small pelagics management plan a rebuilding strategy with milestones and indicators to ensure recovery of the stock to sustainable levels. This should consider the regional nature of the stock.</p>	Department of Fisheries	GAMFIDA Regional partners Artisanal fishers	Medium cost (>EUR 25,000 and < EUR 250,000)	6-12 months	January 2025	Rebuilding strategy plan.
<p>A3-3 Ensure the small pelagics management plan is harmonised with Senegal in regards to policies and regulations.</p>	Department of Fisheries	GAMFIDA Regional partners Artisanal fishers	Low cost (<EUR 25,000)	More than 12 months	June 2024	Evidence of harmonisation included within the management plan.
<p>A3-4 Implement small pelagics management plan. This should include a robust communication plan to allow for a participatory approach and ensure findings are disseminated both locally and regionally.</p>	Department of Fisheries	Artisanal fishers	Medium cost (>EUR 25,000 and < EUR 250,000)	6-12 months	December 2025	Evidence of activities being implemented through periodic reporting.

MSC Fisheries Improvement Action Plan



<p>A3-5 Establish a national Working Group to evaluate progress against small pelagics management plan objectives on a regular basis and adjust activities if necessary. This evaluation process should include a disputes mechanism at the national and regional level.</p>	<p>Department of Fisheries</p>	<p>Regional partners Artisanal fishers Research NGOs</p>	<p>Medium cost (>EUR 25,000 and < EUR 250,000)</p>	<p>6-12 months</p>	<p>June 2025 (ongoing)</p>	<p>Evaluation reports.</p>
<p>A3-6 Support regional collaboration in implementation and review of the management plan through periodic workshops.</p>	<p>Department of Fisheries</p>	<p>Regional partners Artisanal fishers Research NGOs</p>	<p>Low cost (<EUR 25,000)</p>	<p>6-12 months</p>	<p>June 2025 (ongoing)</p>	<p>Evidence of regular meetings e.g., meeting minutes, reports.</p>

MSC Fisheries Improvement Action Plan



Table 2d. Performance Indicator Action Plan table for Action 4 [A4]

Action ID no	A4					
Action name	Improved Monitoring, Control and Surveillance.					
Action summary	Ensure good compliance of the fishery with management measures both within the Gambia and regionally.					
Performance Indicator(s) and/or Scoring Issue(s)	PI 1.1.2 PI 1.2.1 PI 1.2.2 PI 1.2.3 PI 2.1.2 PI 2.1.3 PI 2.2.2 PI 2.3.2 PI 2.3.3 PI 2.4.2 PI 2.4.3 PI 2.5.2 PI 2.5.3 PI 3.1.1 PI 3.2.3					
Date of completion	2026					
Task/s No.	Responsible – Action lead	Responsible – Action partners	Resources – Cost	Resources - Time	Date of completion	Evidence of completion
A4-1 Review current MCS strategy to ensure enforcement of harvest strategy (including minimum mesh size) and control of fishing effort are aligned with sustainability of the fishery. This should consider implementation of a licensing system for artisanal vessels. As part of this, review possibility of implementing	Department of Fisheries	Artisanal fishers Navy	Medium cost (>EUR 25,000 and < EUR 250,000)	Over 12 months	June 2025	Evidence of review such as consultation meetings and drafting of updated MCS strategies.

MSC Fisheries Improvement Action Plan



more community-based enforcement that might be more appropriate for the scale and intensity of the fishery.						
<p>A4-2 Evaluate effectiveness of the MCS strategy and identify where gaps or weaknesses may exist. This should include collection of data on number of inspections, number of infringements and number of prosecutions to determine if management measures are effective and complied with, as well as whether sanctions are an effective deterrent.</p>	Department of Fisheries	Artisanal fishers Navy	Medium cost (>EUR 25,000 and < EUR 250,000)	6-12 months	December 2025	MCS Strategy.
<p>A4-3 Where gaps exist, identify capacity and resources needed to improve MCS strategy and implement changes.</p>	Department of Fisheries	Artisanal fishers Navy	Medium cost (>EUR 25,000 and < EUR 250,000)	6-12 months	June 2026	Needs Assessment Study Report.
<p>A4-4 Engage with national authorities from neighbouring countries (e.g., Senegal) related to issues of MCS and enforcement of transboundary stock and the Fisheries Access Agreement that is in place between the two countries.</p>	Department of Fisheries	Navy	Low cost (<EUR 25,000)	6-12 months	January 2026 (ongoing)	Evidence of consultation such as workshop minutes or meeting reports.

