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Global Standard for Responsible Supply of Marine Ingredients

Fishery Assessment Methodology and Template Report V2.0

Fishery Under Assessment	**Skipjack tuna *Katsuwonus pelamis* FAO 77**
Date	**May 2019**
Assessor	**Jim Daly**

Application details and summary of the assessment outcome				
Name: Maz Industrial				
Address:				
Country: Mexico		**Zip:**		
Tel. No.:		**Fax. No.:**		
Email address:		**Applicant Code**		
Key Contact:		**Title:**		
Certification Body Details				
Name of Certification Body:		**SAI Global Ltd**		
Assessor Name	**Peer Reviewer**	**Assessment Days**	**Initial/Surveillance/Re-approval**	**Whole fish/ By-product**
Jim Daly	Virginia Polonio	0.5	Re-approval	By-product
Assessment Period	2018			

Scope Details	
Management Authority (Country/State)	Inter-American Tropical Tuna Commission (IATTC)
Main Species	Skipjack tuna *Katsuwonus pelamis*
Fishery Location	FAO 77 Pacific, Eastern central (EPO)
Gear Type(s)	Purse seine, pole and line, long line
Outcome of Assessment	
Overall Outcome	Pass
Clauses Failed	None
Peer Review Evaluation	Approve
Recommendation	Pass

Assessment Determination
The Regional Fishery Management Organisation (RFMO) managing the fishery in the assessment area is the Inter-American Tropical Tuna Commission (IATTC). The objective of this RFMO is to ensure the long-term conservation and sustainable use of tuna, tuna-like and other fish species taken by vessels fishing in the Eastern Pacific Ocean (EPO) in accordance with the relevant rules of international law. Recent Resolutions adopted by IATTC include a 2016 Resolution on Harvest Control Rules for Tropical Tuna including Skipjack. Maunder and Deriso (2007) investigated some simple indicators of skipjack stock status based on relative quantities. Rather than using reference points based on MSY, they compared current values of indicators to the distribution of indicators observed historically. They also developed a simple stock assessment model to generate indicators for biomass, recruitment, and exploitation rate. Results have been updated in this report to include data up to 2017 (**R3**). Although biomass, recruitment, and fishing mortality indices are estimated to be highly variable over time, data and model-based indicators have yet to detect any adverse impacts of removals on this fishery. The species is considered, when applying the most recent stock indicators, to have a biomass above the limit reference point (or proxy). Fishery removals of the species in the fishery under assessment are included in the stock assessment process. IUCN has categorised skipjack tuna as a species of least concern. The species does not appear in the current CITES appendices (both sites accessed 21.05.19). The assessment team recommends the approval of skipjack tuna (Eastern Pacific Ocean fishery) as a by-product species under the current IIFO RS Standard (v2.0).
Peer Review Comments
Agree
Notes for On-site Auditor

Species-Specific Results

Category	Species	% landings	Outcome (Pass/Fail)	
Category A			A1	
			A2	
			A3	
			A4	
Category B				
Category C	Skipjack tuna *Katsuwonus pelamis*	N/A	Pass	
Category D				

[List all Category A and B species. List approximate total %age of landings which are Category C and D species; these do not need to be individually named here]

HOW TO COMPLETE THIS ASSESSMENT REPORT

This assessment template uses a modular approach to assessing fisheries against the IFFO RS standard.

Whole Fish

The process for completing the template for a **whole fish** assessment is as follows:

1. ALL ASSESSMENTS: Complete the Species Characterisation table, to determine which categories of species are present in the fishery.
2. ALL ASSESSMENTS: Complete clauses M1, M2, M3: Management.
3. IF THERE ARE CATEGORY A SPECIES IN THE FISHERY: Complete clauses A1, A2, A3, A4 for **each** Category A species.
4. IF THERE ARE CATEGORY B SPECIES IN THE FISHERY: Complete the Section B risk assessment for **each** Category B species.
5. IF THERE ARE CATEGORY C SPECIES IN THE FISHERY: Complete clause C1 for **each** Category C species.
6. IF THERE ARE CATEGORY D SPECIES IN THE FISHERY: Complete Section D.
7. ALL ASSESSMENTS: Complete clauses F1, F2, F3: Further Impacts.

A fishery must score a pass in **all applicable clauses** before approval may be recommended. To achieve a pass in a clause, the fishery/species must meet **all** of the minimum requirements.

