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Global Standard for Responsible Supply
of Marine Ingredients

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Global Standard for Responsible Supply of Marine Ingredients Fishery Assessment Methodology and Template Report V2.0



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Fishery Under Assessment	Yellowfin Tuna (<i>Thunnus albacares</i>)
Date	May 2019
Assessor	Virginia Polonio

Application details and summary of the assessment outcome				
Name: Thein Quynh Ltd				
Address:				
Country: Vietnam		Zip:		
Tel. No.:		Fax. No.:		
Email address:		Applicant Code		
Key Contact:		Title:		
Certification Body Details				
Name of Certification Body:		SAI Global		
Assessor Name	Peer Reviewer	Assessment Days	Initial/Surveillance/Re-approval	Whole fish/ By-product
Virginia Polonio	Vito Romito	0.5	Surveillance 1	Byproduct
Assessment Period	2018			

Scope Details	
Management Authority (Country/State)	Western and Central Pacific Fisheries Commission (WCPFC)
Main Species	Yellowfin Tuna (<i>Thunnus albacares</i>)
Fishery Location	FAO 71 Pacific Western Central
Gear Type(s)	Purse seine, longline, pole and line.
Outcome of Assessment	
Overall Outcome	Pass
Clauses Failed	None
Peer Review Evaluation	Approve
Recommendation	Pass

Assessment Determination
<p>The Thailand Department of Fisheries (DOF) is the primary fishery management organisation in Thailand. The DOF is responsible for the implementation of Thai fishery legislation, the undertaking of fishery and aquaculture research, fishery control and enforcement, the management of international fishery affairs, and the engagement of fishery and aquaculture stakeholders. The current Thai fisheries management objectives are set out in The Master Plan – Marine Fisheries Management in Thailand. The Master Plan applies for the ten years beginning in 2009. The Plan includes five major strategies, the third of which is “Development and Promotion of Responsible and Sustainable Fisheries”. Thailand is a member of the Indian Ocean Tuna Commission (IOTC) and a co-operating non-member of the Western and Central Pacific Fisheries Commission (WCPFC).</p> <p>Yellowfin tuna, as a high migratory species, in the Western and Central Pacific Ocean are managed at the international level by the Western and Central Pacific Fisheries Commission (WCPFC). The Secretariat of the Pacific Community conducts regular assessments of tuna and tuna-like species. Also, the IOTC has implemented a number of conservation and management measures specific to the yellowfin tuna. These include resolutions on the limitation of fishing capacity, a ban on discarding, and establishment of target and limit reference points, and a number of measures aimed at ensuring the accurate recording of catch and effort.</p> <p>SC14 noted that no stock assessment was conducted for WCPO yellowfin tuna in 2018. Therefore, the stock status description from SC13 is still current.</p> <p>The estimates of the latest (2015) and recent (2011-2014) spawning biomass are both above levels necessary to produce the maximum sustainable yield (MSY). This indicates that the population is not overfished. Fishing mortality levels have been increasing over time but are still below levels needed to produce the maximum sustainable yield. Therefore overfishing is not occurring (Tremblay-Boyer, L. et al. 2017).</p> <p>The IUCN red list in its last assessment of global yellowfin tuna population carried out in 2011 defined the species as Near threatened with a decreasing population due to the mortality of juveniles in the FAD fisheries.</p> <p>However, in the last WCPFC the stock trends showed that the adults have increased over time.</p>

As the fishery has species –specific management system, it has been scored under category C. Clauses C1.1 and C1.2 have passed therefore the assessment team recommend the approval as by-product under IFFO RS standard.

Peer Review Comments

Yellowfin tuna in the Western and Central Pacific Ocean are managed at the international level by the Western and Central Pacific Fisheries Commission (WCPFC). The latest stock assessment in 2017, with data up to 2015, indicates that all relevant and available data, including catch information are used in the stock assessment process. Furthermore, yellowfin tuna biomass has been assessed as being above the B_{MSY} reference point, and therefore, above biomass limit level.

The Peer Reviewer agrees that this stock should be approved as by-product against the IFFO RS Standard.