MSC Fisheries Improvement Action Plan



Table 2e. Performance Indicator Action Plan table for Action 5 [A5]

Action ID no	A5					
Action name	Improve stock assessment methodology.					
Action summary	The current equilibrium-based stock assessment is not deemed appropriate for the stock. Therefore, a more appropriate method should be selected that uses target reference points that are appropriate for a key Low Trophic Level (i.e. $0.5 F_{MSY}$). This should be informed through the improvements made to data collection in A1. CECAF should be able to conduct a regional-level assessment that can quantify uncertainty in the assessment.					
Performance Indicator(s) and/or Scoring Issue(s)	PI 1.1.1 PI 1.1.2 PI 1.2.1 PI 1.2.2 PI 1.2.3 PI 1.2.4					
Date of completion	2025					
Task/s No.	Responsible – Action lead	Responsible – Action partners	Resources – Cost	Resources - Time	Date of completion	Evidence of completion
A5-1 Ensure national attendance at CECAF meetings to support the Small Pelagic Working Group to develop new assessment methodologies and methods of quantifying uncertainty and implementation of target reference points that are suitable for a key LTL stock (i.e. $0.5 F_{MSY}$).	Department of Fisheries	CECAF University of Gambia	Medium cost (>EUR 25,000 – EUR <250,000)	More than 12 months	January 2025	CECAF Stock Assessment Report.
A5-2 Attendance of national working group at CECAF preparatory meetings and provide appropriate national data in a timely manner prior to stock	Department of Fisheries	CECAF	Medium cost (>EUR 25,000 and < EUR 250,000)	Over 12 months	January 2025	Evidence of attendance.

MSC Fisheries Improvement Action Plan



assessment.						
A5-3 Consider development and implementation of a regional harvest control strategy considering the transboundary nature of the fishery.	Department of Fisheries	CECAF University of Gambia	Low cost (<EUR 25,000)	More than 12 months	December 2025	Regional HCR report.

Action timescales and progress report

Table 3: Evaluation against Action Plan Timescale Year X (complete a table for each year after Year 1)

Action ID and Name	Date of completion expected	Progress / outcome this year	Revised date of completion (if required)

MSC Fisheries Improvement Action Plan



Table 4a. Action plan score change table for Principle 1 Performance Indicators

[This should correspond with the Benchmarking and Tracking Tool]

Performance Indicator	Draft Scoring Range [Pre-Assessment] Year 0	Action(s) IDs [If improvement is needed]	Expected PI draft scoring range change							
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
1.1.1 Stock Status	<60	A3, A5	<60	<60	60-79	60-79	60-79			
1.1.2 Stock rebuilding	<60	A3, A4, A5	<60	<60	60-79	60-79	≥80			
1.2.1 Harvest Strategy	<60	A1, A3, A4, A5	<60	<60	60-79	60-79	≥80			
1.2.2 Harvest control rules and tools	<60	A1, A3, A4, A5	<60	<60	60-79	60-79	≥80			
1.2.3 Information and monitoring	60-79	A1, A3, A4, A5	60-79	60-79	60-79	60-79	≥80			
1.2.4 Assessment of stock status	<60	A1, A5	<60	<60	60-79	60-79	≥80			

MSC Fisheries Improvement Action Plan



Table 4b. Action plan score change table for Principle 2 Performance Indicators

Performance Indicator	Draft Scoring Range Year 0	Action(s) IDs	Expected PI draft scoring range change							
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
2.1.1 Primary species outcome	<60	A2	<60	<60	60-79	≥80	≥80			
2.1.2 Primary species management	<60	A2, A3, A4	<60	<60	60-79	60-79	≥80			
2.1.3 Primary species Information & monitoring	<60	A1, A2, A4	<60	<60	60-79	60-79	≥80			
2.2.2 Secondary species management	60-79	A2, A3, A4	60-79	60-79	60-79	60-79	≥80			
2.3.1 ETP species Outcome	<60	A2	60-79	60-79	≥80	≥80	≥80			
2.3.2 ETP species management	<60	A2, A3, A4	<60	<60	60-79	60-79	≥80			
2.3.3 ETP Species Information & monitoring	<60	A1, A2, A4	<60	<60	60-79	60-79	≥80			
2.4.2 Habitat management strategy	<60	A2, A4	<60	<60	60-79	60-79	≥80			
2.4.3 Habitat information	<60	A2, A4	<60	<60	60-79	60-79	≥80			
2.5.1 Ecosystem outcome	60-79	A2	60-79	60-79	60-79	60-79	≥80			

MSC Fisheries Improvement Action Plan



2.5.2 Ecosystem management strategy	60-79	A2, A4	60-79	60-79	60-79	60-79	60-79			
2.5.3 Ecosystem information	60-79	A2, A4	60-79	60-79	60-79	60-79	60-79			