By-products

The process for completing the template for **by-product raw material** is as follows:

1. ALL ASSESSMENTS: Complete the Species Characterisation table with the names of the by-product species and stocks under assessment. The '% landings' column can be left empty; all by-products are considered as Category C and D.
2. IF THERE ARE CATEGORY C BYPRODUCTS UNDER ASSESSMENT: Complete clause C1 for **each** Category C by-product.
3. IF THERE ARE CATEGORY D BYPRODUCTS UNDER ASSESSMENT: Complete Section D.
4. ALL OTHER SECTIONS CAN BE DELETED. Clauses M1 - M3, F1 - F3, and Sections A and B do not need to be completed for a by-product assessment.

By-product approval is awarded on a species-by-species basis. Each by-product species scoring a pass under the appropriate section may be approved against the IFFO RS Standard.

SPECIES CATEGORISATION

The following table should be completed as fully as the available information permits. Any species representing more than 0.1% of the annual catch should be listed, along with an estimate of the proportion of the catch each species represents. The species should then be divided into Type 1 and Type 2 as follows:

- **Type 1 Species** can be considered the 'target' or 'main' species in the fishery. They make up the bulk of annual landings and are subjected to a detailed assessment.
- **Type 2 Species** can be considered the 'bycatch' or 'minor' species in the fishery. They make up a small proportion of the annual landings and are subjected to relatively high-level assessment.

Type 1 Species must represent 95% of the total annual catch. Type 2 Species may represent a maximum of 5% of the annual catch (see Appendix B).

Species which make up less than 0.1% of landings do not need to be listed (NOTE: ETP species are considered separately). The table should be extended if more space is needed. Discarded species should be included when known.

The 'stock' column should be used to differentiate when there are multiple biological or management stocks of one species captured by the fishery. The 'management' column should be used to indicate whether there is an

adequate management regime specifically aimed at the individual species/stock. In some cases it will be immediately clear whether there is a species-specific management regime in place (for example, if there is an annual TAC). In less clear circumstances, the rule of thumb should be that if the species meets the minimum requirements of clauses A1-A4, an adequate species-specific management regime is in place.

NOTE: If any species is categorised as Endangered or Critically Endangered on the IUCN Red List, or if it appears in the CITES appendices, it **cannot** be approved for use as an IFFO RS raw material. This applied to whole fish as well as by-products.

TYPE 1 SPECIES (Representing 95% of the catch or more)
Category A: Species-specific management regime in place.
Category B: No species-specific management regime in place.

TYPE 2 SPECIES (Representing 5% OF THE CATCH OR LESS)
Category C: Species-specific management regime in place.
Category D: No species-specific management regime in place.

Common name	Latin name	Stock	% of landings	Management	Category
Skipjack tuna	*Katsuwonus pelamis*	EPO	N/A	IATTC	C

CATEGORY C SPECIES

In a whole fish assessment, Category C species are those which make up less than 5% of landings, but which are subject to a species-specific management regime. In most cases this will be because they are a commercial target in a fishery other than the one under assessment. In a by-product assessment, Category C species are those which are subject to a species-specific management regime, and are usually targeted species in fisheries for human consumption.

Clause C1 should be completed for **each** Category C species. If there are no Category C species in the fishery under assessment, this section can be deleted. A Category C species does not meet the minimum requirements of clause C1 should be re-assessed as a Category D species.

Species Name		**Skipjack tuna *Katsuwonus pelamis***	
C1	**Category C Stock Status - Minimum Requirements**		
	C1.1	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	Pass
	C1.2	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.	Pass
		Clause outcome:	**Pass**

Evidence:

Clause C1.1:

EPO Skipjack are caught by purse seine, longline, pole & line and artisanal vessels. It is likely that there is a continuous stock throughout the Pacific Ocean with some exchange of individuals occurring at local level. Large-scale movements (from Eastern to Western Pacific Ocean) are thought to be rare.

For stock assessments of skipjack seven purse-seine fisheries and one pole-and-line fishery are defined. During 2001-2015 the annual retained catch in the EPO (purse-seine, pole and line fisheries) averaged 242,000t. The preliminary estimate of retained catch in 2016 was 337,000t. Small amounts of EPO skipjack are caught with longlines and other gears. The bulk of the catches are made in the Eastern and Western regions, purse-seine catches are relatively low in the vicinity of the western boundary of the EPO at 150°W.

