Review of updated information systems on fisheries removals for the Ghana pole and line FIP against the MSC Fisheries Standard

Version 1.0

Prepared by

***by* Key Traceability Ltd.**
March 2023

Key Traceability Ltd.
+44 7505 122728
info @keytraceability.com
England Registered Company 09730288
70 Londesborough Road, Portsmouth, PO4 0EX

Project ref. 0080

Contents

Glossary 3
1 Executive summary 4
2 Principle 1 action analysis 5
3 References 10

Key Traceability Ltd. Company Registered in England, Number 9730288, VAT No. 257022718

Glossary

Acronym	Definition
ACDR	Announcement Comment Draft Report
AOTTP	Atlantic Ocean Tropical tuna Tagging Programme
CAS	Catch-At-Size
CPC	Contracting Party or Cooperating non-Contracting Party
CPUE	Catch-Per-Unit Effort
FIP	Fishery Improvement Programme
HCR	Harvest Control Rule
ICCAT	International Commission on the Conservation of Atlantic Tuna
MSC	Marine Stewardship Council
MSE	Management Strategy Evaluation
MP	Management Procedure
SCRS	Standing Committee on Research and Statistics
SI	Scoring Issue
PCR	Public Certification Report
PI	Performance Indicator
RFMO	Regional Fisheries Management Organisation

Key Traceability Ltd. Company Registered in England, Number 9730288, VAT No. 257022718

1 Executive summary

This report is with respect to the Ghana pole and line fishery improvement project (FIP). The fishery targets bigeye (*Thunnus obesus*), skipjack (*Katsuwonus pelamis*), and yellowfin tuna (*T. albacares*) by pole and line gear. Fishing activities is made on both on freely associated schools of tuna and floating objects, for example Fish Aggregating Devices (FADs). The regional fisheries management organisation (RFMO) for this fishery is the International Commission for the Conservation of Atlantic Tunas (ICCAT).

This short report explores published and peer-reviewed literature to justify the completion and closure of Tasks 5b and 6b in the FIP workplan for publication on the Fishery Progress website. Two Performance Indicators (PIs) are relevant for this report, PI 1.2.3 “Information and Monitoring” and 1.2.4 “Assessment of Stock Status”.

Justification for the closure of these tasks is based on other Marine Stewardship Council (MSC) Public Certification Reports (PCRs) and the new ICCAT skipjack stock assessment from 2022. Due to harmonisation requirements under MSC Fisheries Certification Process (FCP) v2.2 Annex PB (active document at the time of this report being written) for Principle 1, the review of other certifications of overlapping fisheries has been considered here.

The FIP task associated with 6b asks to “follow up next SKJ stock assessment report and recommendations to ensure stock assessments support the development of applicable, quantitative HCRs”. Sieben et al., 2023 address this in the MSC report “ICCAT is working on the development of formal management procedures for its key stocks, based on the process of Management Strategy Evaluation (MSE) – basically a formal method of selecting the most appropriate management procedure, using model projections… According to the 2022 SCRS report (ICCAT_SCRS, 2022a), the development of a single-species western skipjack MSE (the most advanced) is proceeding in parallel with the development of single-species models for the other stocks (eastern skipjack, yellowfin and bigeye) with the aim of introducing first the MP for western skipjack and then a multispecies MP for all the tropical tunas (as per the timetable set out above). The western skipjack MSE is progressing and has been updated to the 2022 skipjack stock assessment, and preliminary single-species models for yellowfin and bigeye exist, but the eastern skipjack single-species model has not yet been revised for the new assessment”. Although HCRs for skipjack to do not meet an unconditional pass in the MSC assessments, the argument is that HCRs for the eastern stock are available, and the new stock assessment demonstrates stock status is good with low exploitation rates and takes into account the main uncertainties. Essentially HCRs for eastern skipjack have not had to be well-defined as PRI has never been approached and management for this mixed species fishery has been mainly aimed at the less productive stocks of yellowfin and bigeye (and these are addressed under FIP activities for harvest strategy and HCRs). On that basis the work around PIs 1.2.3 and 1.2.4 for eastern skipjack are no longer required as the stock assessment is now contributing to the development of quantitative HCRs.

Key Traceability Ltd. Company Registered in England, Number 9730288, VAT No. 257022718

2 Principle 1 action analysis

The following section provides the pre-assessment rationales which led to the development of FIP actions, and the justification for the completion of actions 5b and 6b from the Ghana pole and line FIP workplan. The rationales are based on MSC full assessments Public Certification Reports. With the acceptance of the closure of this task, improvements to PIs 1.2.3 and 1.2.4 are expected for skipjack for the FIP.