Table 4c. Action plan score change table for Principle 3 Performance Indicators

Performance Indicator	Draft Scoring Range Year 0	Action(s) IDs	Expected PI draft scoring range change							
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
3.1.1 Legal and/or customary framework	60-79	A3, A4	60-79	60-79	60-79	60-79	≥80			
3.1.2 Consultation, roles & responsibilities	60-79	A3	60-79	60-79	60-79	60-79	≥80			
3.2.1 Fishery-specific objectives	60-79	A3	60-79	60-79	60-79	≥80	≥80			
3.2.2 Decision-making processes	<60	A3	<60	60-79	60-79	≥80	≥80			
3.2.3 Compliance & enforcement	<60	A3, A4	<60	60-79	60-79	60-79	60-79			
3.2.4 Monitoring and management performance evaluation	<60	A3	<60	60-79	60-79	60-79	≥80			

MSC Fisheries Improvement Action Plan Template



Versions published or superseded documents

Version no.	Date	Document name	Description of amendment
1.0	07/10/2009	msc-fishery-improvement-action-plan-template.xlsx	– N/A – new document
1.0	2013	msc-fishery-improvement-action-plan-overview-template.docx	– N/A – new document
1.0	22/11/2013	Fisheries Improvement Action Plan Template.docx	– N/A – new document
2.0	30/09/2019	ITM Fisheries Improvement Action Plan Template.docx	– Combination of v1.0 overview and reporting templates in single document, specifically for ITM
2.1	23/07/2020	MSC Fisheries Improvement Action Plan Template.docx	<ul style="list-style-type: none"> – Template updated to be applicable to all FIPs not just ITM – Contact email changed from standards@msc.org to globalaccessibility@msc.org – BMT hyperlink updated – Introduction and Overview updated – Version tracker added – Added additional document table

MSC Scheme and supporting documents applicable to, or referenced, in this template

MSC Benchmarking and Tracking Tool (BMT) v3.0 - (31 July 2019)
 In-Transition to MSC (ITM) Program Requirements and Guidance – Pilot v1.0 (30 September 2019)
 MSC Pre-Assessment Reporting Template v2.1 (9 October 2017)

MSC Fisheries Improvement Action Plan Template



MSC Scheme and supporting documents applicable to, or referenced, in this template

MSC Pre-Assessment Reporting template v3.1 (29 March 2019)

MSC Pre-Assessment Reporting template v3.2 (25 March 2020)

MSC Guidance for using the Benchmarking and Tracking Tool (BMT) v2.0 (2014)

MSC Fisheries Improvement Action Plan Template



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MSC Fisheries Improvement Action Plan Template



Introduction and Overview

Many fisheries are making the improvements necessary to move towards sustainability with the goal of achieving MSC Certification. These efforts, often termed Fishery Improvement Projects (FIPs), use different approaches to identify actions that need to be taken to improve the fishery. One of the most common ways of documenting and reporting the progress that is being made over time against these actions is by developing 'Work Plans' or 'Improvement Action Plans'. Most of FIPs involve multiple stakeholders and therefore a consistent method of documenting actions and progress is vital to ensure that the Action Plan delivers a level of performance consistent with meeting the MSC Fisheries Standard. The Action Plan should capture and report all necessary information in a practical way that is easily understood by all those involved or interested in the FIP.

The purpose of this template is to ensure quality and consistency in developing improvement action plans for fisheries working towards meeting the MSC Fisheries Standard and achieving MSC Certification. It can also be used to provide the information needed to use the [MSC's Benchmarking and Tracking Tool \(BMT\)](#).

This template is designed to be used by any fisheries engaged in a credible fisheries improvement project, but in particularly fisheries in the [In-Transition to MSC \(ITM\) Program](#) and in partial fulfilment of the [ITM Program Requirements and Guidance - Pilot](#). It should be used together with the ITM Eligibility and Progress Reporting Templates and the BMT. The Action Plan should be developed after the fishery has undergone an MSC Pre-Assessment using the current version of the MSC Pre-Assessment Template. The Pre-Assessment should be ideally conducted by an accredited Conformity Assessment Body (CAB) for it to meet the ITM eligibility requirements.

The Action Plan report should document all actions at least at a Performance Indicator level, needed to improve the fishery to be at a level that is likely consistent with a conditional pass against the MSC Standard (≥ 80 draft scoring range) using the tables below.