Fishery removals of the species in the fishery under assessment are included in the stock assessment process, the stock passes Clause C1.1.

Clause C1.2:
Maunder (2016 **R2**) provides a concise but comprehensive explanation of the difficulties associated with assessing stock status of EPO skipjack tuna. As a result of these difficulties, no traditional biomass or fishing mortality-based reference points are available. Maunder and Deriso (2007 **R4**) investigated some simple indicators of stock status based on relative quantities. Rather than using reference points based on MSY, they compared current values of indicators to the distribution of indicators observed historically. They also developed a simple stock assessment model to generate indicators for biomass, recruitment, and exploitation rate. To evaluate the current values of the indicators in comparison to historical values, reference levels based on the 5th and 95th percentiles were used, as distributions of the indicators are asymmetric. The latest evaluation based on these indicators used data up to 2017 (Maunder, 2018 **R3**).

Eight data- and model-based indicators are shown in **Figure 1**. Maunder (2018) notes that the main concern with the skipjack stock was the constantly increasing exploitation rate. However, he notes that this appears to have levelled off in recent years and the data- and model-based indicators have yet to detect any adverse consequence of this increase. He also notes that the average weight was below its lower reference level in 2015 and 2016, which can be a consequence of overexploitation, but can also be caused by recent recruitments being greater than past recruitments or expansion of the fishery into areas occupied by smaller skipjack. Any continued decline in average length is a concern and, combined with levelling off of catch and CPUE, may indicate that the exploitation rate is approaching, or above, the level associated with MSY. Neither analyses of tagging data, nor various previous models (length-structured, A-SCALA, and SEAPODYM) indicate a credible risk to the skipjack stock(s).

As fishery removals of EPO skipjack tuna are included in the stock assessment process and the stock can be considered, in its most recent assessment, to have a biomass above its proxy limit reference point it passes clause C1.2.