FIP task (Huntingdon and Defaux, 2017):
5b. Review of updated information systems on fisheries removals. Review of the actions taken to date, progress in work plan implementation, and an evaluation of remaining gaps in data collection and analysis.

6b: Follow up next SKJ stock assessment report and recommendations to ensure stock assessments support the development of applicable, quantitative HCRs.

NB: Only the scoring issues (SIs) which received less than SG80 during the 2017 pre-assessment have been discussed in this document.

Table 1. Rationale for closure of FIP action associated with MSC PI 1.2.3 for "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			
	Guidepost	**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 is 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.
	Pre-assessment met?	Y	N	
	This report	Y	Y	
	Justification to develop FIP action plan: "The scientific working group appears to believe, among other things, that the Eastern stock comprises a series of sub-stocks for which the structure is not well understood. The lack of a generally accepted stock assessment underlines these problems. SG80 is not met (Medley and Gascoigne, 2017).			

Key Traceability Ltd. Company Registered in England, Number 9730288, VAT No. 257022718

	Updated rationale based on MSC assessments: ICCAT has several information reporting requirements for Contracting Party or Cooperating non-Contracting Parties (CPCs) with respect to input into stock assessment models. CPCs are mandated to submit fisheries data on their fleets' activities. These include Task I nominal catch, Task II catch and effort, Task II catch-at-size (CAS) and the corresponding size frequency data aggregated by year-quarter, fishing mode, main gear, and 5x5 square Lat-Long. grid (ICCAT, 2016). When compiled, this information provides a suitable insight into stock structure, stock productivity, fleet composition and catch-per-unit effort (CPUE). These detailed data are available since the 1950s. According to Akroyd et al., 2022 and Kirchner et al., 2019 the information is adequate to use different stock assessment approaches and **meet SG80**. This is justified with reference to ICCAT paper (2019), the report on the Standing Committee on Research and Statistics (SCRS) and Atlantic Ocean Tropical tuna Tagging Programme (AOTTP) in place, which contributes to building information of key parameters for the stock assessment. There is a comprehensive range of relevant information on stock abundance, fishery removal and other information such as environmental information. Environmental data is available on the ICCAT website. Subsequent to the MSC assessment reports referenced above was the publication of the skipjack stock assessment meeting (ICCAT, 2022). This report provided updates on fisheries statistics, size and CAS estimates, biological parameters (growth and natural mortality) and fleet structure. The fleet structures were updated in line with the latest BET and YFT stock assessments with the aim of allowing for future integration with the tropical tuna MSE process.			
b	Monitoring			
	Guidepost	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.
	Pre-assessment met?	Y	N	
	This report	Y	Y	
	Justification to develop FIP action plan: With recent sustained higher exploitation, the fisheries needs to develop more accurate abundance indices and catches measures to meet SG80 (Medley and Gascoigne, 2017).			
	Updated rationale based on MSC assessments: CPCs submit information on their fleets' activities to ICCAT. This is collected through logbook submissions and landing records. Palma et al. (2019) provides a 'scorecard' on data availability for the stocks under ICCAT's jurisdiction (below) and eastern skipjack scored as "reasonable". Kirchner et al., (2019) and Akroyd et al., (2022) assert that stock abundance and removals of skipjack are regularly monitored at a level of accurate and consistent with the harvest control rule (HCR). This is provided through two standardised fishery indices from the EU purse seine fishery "an index which accounts for eastern Atlantic skipjack caught in free schools off the coast of Senegal up to 2006 and the second index which characterises fish captured off FADs and in free schools in the equatorial			

Key Traceability Ltd. Company Registered in England, Number 9730288, VAT No. 257022718

area were developed which were used in different stock assessment methods as sensitivity runs". **SG80 is met**.

SCORECARD (30 years, 1988-2017)

Spc. Group	Species	Species/stock	flags fisheries (95%tot)	SCORE
Temperate	ALB	ALB-N stock	12	7.05
		ALB-S stock	10	5.49
		ALB-M stock	12	1.89
	BFT	BFT-E stock (ATE region)	10	5.71
		BFT-E stock (MED region)	29	3.12
		BFT-W stock	9	8.49
Tropicals	BET	BET-A stock (AT + MD)	27	6.49
	YFT	YFT-E region	24	6.46
		YFT-W region	26	4.36
	SKJ	SKJ-E stock	18	7.05
		SKJ-W stock	5	4.37