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Table 1a: Action Plan Overview

Fishery name:	The Gambia West Africa mangrove oyster (<i>Crassostrea tulipa</i>) hand collection fishery	Fishery location:	The Tanbi Wetlands Complex Reserve in The Gambia
Fishing method/gear:	Hand Collection	Fishery in ITM program? (Applicant/Yes/No):	No
Start date (expected):	End date (anticipated month/year of entering Full Assessment):		
2022	2026		
Project leaders (organisation/individual responsible for Action Plan):	Improvements recommended by (meeting/group that supported the development):		
TBD	TBD		
FIP Coordinator/ ITM Project Manager (name, affiliation and position if applicable):	Action Plan developed by (consultant or person):		
TBD	Hannah Richardson and Robert Wakeford MRAG		
Overview of the Action Plan (Add/delete as appropriate):			
<p>Principle 1</p> <p>There are no current stock assessments for oyster and data on catch and effort are minimal. This needs to be addressed so that removals from the fishery can be sufficiently monitored and management measures implemented accordingly to form a robust harvest strategy.</p> <p>Principle 2</p> <p>Although impacts on primary, secondary and ETP species are thought to be minimal, more quantitative data are needed to confirm this. The primary habitat for this UoA are mangroves which are directly impacted during removal of oyster. There is also indication of illegal harvesting of mangroves that needs to be</p>			

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monitored and controlled. Finally, as oysters provide key ecosystem functions their removal needs to be formally studied to determine any other impacts to the ecosystem.

Principle 3

Monitoring, Control and Surveillance needs to be improved within the fishery to ensure management measures are adhered to. This should include strengthening the ability for TRY members to undertake more community-led enforcement and MCS.

Chain of Custody/Traceability

Currently the traceability system is fairly informal and TRY members are able to harvest oyster outside of the Tanbi Wetlands which could increase the risk of substitution. A more robust traceability system would need to be in place within this fishery.

Note: Resources (Time) refers to the anticipated length of the specific Task.

References (document/s on which the Action Plan was based):

Pre-Assessment Report
Stakeholder Consultation

Table 1b: Action Plan Overview Performance Indicator detail – Optional

Performance Indicator (PI)	Action ID and Name	Timescale
1.2.1 Harvest Strategy	A1 - Improve data collection in the oyster fishery	2 years
	A3 - Review and update Co-Management Plan	4 years
	A4 - Improved Monitoring, Control and Surveillance	5 years
	A5 - Stock assessment	4 years
1.2.2 Harvest control rules and tools	A1 - Improve data collection in the oyster fishery	2 years
	A3 - Review and update Co-Management Plan	4 years
	A4 - Improved Monitoring, Control and Surveillance	5 years
	A5 - Stock assessment	4 years
1.2.3 Information and monitoring	A1 - Improve data collection in the oyster fishery	2 years
	A3 - Review and update Co-Management Plan	4 years

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Performance Indicator (PI)	Action ID and Name	Timescale
	A4 - Improved Monitoring, Control and Surveillance A5 - Stock assessment	5 years 4 years
2.1.3 Primary species Information & monitoring	A1 - Improve data collection in the oyster fishery A2 - Ensure that the fishery is managed consistent with ecosystem requirements A4 - Improved Monitoring, Control and Surveillance	2 years 4 years 5 years
2.2.3. Secondary species Information & monitoring	A1 - Improve data collection in the oyster fishery A2 - Ensure that the fishery is managed consistent with ecosystem requirements A4 - Improved Monitoring, Control and Surveillance	2 years 4 years 5 years
2.3.2 ETP species management	A2 - Ensure that the fishery is managed consistent with ecosystem requirements A4 - Improved Monitoring, Control and Surveillance A3 - Review and update Co-Management Plan	4 years 5 years 4 years
2.3.3 ETP Species Information & monitoring	A2 - Ensure that the fishery is managed consistent with ecosystem requirements A4 - Improved Monitoring, Control and Surveillance	4 years 5 years
2.4.2 Habitat management strategy	A2 - Ensure that the fishery is managed consistent with ecosystem requirements A3 - Review and update Co-Management Plan A4 - Improved Monitoring, Control and Surveillance	4 years 4 years 5 years

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Performance Indicator (PI)	Action ID and Name	Timescale
2.4.3 Habitat information	A2 - Ensure that the fishery is managed consistent with ecosystem requirements A4 - Improved Monitoring, Control and Surveillance	4 years 5 years
2.5.1 Ecosystem outcome	A2 - Ensure that the fishery is managed consistent with ecosystem requirements	4 years
2.5.2 Ecosystem management strategy	A2 - Ensure that the fishery is managed consistent with ecosystem requirements A3 - Review and update Co-Management Plan A4 - Improved Monitoring, Control and Surveillance	4 years 4 years 5 years
2.5.3 Ecosystem information	A2 - Ensure that the fishery is managed consistent with ecosystem requirements A4 - Improved Monitoring, Control and Surveillance	4 years 5 years
3.1.1 Legal and/or customary framework	A3 - Review and update Co-Management Plan	4 years
3.1.2 Consultation, roles & responsibilities	A3 - Review and update Co-Management Plan	4 years
3.2.2 Decision-making processes	A3 - Review and update Co-Management Plan	4 years
3.2.3 Compliance & enforcement	A3 - Review and update Co-Management Plan A4 - Improved Monitoring, Control and Surveillance	4 years 5 years
3.2.4 Monitoring and management performance evaluation	A3 - Review and update Co-Management Plan	4 years