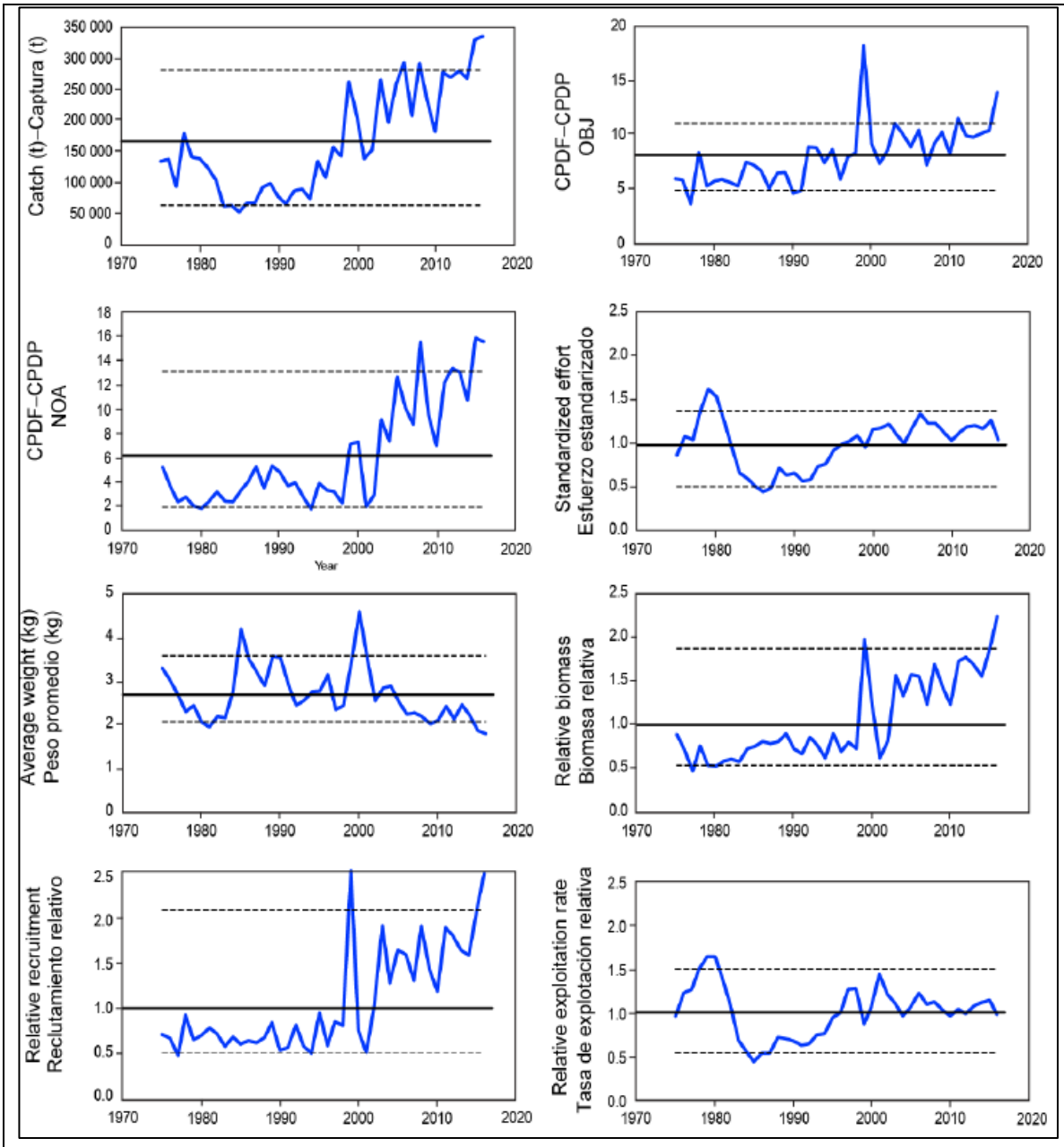

Figure 1. Indicators of stock status for skipjack tuna in the eastern Pacific Ocean.
OBJ: floating-object fishery; NOA: un-associated fishery; CPDF: catch per day fished. All indicators are scaled so that their average equals one. Source: Maunder, 2016. **R3**

The standardized effort, which is a measure of exploitation rate, is calculated as the sum of the effort, in days fished, for the floating-object (OBJ) and unassociated (NOA) fisheries. The floating-object effort is standardized to be equivalent to the unassociated effort by multiplying by the ratio of the average floating-object CPUE to the average unassociated CPUE.

The data- and model-based indicators have yet to detect any adverse impacts of the fishery. The average weight was below its lower reference level in 2015 and 2016, which can be a consequence of overexploitation, but can also be caused by recent recruitments being greater than past recruitments or expansion of the fishery into areas occupied by smaller skipjack. Any continued decline in average length is a concern. Neither analyses of tagging data, nor various previous models indicate a credible risk to the skipjack stock(s).

The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), and passes Clause C1.2.
References **R1** IATTC, (2016). Fishery Status Report. Tunas, billfishes and other pelagic species in the Eastern Pacific Ocean in 2016. https://www.iattc.org/PDFFiles/FisheryStatusReports/_English/FisheryStatusReport15.pdf **R2** Maunder, Mark N. (2016). Updated indicators of stock status for skipjack tuna in the Eastern Pacific Ocean. https://www.iattc.org/PDFFiles/StockAssessmentReports/_English/SAR-18-3-SKJ-assessment-2016.pdf **R3** Maunder, Mark N. (2018) IATTC Stock Assessment Report No 19: Status of the tuna and billfish stocks in 2017: Updated indicators of stock status: pp 25-32 http://www.iattc.org/PDFFiles/StockAssessmentReports/_English/No-19-2018_Status%20of%20the%20tuna%20and%20billfish%20stocks%20in%202017.pdf **R4** Maunder and Deriso (2007) El uso de indicadores de condición de población cuando no se dispone de puntos de referencia tradicionales: evaluación y aplicación al atún barrilete en el Océano Pacífico oriental. Comisión Interamericana del Atún Tropical, Informe de Evaluación de Stocks, 8: 229-248. **R5** (Anon) (2017) IATTC Fisheries Status Report No 15: Tunas, Billfishes and other pelagic species in the Eastern Pacific Ocean pp 1-191 http://www.iattc.org/PDFFiles/FisheryStatusReports/_English/FisheryStatusReport15.pdf **R6** FAO Species Fact Sheets (Skipjack tuna) http://www.fao.org/fishery/species/2494/en **R7** IUCN Red list: http://www.iucnredlist.org/search (accessed 20.05.19)
Standard clauses 1.3.2.2

SOCIAL CRITERION

In addition to the scored criteria listed above, applicants must commit to ensuring that vessels operating in the fishery adhere to internationally recognised guidance on human rights. They must also commit to ensuring there is no use of enforced or unpaid labour in the fleet(s) operating upon the resource.