Notes for On-site Auditor

Species-Specific Results

Category	Species	% landings	Outcome (Pass/Fail)	
Category A			A1	
			A2	
			A3	
			A4	
Category B				
Category C	Yellowfin tuna	NA	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
Yellowfin tuna	<i>Thunnus albacares</i>	FAO 71	NA	WCPFC	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		Yellowfin tuna (<i>Thunnus albacares</i>)	
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.	Yes
	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.	Yes
Clause outcome:			Pass
Evidence			
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.			
<p>Yellowfin tuna are considered a single population in the western and central Pacific Ocean for stock assessment purposes. The las stock assessment carried out was in 2017 and there is no new stock assessment in 2018. Fishery removals of Yellowfin tuna are still included in the stock assessment process. The 2017 assessment, similar to past assessments, used the stock assessment model and computer software known as MULTIFAN-CL. This updated assessment included a complete update of the 2014 reference model, with inputs (catch, effort, length-frequency and weight-frequency data for the fisheries defined in the analysis, and tag release-recapture data) extended for the time period 2012-2015. Catch rate series were updated using the Pacific wide longline database, a new regional structure was used and modifications to recruitment estimates were made (Tremblay-Boyer, L. et al. 2017). In the last assessment a weakness was considered due to timely submissions and data accuracy from some member countries, including Indonesia, Vietnam and the Philippines, that has been identified as an issue by the WCPFC Scientific Committee and it is expected to be corrected by the Commission. Since fishery removals of yellowfin tuna are included in the stock assessment process, the assessment team concludes that C1.1 is met.</p>			
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.			
<p>There is no update in the stock assessment for 2018, therefore we use the 2017 assessment information as a proxy. Yellowfin tuna is considered in its last stock assessment to have a biomass above the limit reference point. There is currently a limit but no target reference point adopted by the Western and Central Pacific Fisheries Commission for yellowfin tuna (Tremblay-Boyer, L. et al. 2017).</p>			
<p>Table 1. Summary of reference points over all 48 individual models in the structural uncertainty grid from the 2017 yellowfin tuna stock assessment. Note especially the SBrecent/SBMSY mean value of 1.37 indicating the stock biomass above the biomass MSY reference point (i.e. not overfished), and the Frecent/FMSY mean</p>			

value of 0.79 indicating fishing rates below the FMSY point (i.e. not overfishing occurring). Source: Tremblay-Boyer, L. et al. 2017.

	Mean	Median	Min	25%	75%	Max
C_{latest}	612764	613660	606762	612889	614273	615350
MSY	662583	666800	539200	627700	690700	754400
Y_{Recent}	642192	639200	534400	613200	677000	720400
f_{mult}	1.30	1.34	0.88	1.18	1.44	1.73
F_{MSY}	0.12	0.12	0.07	0.11	0.12	0.16
F_{Recent}/F_{MSY}	0.79	0.75	0.58	0.70	0.85	1.13
SB_{MSY}	546433	578500	186800	375675	683000	946800
SB_0	2215167	2376500	1197000	1775000	2633250	3105000
SB_{MSY}/SB_0	0.24	0.24	0.15	0.22	0.26	0.34
$SB_{F=0}$	2113938	2273717	1193336	1716208	2438297	2813584
$SB_{MSY}/SB_{F=0}$	0.25	0.26	0.16	0.22	0.28	0.35
SB_{latest}/SB_0	0.32	0.33	0.18	0.27	0.38	0.45
$SB_{latest}/SB_{F=0}$	0.34	0.35	0.16	0.27	0.41	0.49
SB_{latest}/SB_{MSY}	1.38	1.39	0.80	1.15	1.61	1.91
$SB_{Recent}/SB_{F=0}$	0.31	0.32	0.15	0.24	0.37	0.44
SB_{Recent}/SB_{MSY}	1.37	1.39	0.81	1.26	1.55	1.81

The estimates of the latest (2015) and recent (2011-2014) spawning biomass are both above levels necessary to produce the maximum sustainable yield (MSY). This indicates that the population is not overfished. Fishing mortality levels have been increasing over time but are still below levels needed to produce the maximum sustainable yield. Therefore overfishing is not occurring (Tremblay-Boyer, L. et al. 2017).

The kobe figure below (Figure 1) shows the results for each models. Following this plot the management advice given in SC 13 (2017) was that based on the uncertainty grid adopted the spawning biomass was highly likely above the biomass Limit Reference Point (LRP) and recent F was highly likely below FMSY. Therefore noting the level of uncertainties in the assessment, the stock was not experiencing overfishing (96% probability) and is not in an overfished condition (92% probability). The advice is taken for 2018 and the catches remains as suggested in 2017.