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Actions at Performance Indicator and/or Scoring Issue level

Table 2a. Performance Indicator Action Plan table for Action 1 [A1]

Action ID no	A1					
Action name	Improve data collection in the oyster fishery					
Action summary	More data are required in order to verify the current status of the stock. This should include details on catch and effort to allow for an improved assessment, to understand the current stock status and identify any trends in the fishery. Although the Risk Based Framework indicated that the stock was 'low risk', qualitative data indicated decreasing population size, change in geographical range and a decrease in the size of oysters.					
Performance Indicator(s) and/or Scoring Issue(s)	PI 1.2.1 PI 1.2.2 PI 1.2.3 PI 2.1.3 PI 2.2.3					
Date of completion	2023					
Task/s No.	Responsible – Action lead	Responsible – Action partners	Resources – Cost	Resources - Time	Date of completion	Evidence of completion
A1-1 Review current protocol for collection of catch and effort data	Department of Fisheries	TRY	Low cost (<EUR 25,000)	<6 months	December 2022	Catch and effort data reports.
A1-2 Where gaps exist, initiate new protocol to collect routine catch and effort data from landing sites. This could include a fisher self-sampling system (with DoF oversight) and / or inspection at landing sites that also includes fishing location/statistical area.	Department of Fisheries	TRY	Medium cost (>EUR 25,000 and <EUR 250,000)	More than 12 months (to account for seasonality)	June 2023 (ongoing)	Report on new catch and effort protocol, if required. Catch and effort data reports.
A1-3	Department of Fisheries	TRY	Low cost (<EUR 25,000)	<6 months	December 2022	Report on status of biological

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Review current status of biological sampling in the fishery to ensure it is sufficient to support management measures as part of the harvest strategy.						sampling currently undertaken.
A1-4 Where gaps exist, initiate a new protocol to conduct routine biological sampling. This should include size/density of the oyster population to monitor fluctuations in size. This could be undertaken through a fishery independent and/or dependent survey.	Department of Fisheries	TRY University of Gambia	Medium cost (>EUR 25,000 and <EUR 250,000)	More than 12 months (to account for seasonality)	June 2023	Report on new biological sampling protocol, if required. Biological sampling reports.
A1-5 Conduct a training needs assessment.	Department of Fisheries	TRY	Low cost (<EUR 25,000)	Less than 6 months	December 2022	Training needs report.
A1-6 Where gaps exist, implement training to ensure stakeholders are able to accurately collect and analyse data.	Department of Fisheries	TRY	Low (EUR 25,000) – Medium (>EUR 25,000 and <EUR 250,000)	6-12 months	December 2023	List of stakeholders selected for training. Training documents. Evidence of training (e.g., attendance records, meeting minutes).

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Table 2b Performance Indicator Action Plan table for Action 2 [A2]

Action ID no	A2					
Action name	Ensure that the fishery is managed consistent with ecosystem requirements					
Action summary	Ensure the fishery is not having a significant impact on the ecosystem, including important ecosystem components such as primary species, secondary species, ETP species and habitats. Although this fishery is unlikely to cause significant ecosystem impacts, data are needed to identify and quantify these interactions.					
Performance Indicator(s) and/or Scoring Issue(s)	PI 2.1.3 PI 2.2.3 PI 2.3.2 PI 2.3.3 PI 2.4.2 PI 2.4.3 PI 2.5.1 PI 2.5.2 PI 2.5.3					
Date of completion	2025					
Task/s No.	Responsible – Action lead	Responsible – Action partners	Resources – Cost	Resources - Time	Date of completion	Evidence of completion
A2-1 Record interactions with non-target species in catch data to determine presence or interaction with primary, secondary or ETP species. While this is unlikely as the fishery is hand collection, data are required to confirm this.	TRY	Department of Fisheries	Low cost (<EUR25,000) - Medium Cost (>EUR 25,000 and <EUR 250,000)	More than 12 months (to account for seasonality)	December 2022 (ongoing)	Catch data.
A2-2 Review catch data (see A2-1) and if required, implement management measures to mitigate impacts to primary, secondary or ETP species.	TRY	Department of Fisheries	Medium (>EUR 25,000 and <EUR 250,000)	More than 12 months	January 2024	Report detailing additional management measures, if required.