		Quartile
bad:	[0, 2.5[	1
poor:	[2.5, 5[	2
reasonable:	[5, 7.5[	3
good:	[7.5, 10[	4

OVERALL PERFORMANCE INDICATOR SCORE:

Assessment	Score
Sant Yago TF unassociated purse seine Atlantic yellowfin tuna fishery (Kirchner et al., 2019)	**80**
AGAC four oceans integral purse seine tropical tuna fishery (Atlantic Ocean) (Akroyd et al., 2022)	**80**
Atlantic Ocean tropical tuna French purse seine fishery (ACDR report so scoring may change).	**≥80**

New score: 80

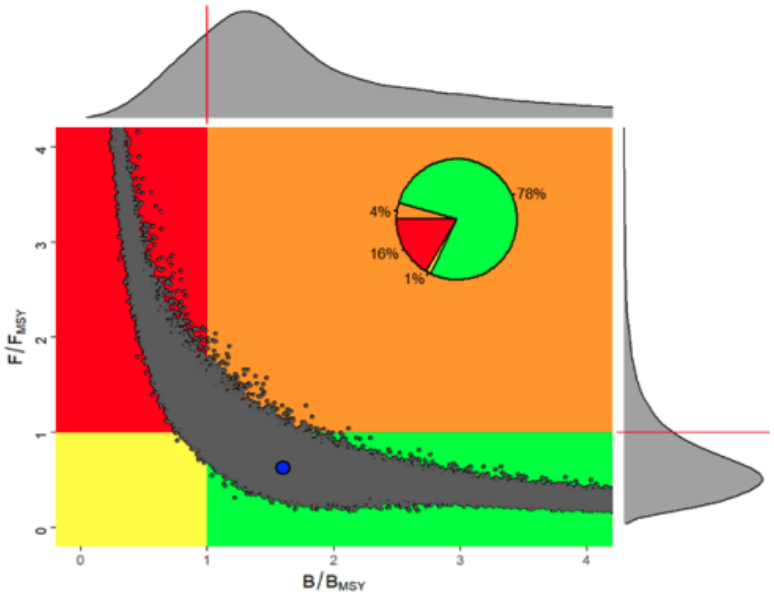
Table 2. Rationale for closure of FIP action associated with MSC PI 1.2.4 "Assessment of stock status".

PI 1.2.4	**There is an adequate assessment of the stock status**		
Scoring Issue	SG 60	SG 80	SG 100
b	Assessment approach		
Guidepost	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.	
Pre-assessment met?	Y	N	
This report	Y	Y	
Justification to develop FIP action plan: The stock appears to be exploited now to a level where risks of undetected overexploitation are no longer negligible. MSY reference points have not been estimated with any confidence, perhaps partly because the assessment is not appropriately aligned with stock structure.			

Key Traceability Ltd. Company Registered in England, Number 9730288, VAT No. 257022718

Therefore, the stock assessment approach is not now appropriate for this stock and does not meet SG80.The next stock assessment is due in 2019 (Medley and Gascoigne, 2017).

Updated rationale based on MSC assessments: The stock assessments run by ICCAT estimate generic reference points B/B_{MSY} and F/F_{MSY}. On this basis, SG60 is met. According to ICCAT (2022b) "The 2022 Skipjack Stock Assessment Meeting was conducted using similar assessment models/methods to those used in the assessments of other tropical tuna species, including yellowfin and bigeye tuna. Stock status evaluations for both stocks of Atlantic skipjack tuna used in 2022 included several modelling approaches, ranging from non-equilibrium (MPB) and Bayesian state-space (JABBA) production models to integrated statistical assessment models (Stock Synthesis). Different model formulations considering plausible representations of the dynamics of the skipjack stocks were used to characterise the stock status and the uncertainties in stock status evaluations". The last stock assessment was updated in 2022 from the previous one in 2014. Improvements have been made to the uncertainties previously highlighted by applying production models (JABBA) and one integrated statistical assessment model (Stock Synthesis) to the available catch data through 2020. The Kobe phase plot below (Figure 14 in ICCAT, 2022b) shows the 18 Stock Synthesis uncertainty grid runs and 18 JABBA uncertainty grid runs for the eastern Atlantic skipjack stock. For each run the benchmarks are calculated from the year-specific selectivity and fleet allocations and based on 90000 MVLN iterations for Stock Synthesis and 90000 MCMC iterations for JABBA. The blue point shows the median of 180,000 iterations for SSB_{2020}/SSB_{MSY} or B_{2020}/B_{MSY} and F_{2020}/F_{MSY} for the entire set of runs in the grid. Grey points represent the 2020 estimates of relative fishing mortality and relative spawning stock biomass for 2020 for each of the 180,000 iterations. The upper graph represents the smoothed frequency distribution of SSB_{2020}/SSB_{MSY} or B_{2020}/B_{MSY} estimates for 2020. The right graph represents the smoothed frequency distribution of F_{2020}/F_{MSY} estimates for 2020. The inserted pie graph represents the percentage of each 2020 estimate that fall in each quadrant of the Kobe plot. All SSB for Stock Synthesis showed the values at the end of years.