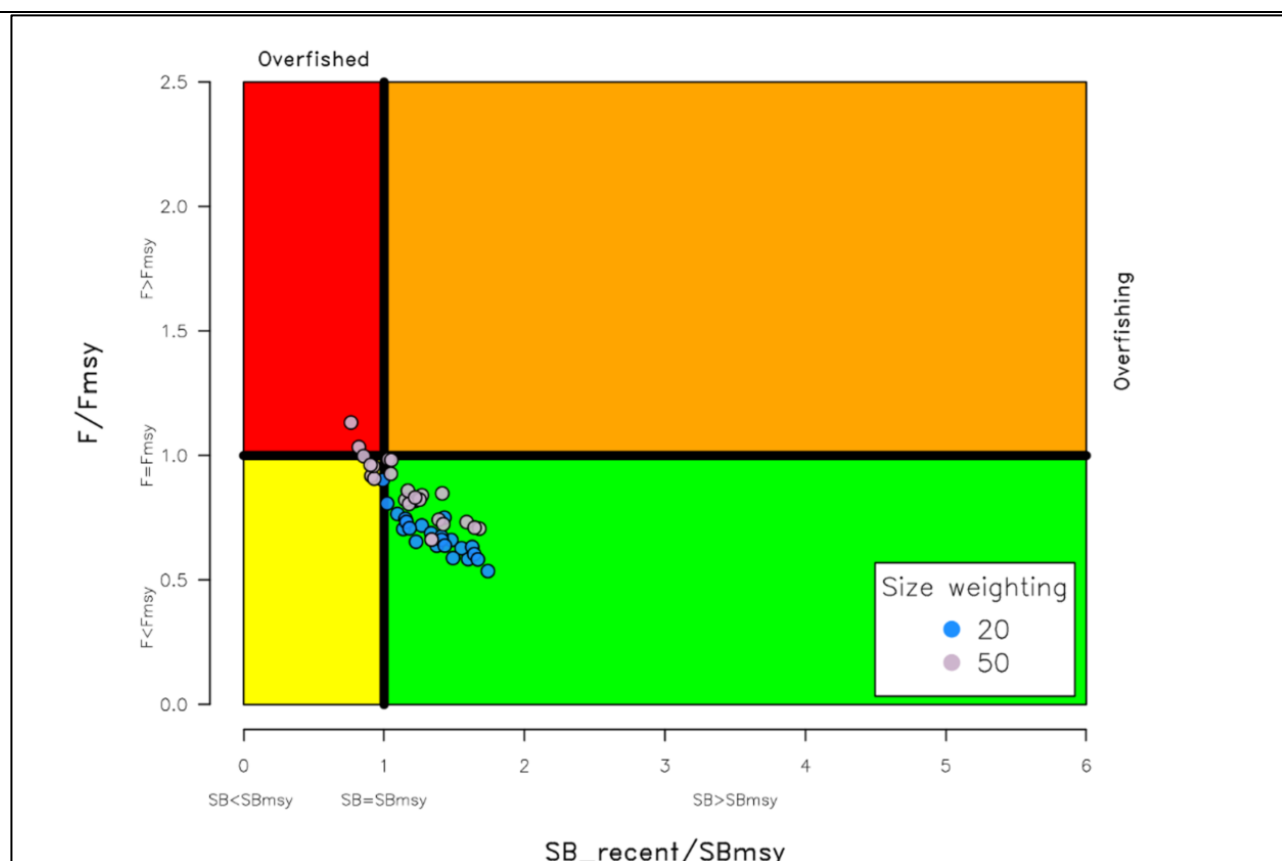


Figure 1. Kobe plot summarising the results for each of the models in the structural uncertainty grid. The points represent SB_{recent}/SB_{MSY} , the colours depict the models in the grid with the size composition weighting using divisors of 20 and 50 (Stock Status & Trends plus Management Advice and Implications, SC 14. WCPFC 2018)

Since the yellowfin tuna stocks under assessment are considered, in the most recent stock assessment, to have a biomass above the limit reference point, the assessment team concludes that the fishery meets C1.2.

References

Tremblay-Boyer, L., M., S., G. Pilling, and Hampton, J. 2017. Stock assessment of yellowfin tuna in the Western and Central Pacific Ocean. WCPFC-SC13-2017/SA-WP-06.

[https://www.wcpfc.int/system/files/SC13-SA-WP-06%20YFT-stock-assessment 2017_REV1.pdf](https://www.wcpfc.int/system/files/SC13-SA-WP-06%20YFT-stock-assessment%202017_REV1.pdf)

Sustainable Fisheries Partnership (SFP). Yellowfin tuna Western and Central Pacific Ocean. FishSource profile. In: FishSource [online]. Updated 14 February 2017. Accessed [16 May 2019]. https://www.fishsource.org/fishery_page/5183

Collette, B., Acero, A., Amorim, A.F., Boustany, A., Canales Ramirez, C., Cardenas, G., Carpenter, K.E., Chang, S.-K., de Oliveira Leite Jr., N., Di Natale, A., Die, D., Fox, W., Fredou, F.L., Graves, J., Guzman-Mora, A., Viera Hazin, F.H., Hinton, M., Juan Jorda, M., Minte Vera, C., Miyabe, N., Montano Cruz, R., Masuti, E., Nelson, R., Oxenford, H., Restrepo, V., Salas, E., Schaefer, K., Schratwieser, J., Serra, R., Sun, C., Teixeira Lessa, R.P., Pires Ferreira Travassos, P.E., Uozumi, Y. & Yanez, E. 2011. *Thunnus albacares*. The IUCN Red List of Threatened Species 2011:

e.T21857A9327139. <http://dx.doi.org/10.2305/IUCN.UK.2011-2.RLTS.T21857A9327139.en>. (Downloaded on 16 May 2019)

Yellowfin tuna (*Thunnus albacares*). Stock Status & Trends plus Management Advice and Implications, SC 14. WCPFC 2018)

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 r_m . 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 approach used in Version 1 of the IFFO RS Standard, in which up to 5% of the raw material could be comprised of 'unassessed' species.

Comments on this proposition are welcomed along with any other feedback on the proposed approach.