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Global Standard for Responsible Supply of Marine Ingredients

Fishery Assessment Methodology and Template Report V2.0

Fishery Under Assessment	**South Pacific Hake (*Merluccius gayi*) Ecuador**
Date	**December 2019**
Assessor	**Jim Daly**

Application details and summary of the assessment outcome				
Name: Productos pesqueros S.A Produpes.				
Address:				
Country: Ecuador		**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	Vito Romito	0.5	Re-assessment	By-product
Assessment Period	2019			

Scope Details	
Management Authority (Country/State)	Ecuador Instituto de Pesca (INP); Peru IMARPE
Main Species	South Pacific Hake (*Merluccius gayi)*
Fishery Location	FAO 87 – Pacific Southeast
Gear Type(s)	Purse seine
Outcome of Assessment	
Overall Outcome	PASS
Clauses Failed	NONE
Peer Review Evaluation	PASS
Recommendation	APPROVE

Assessment Determination

South Pacific hake (*Merluccius gayi*) latitudinal distribution extends from northern Ecuador (01^0N) to central Peru (14^0S). Monthly captures in Ecuador are reported by Ecuador's Fisheries Institute (INP) (**Figure 1:** Map of industrial fleet activity). In addition to fleet activity INP monthly reports provide length frequency data; maturity stages and other population and species parameters. Peru's IMARPE undertake annual stock assessments which include the shared stock with Ecuador.

For the 2019 assessment the eXtended Survivor Analysis (XSA, based on VPA) was the principal method used to assess the stock through modelling. Data on capture by age and number of individuals (by year) was used to generate abundance indices.

South Pacific hake's stock status has been associated with high uncertainty in recent years due to environmental variability and population changes in response to fishing pressure. Biomass estimates (2019) from survey and fishery dependent data (**Figure 2**) were 353, 407t of which 89% corresponded to Spawning Stock.

Given the level of uncertainty in biomass estimates IMARPE recommend a precautionary approach when determining the permitted level of fishing mortality for 2020. FMSY for 2020 was proposed at between 0.15-0.18. TAC's for the 2018 season (Peru fleet) of 60,618t and for 2019-2020 of 58,776t were published by PRODUCE (Ministry of Production) in advance of these fishing seasons.

South Pacific hake is currently not assessed on the IUCN Red List (09.12.19). The species is approved by the assessment team for the production of fishmeal and fish oil under the IFFO-RS v 2.0 standard (by-products).

Peer Review Comments

South Pacific hake's biomass has been increasing steadily in the past two decades and the 2019 estimates show SSB to be at same peak level previously recorded in 1977 and 1995. The peer reviewer agrees that the species should be approved for the production of fishmeal and fish oil under the IFFO-RS v 2.0 standard (by-products).

Notes for On-site Auditor

Species-Specific Results

[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
South Pacific Hake	*Merluccius gayi*	Ecuador	N/A	Peru/Ecuador	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		**South Pacific Hake *Merluccius gayi***	
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**

Evidente:

C1.1:

In the assessment area the Fisheries Institute of Ecuador INP publish monthly reports of fishing activity in the industrial fleet off the coast (**Figure 1**):