Given the updated work by the SCRS it can be argued that assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated as "the 2022 assessment was able to provide quantitative estimates of management reference points and projections of stock status for both skipjack stocks, something that was never achieved before by the Committee (ICCAT, 2022b). SG80 is met.

Key Traceability Ltd. Company Registered in England, Number 9730288, VAT No. 257022718

OVERALL[1] PERFORMANCE INDICATOR SCORE:

Assessment	Score
Sant Yago TF unassociated purse seine Atlantic yellowfin tuna fishery (Kirchner et al., 2019)	**75**
AGAC four oceans integral purse seine tropical tuna fishery (Atlantic Ocean) (Akroyd et al., 2022	**70**
Atlantic Ocean tropical tuna French purse seine fishery (ACDR report so scoring may change).	**≥80**

New score: 80

[1] This is the score for the overall PI score, not the scoring issues listed above, which were allocated as follows for the AGAC assessment – SIa 80, SIb 60 and St Yago assessment – SIa 80, SIb 80.

Key Traceability Ltd. Company Registered in England, Number 9730288, VAT No. 257022718

3 References

Akroyd, J., Kirchner, C., McLoughlin, K., Blythe-Skyrme, R., Norman, S., Japp, D. 2022. AGAC four ocean Integral Purse Seine Tropical Tuna Fishery (Atlantic Ocean). MSC Public Certification Report. Available at:
https://fisheries.msc.org/en/fisheries/agac-four-oceans-integral-purse-seine-tropical-tuna-fishery/@@assessments

Huntington, T., and Defaux, V. 2017. Draft action plan for a purse seine tuna fisheries improvement project in the eastern Atlantic Ocean. Poseidon Aquatic Resource Management Ltd. Available at: https://fisheryprogress.org/system/files/documents_workplan/action%20plan.pdf

ICCAT. 2016. Report of the 2016 ICCAT yellowfin tuna stock assessment meeting (San Sebastian, Spain – 27 June to 1 July 2016). Retrieved from:
https://www.iccat.int/Documents/Meetings/Docs/2016_YFT_ASSESSMENT_ENG.pdf

ICCAT. 2019. Report of the Standing Committee on Research and Statistics (SCRS). (Madrid, Spain, 30 September to 4 October 2019) Retrieved from:
https://www.iccat.int/Documents/Meetings/Docs/2019/REPORTS/2019_SCRS_ENG.pdf

ICCAT. 2022a. Report on the 2022 skipjack stock assessment meeting. (Online, 23-27 May 2022)

ICCAT. 2022b. Report of the Standing Committee on Research and Statistics (SCRS). (Madrid, Spain/hybrid – 26-30 September 2022. Revised, 6 October 2022. Available at: iccat.int/Documents/Meetings/Docs/2022/REPORTS/2022_SCRS_ENG.pdf

Kirchner, C., DeAlteris, J., Ríos, J. 2019. Sant Yago TF unassociated purse seine Atlantic yellowfin tuna fishery. Public Certification Report. 2019. Available at: https://fisheries.msc.org/en/fisheries/sant-yago-tf-unassociated-purse-seine-atlantic-yellowfin-tuna-fishery/@@assessments

Palma, C., Mayor, C., Taylor, N., Schirripa, M., Diaz, G., Ortiz, M. 2019. Global scores on Task I and task II data availability by species and stock, for the major ICCAT managed species. Collect. Vol. Sci. Pap. ICCAT, 76(5): 58-71. SCRS/2019/045. Available at:
https://www.iccat.int/Documents/CVSP/CV076_2019/n_5/CV76005058.pdf

Sieben, C., Gascoigne, J., des Clers, S. 2023. Atlantic Ocean tropical tuna French purse seine fishery. MSC Announcement Comment Draft Report. Available at:
https://fisheries.msc.org/en/fisheries/atlantic-ocean-tropical-tuna-french-purse-seine/@@view

Key Traceability Ltd. Company Registered in England, Number 9730288, VAT No. 257022718