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<p>A2-3 Conduct a mapping exercise to determine current spatial footprint of the fishery. This could be conducted through a stakeholder workshop.</p>	TRY	<p>Department of Fisheries</p> <p>University of Gambia</p> <p>Department of Parks and Wildlife Management (DPWM)</p>	Low (<EUR 25,000)	6-12 months	January 2023	Map detailing spatial footprint of the fishery.
<p>A2-4 Conduct a review to determine if current and historical habitat maps exist in the area of the UoA and if not then create/update these so as to determine spatial and temporal impact.</p>	TRY	<p>Department of Fisheries</p> <p>University of Gambia</p> <p>DPWM</p>	Low (<EUR 25,000) - Medium cost (>EUR 25,000 and <EUR 250,000)	6-12 months	June 2024	Up-to-date habitat map.
<p>A2-5 Review changes in habitat cover and density in the Wetlands. If necessary, initiate study to determine main causes (is this from direct impacts from the fishery or due to external factors such as climate change or land-based activities such as agricultural runoff)? NB: Can use participatory methods to map changes over time with different</p>	University of Gambia / Research institute	<p>DPWM</p> <p>National Environment Agency (NEA)</p> <p>TRY</p> <p>Department of Fisheries</p>	Medium cost (>EUR 25,000 and <EUR 250,000)	More than 12 months	December 2024	Study report.

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stakeholders if historical data unavailable.						
A2-6 If required, implement management measures to mitigate impacts on habitats.	TRY	Department of Fisheries Artisanal Fishers DPWM	Medium (>EUR 25,000 and <EUR 250,000)	More than 12 months	June 2025	Report detailing additional management measures, if required.
A2-7 Due to important ecosystem functions that oysters provide, determine the impacts of removing oyster from the ecosystem such as impacts on predators (e.g., manatee) or on fish that use oysters as habitats. This could look at other studies in similar areas and / or undertake primary research.	University of Gambia / Research institute	DPWM NEA TRY Department of Fisheries	Medium cost (>EUR 25,000 and <EUR 250,000)	More than 12 months	December 2025	Study report.
A2-8 Review ecosystem impacts and if necessary, implement additional management measures to reduce ecosystem impacts that are directly from the fishery.	TRY	DPWM NEA Department of Fisheries University of Gambia	Medium cost (>EUR 25,000 and <EUR 250,000)	More than 12 months	June 2026	Report detailing management measures, if required.
A2-9 Dredging is an issue in the Tanbi Wetlands (and wider Gambia) as sand is dredged and then sold to the construction sector. There is	Department of Fisheries	TRY University of Gambia	Medium cost (>EUR 25,000 and <EUR 250,000)	More than 12 months	January 2025	Study report.

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<p>concern that this activity is impacting oysters through environmental changes in the wetlands. To identify potential impacts, undertake study to identify the impacts of dredging in the Tanbi wetlands focusing on the salinity, turbidity and acidity effects on the fishery.</p>						
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Table 2c Performance Indicator Action Plan table for Action 3 [A3]

Action ID no	A3					
Action name	Review and update Co-Management Plan					
Action summary	The Co-Management Plan should set out clear objectives for the fishery and ecosystem, along with appropriate management measures and actions to ensure that these objectives are met. This should include a suitable harvest strategy and consider implementation of value-added opportunities to increase economic profit from the fishery without having to increase catch.					
Performance Indicator(s) and/or Scoring Issue(s)	PI 1.2.1 PI 1.2.2 PI 1.2.3 PI 2.3.2 PI 2.4.2 PI 2.5.2 PI 3.1.1 PI 3.1.2 PI 3.2.2 PI 3.2.3 PI 3.2.4					
Date of completion	2025					
Task/s No.	Responsible – Action lead	Responsible – Action partners	Resources – Cost	Resources - Time	Date of completion	Evidence of completion
A3-1 Review status of the current Co-Management Plan and identify any gaps or additional management measures that may be required. This should include a harvest strategy (harvesting limits and / or a cap on effort). Consultation is key in the preparation stage.	TRY	Department of Fisheries DPWM NEA University of Rhode Island	Low cost (<EUR 25,000)	More than 12 months	December 2024	Evidence of stakeholder consultation and participation in the review of the Management Plan. Revised Management Plan.

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The plan should clearly outline consultation and decision-making procedures and actively encourage participation. The plan should be based on the precautionary approach and management measures consistent with Senegalese management plans (size limits etc.) where applicable.						
A3-2 As part of the Co-Management plan, identify and define who and where people are legally able to harvest oysters from within the Tanbi Wetlands. This may require a fisher licencing or registration scheme and should include any migrant fishers from neighbouring countries (e.g., Senegal).	TRY	Department of Fisheries	Low cost (<EUR 25,000)	6-12 months	December 2024	Definition of legal harvesters.
A3-3 Implement revised management plan	TRY	Department of Fisheries	Medium cost (>EUR 25,000 and < EUR 250,000)	6-12 months	June 2025	Evidence of activities being implemented through periodic reporting.
A3-4 Conduct gap analysis to determine opportunity to increase scope to include the area opposite to Tanbi Wetlands.	Department of Fisheries	National fishers	Medium cost (>EUR 25,000 and < EUR 250,000)	6-12 months	June 2023	Study report.