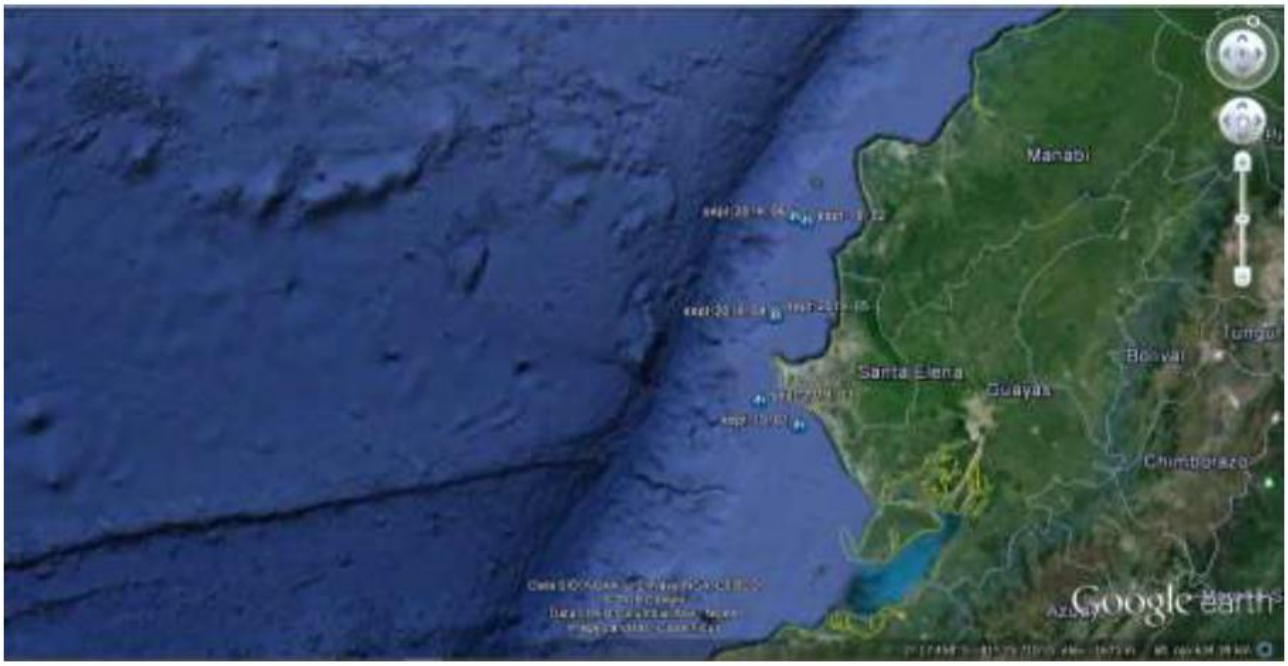

Figure 1: Fleet activity off Ecuador (September 2019, Source INP Ecuador) **R1**

In addition to fleet activity INP monthly reports provide length frequency data; maturity stages and other population and species parameters.

Peruvian hake (*Merluccius gayi*) latitudinal distribution extends from northern Ecuador (010^{N}) to central Peru (14^{0}S). A stock is considered to occur between the **N**orthern limit of Peru (03^{0}S) and Huarmey in the South of Peru (10^{0}S). There is no evidence of stock assessments undertaken for this species by the Fisheries Institute (INP) in Ecuador.

For shared stocks with Peru fisheries are managed in accordance with Fishery Management Rules stated in Peru Supreme Decree (D.S.) No. 016-2003-PRODUCE (Ministry of Production). These rules aim to reduce effort so that recovery to sustainable levels is achieved in the medium-term via setting a TAC and defining the fishing season. Peruvian hake is considered to be in a recovery phase, although current stock status in not fully known. A TAC for the 2019-2020 season (Peru fleet) of 58,776t was published by PRODUCE.

Assessments undertaken by IMARPE (Marine Research Institute of Peru) are based on direct and indirect methods and process studies, and research oriented towards assessment of abundance, distribution and availability of resources. Cohort and Virtual Population Analysis (VPA) analyses are used to assess the stock and a Thomson and Bell model employed to produce projections of short-term stock status.

Two annual survey cruises are conducted solely by IMARPE, and at least two complementary surveys are run with the help of trawl fleets for verification purposes. IMARPE uses swept area and acoustic methods for stock assessments.

For the 2019 assessment the eXtended Survivor Analysis (XSA, based on VPA) was the principal method used to assess the stock through modelling. Data on capture by age and number of individuals (by year) was used to generate abundance indices.

C1.2:
The stock in Peru (includes the shared stock with Ecuador) has been associated with high uncertainty in recent years due to environmental variability and population changes in response to fishing pressure. Spawning has been mainly sustained by specimens of age 2- 3 due to the lack of older specimens.