Appendix A - Determining Resilience Ratings

The assessment of Category B species described in this assessment report template utilises a resilience rating system suggested by the American Fisheries Society. This approach was chosen because it is also used by FishBase, and so the resilience ratings for many thousands of species are freely available online. As described by FishBase, the following is the process used to arrive at the resilience ratings:

"*The American Fisheries Society (AFS) has suggested values for several biological parameters that allow classification of a fish population or species into categories of high, medium, low and very low resilience or productivity (Musick 1999). If no reliable estimate of r_m (see below) is available, the assignment is to the lowest category for which any of the available parameters fits. For each of these categories, AFS has suggested thresholds for decline over the longer of 10 years or three generations. If an observed decline measured in biomass or numbers of mature individuals exceeds the indicated threshold value, the population or species is considered vulnerable to extinction unless explicitly shown otherwise. If one sex strongly limits the reproductive capacity of the species or population, then only the decline in the limiting sex should be considered. We decided to restrict the automatic assignment of resilience categories in the Key Facts page to values of K, t_m and t_{max} and those records of fecundity estimates that referred to minimum number of eggs or pups per female per year, assuming that these were equivalent to average fecundity at first maturity (Musick 1999). Note that many small fishes may spawn several times per year (we exclude these for the time being) and large live bearers such as the coelacanth may have gestation periods of more than one year (we corrected fecundity estimates for those cases reported in the literature). Also, we excluded resilience estimates based on r_m (see below) as we are not yet confident with the reliability of the current method for estimating rm. If users have independent r_m or fecundity estimates, they can refer to Table 1 for using this information.*"

Parameter	**High**	**Medium**	**Low**	**Very low**
Threshold	0.99	0.95	0.85	0.70
r_{max} (1/year)	> 0.5	0.16 – 0.50	0.05 – 0.15	< 0.05
K (1/year)	> 0.3	0.16 – 0.30	0.05 – 0.15	< 0.05
Fecundity (1/year)	> 10,000	100 – 1000	10 – 100	< 10
t_m (years)	< 1	2 – 4	5 – 10	> 10
t_{max} (years)	1 - 3	4 – 10	11 – 30	> 30

Taken from the FishBase manual, "Estimation of Life-History Key Facts":
http://www.fishbase.us/manual/English/key%20facts.htm#resilience]

Appendix B – Background on the 5% catch rule

The proposed fishery assessment methodology uses a species categorisation approach to divide the catch in the assessment fishery into groups. These groups are:

- **Category A:** "Target" species with a species-specific management regime in place.
- **Category B:** "Target" species with no species-specific management regime in place.
- **Category C:** "Non-target" species with a species-specific management regime in place.
- **Category D:** "Non-target" species with no species-specific management regime in place

The distinction between 'target' and 'non-target' species is made to enable the assessment to consider the impact of the fishery on all the species caught regularly, without requiring a full assessment be conducted for each. Thus 'target' species are subjected to a more detailed assessment, while 'non-target' species are considered more briefly. For the purposes of the IFFO RS fishery assessment, 'target' and 'non-target' species are defined by their prevalence in the catch, by weight. Applicants must declare which species are considered 'target' species in the fishery, and the combined weight of these must be at least 95% of the annual catch. The remaining 5% can be made up of 'non-target' species. Note also that ETP species are considered separately, irrespective of their frequency of occurrence in the catch.

The proposed use of 5% as a limit for 'non-target' species is one area in which feedback is being sought via the public consultation. The decision to propose a value of 5% ensures consistency with other fishery assessment programmes, such as the MSC which uses 5% to distinguish between 'main' and 'minor' species (see MSC Standard, SA3.4 and GSA3.4.2); and Seafood Watch, which uses 5% when defining the 'main' species for the assessment (see Seafood Watch Standard, Criterion 2). The value is also consistent with the approached used in Version 1 of the IFFO RS Standard, in which up to 5% of the raw material could be comprised of 'unassessed' species.