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<p>A3-5 While benthic resources are usually managed at a local level it is important to monitor and control external fishing effort from outside where needed. If necessary, collaborate with neighbouring countries (Senegal) on review and update of the management plan, due to presence of migrant fishers in the Tanbi Wetlands.</p>	TRY	Department of Fisheries DPWM NEA Sub Regional Fisheries Commission (SRFC)	Low cost (<EUR 25,000)	6-12 months	June 2024	Evidence of consultation and participation in the review of the Management Plan.
<p>A3-6 Conduct a socio-economic study of the characteristics of the fishery to identify value-added opportunities or harvesting of other species in the closed season.</p>	Department of Fisheries	TRY	Medium cost (>EUR 25,000 and < EUR 250,000)	More than 12 months	December 2025	Socio-economic study report.
<p>A3-7 Explore opportunities to collaborate with the current FAO project, Fish4ACP¹ to help enhance productivity and competitiveness of value chains.</p>	Department of Fisheries	TRY	Low cost (<EUR 25,000)	6-12 months	December 2022	Number of meetings to explore harmonisation.
<p>A3-8 Establish communication links and knowledge sharing (linked to A3-9), perhaps through site visits, with the oyster fishery in</p>	TRY	Department of Fisheries	Low cost (<EUR 25,000)	Periodic	January 2023 (ongoing)	Site visits reports. Evidence of communication

¹ <https://www.fao.org/in-action/fish-4-acp/en/>

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the Casamance and Sine Saloum regions of Senegal to encourage adoption of best practice (e.g., data collection, management, value added) and identify lessons learnt.						e.g., meeting minutes.
A3-9 Establish a national Working Group to evaluate progress and review Management Plan objectives on a regular basis and adjust activities if necessary. This evaluation process should include a disputes mechanism at the national and regional level.	TRY	Department of Fisheries DPWM NEA	Low cost (<EUR 25,000)	More than 12 months	June 2023 (ongoing)	Evaluation reports.

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Table 2d Performance Indicator Action Plan table for Action 4 [A4]

Action ID no	A4					
Action name	Improved Monitoring, Control and Surveillance (MCS)					
Action summary	Ensure good compliance of the fishery with management measures and conduct routine monitoring to ensure management is effective and appropriate to the stock.					
Performance Indicator(s) and/or Scoring Issue(s)	PI 1.2.1 PI 1.2.2 PI 1.2.3 PI 2.1.3 PI 2.2.3 PI 2.3.2 PI 2.3.3 PI 2.4.2 PI 2.4.3 PI 2.5.2 PI 2.5.3 PI 3.2.3					
Date of completion	2026					
Task/s No.	Responsible – Action lead	Responsible – Action partners	Resources – Cost	Resources - Time	Date of completion	Evidence of completion
A4-1 Review MCS strategy, including risk assessment, to ensure enforcement of harvest strategy (open and closed season, community exclusive zones and size limits) is applied consistently. This should review not only management measures to protect oysters but also those in place to protect mangroves.	DPWM Department of Fisheries	TRY NEA NASCOM Gambian Navy	Medium cost (>EUR 25,000 and < EUR 250,000)	More than 12 months	January 2025	Evidence of review such as consultation meetings and drafting of updated MCS strategies.

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There is currently anecdotal evidence of illegal mangrove harvesting and oyster poaching during the closed season (largely from non-members of TRY).						
<p>A4-2 Evaluate effectiveness of the MCS strategy and where necessary, initiate improvements to MCS that are appropriate for the fishery.</p> <p>Collect and record data on number of inspections, number of infringements and number of successful prosecutions to determine if management measures within the Co-Management Plan are effective and complied with as well as whether sanctions are an effective deterrent.</p>	<p>DPWM Department of Fisheries</p>	<p>TRY NEA Gambian Navy</p>	<p>Medium cost (>EUR 25,000 and < EUR 250,000)</p>	<p>More than 12 months</p>	<p>January 2026</p>	<p>MCS Strategy.</p>
<p>A4-3 Where gaps exist, identify capacity and resources needed to improve MCS strategy and implement changes.</p>	<p>Department of Fisheries</p>	<p>TRY</p>	<p>Medium cost (>EUR 25,000 and < EUR 250,000)</p>	<p>6-12 months</p>	<p>June 2026</p>	<p>Needs Assessment Study Report.</p>