Biomass estimates (2019) from survey and fishery dependent data (**Figure 2**) were 353, 407t of which 89% corresponded to Spawning Stock:

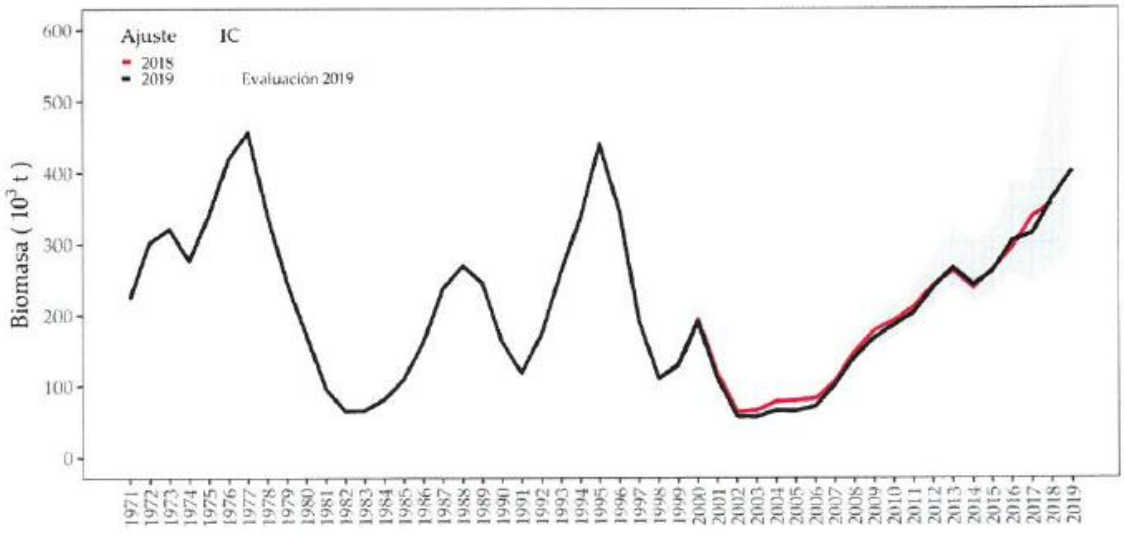

Figure 2: Biomass estimates 10^3 t (IMARPE, Peru) Red line 2018; Black line 2019 **R3**

Given the level of uncertainty in biomass estimates IMARPE recommend a precautionary approach when determining the permitted level of fishing mortality for 2019-2020. FMSY for 2020 was proposed between 0.15-0.18. A TAC for the 2019-2020 season (Peru fleet) of 58,776t was published by PRODUCE.

References

R1 National Fisheries Institute (INP) Ecuador: Monthly report on the Hake fishery (September 2019): http://www.institutopesca.gob.ec/wp-content/uploads/2018/01/Reporte-mensual-de-Recursos-Merluza-Pesca-Industrial-Polivalente-septiembre-2019.pdf

R2 Fishsource South Pacific Hake Peru/Ecuador Stock: https://www.fishsource.org/stock_page/851

R3 IMARPE 2019: State of the stock and projections until June 2020 14pp pdf: http://www.imarpe.gob.pe/imarpe/sacar.php?archivo=26

R4 Hake quota announcement 2019-2020 Season: https://larepublica.pe/economia/2019/06/28/produce-autorizan-pesca-de-merluza-desde-este-1-de-julio-hasta-junio-2020/

R5: IUCN Red list: http://oldredlist.iucnredlist.org/search

R6 Ecuador Ministerio de Agricultura, Ganadería, Acuacultura y Pesca http://www.institutopesca.gob.ec/valores-mision-vision/

R7|: INSTITUTO NACIONAL DE PESCA INFORME DE SEGUIMIENTO DEL ESTADO BIOLÓGICO DE MERLUZA (*Merluccius gayi*) – ENERO, 2018 http://www.institutopesca.gob.ec/wp-content/uploads/2016/08/MERLUZA-SEPTIEMBRE-2018.pdf

Standard clauses 1.3.2.2