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<p>A4-4 If needed, strengthen ability for TRY Association to undertake their own MCS through enhanced training and availability of resources.</p>	<p>DPWM Department of Fisheries</p>	<p>TRY NEA NASCOM Gambian Navy</p>	<p>Medium cost (>EUR 25,000 and < EUR 250,000)</p>	<p>More than 12 months</p>	<p>June 2026</p>	<p>Training programme and attendance records.</p>
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Table 2e Performance Indicator Action Plan table for Action 5 [A5]

Action ID no	A5					
Action name	Stock Assessment					
Action summary	Conduct stock assessment on the mangrove oyster stock to demonstrate that management measures are working and to obtain data to feed back into the management plan.					
Performance Indicator(s) and/or Scoring Issue(s)	PI 1.2.1 PI 1.2.2 PI 1.2.3					
Date of completion	2025					
Task/s No.	Responsible – Action lead	Responsible – Action partners	Resources – Cost	Resources - Time	Date of completion	Evidence of completion
A5-1 Identify stock assessment methodologies that would be suitable (e.g. data-limited models) to determine stock density and spatial distribution. More complex age/size based models could be used where data exists from biological sampling.	Department of Fisheries	TRY	Low cost (< EUR 25,000)	6-12 months	January 2025	Identification of appropriate stock assessment methodology.
A5-2 Conduct routine stock assessments (e.g. every 3-5 years).	Department of Fisheries	TRY	Medium cost (>EUR 25,000 and < EUR 250,000)	6-12 months	June 2025 (ongoing)	Stock assessment report.
A5-3 Stock assessment data should be used to review effectiveness of the harvest strategy within the Co-Management Plan and could provide data needed to control fishing effort by the	Department of Fisheries	TRY	Low cost (< EUR 25,000)	<6 months	June 2025 (ongoing)	Updated management plan based on stock assessment data.

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established national Working Group.						
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Action timescales and progress report

Table 3: Evaluation against Action Plan Timescale Year X (complete a table for each year after Year 1)

Action ID and Name	Date of completion expected	Progress / outcome this year	Revised date of completion (if required)

MSC Fisheries Improvement Action Plan Template



Table 4a. Action plan score change table for Principle 1 Performance Indicators

[This should correspond with the Benchmarking and Tracking Tool]

Performance Indicator	Draft Scoring Range [Pre-Assessment] Year 0	Action(s) IDs [If improvement is needed]	Expected PI draft scoring range change							
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
1.2.1 Harvest Strategy	<60	A1, A3, A4, A5	<60	<60	60-79	60-79	≥80			
1.2.2 Harvest control rules and tools	<60	A1, A3, A4, A5	<60	<60	60-79	60-79	≥80			
1.2.3 Information and monitoring	<60	A1, A3, A4, A5	<60	<60	60-79	60-79	60-79			

Table 4b. Action plan score change table for Principle 2 Performance Indicators

Performance Indicator	Draft Scoring Range Year 0	Action(s) IDs	Expected PI draft scoring range change							
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
2.1.3 Primary species Information & monitoring	60-79	A1, A2, A4	60-79	60-79	60-79	60-79	≥80			
2.2.3. Secondary species Information & monitoring	60-79	A1, A2, A4	60-79	60-79	60-79	60-79	≥80			

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2.3.2 ETP species management	60-79	A2, A3, A4	60-79	60-79	60-79	60-79	≥80			
2.3.3 ETP Species Information & monitoring	<60	A2, A4	<60	60-79	60-79	60-79	≥80			
2.4.2 Habitat management strategy	60-79	A2, A3, A4	60-79	60-79	60-79	60-79	60-79			
2.4.3 Habitat information	60-79	A2, A4	60-79	60-79	60-79	60-79	60-79			
2.5.1 Ecosystem outcome	60-79	A2	60-79	60-79	60-79	≥80	≥80			
2.5.2 Ecosystem management strategy	60-79	A2, A3, A4	60-79	60-79	60-79	60-79	≥80			
2.5.3 Ecosystem information	<60	A2, A4	<60	60-79	60-79	60-79	≥80			

Table 4c. Action plan score change table for Principle 3 Performance Indicators

Performance Indicator	Draft Scoring Range Year 0	Action(s) IDs	Expected PI draft scoring range change							
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
3.1.1 Legal and/or customary framework	60-79	A3	60-79	60-79	60-79	60-79	≥80			
3.1.2 Consultation, roles & responsibilities	60-79	A3	60-79	60-79	60-79	≥80	≥80			
3.2.2 Decision-making processes	60-79	A3	60-79	60-79	60-79	≥80	≥80			
3.2.3 Compliance & enforcement	<60	A3, A4	<60	<60	<60	60-79	60-79			

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3.2.4 Monitoring and management performance evaluation	60-79	A3	60-79	60-79	60-79	60-79	≥80			
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