By-Product assessment report

BP052 Tadel SA

Report code	BP052	Date of issue	July 2025

1. Application details		
Applicant	Tadel SA	
Applicant country	Ecuador	
2. Certification Body details		
Name of Certification Body (CB)	NSF / Global Trust Certification Ltd	
Contact information for CB	Fisheries@nsf.org	
Assessor name	Ana Elisa Almeida Ayres	
CB internal peer reviewer name	Léa Lebechnech	
Internal peer review evaluation	Agree with evaluation	
Comments on the assessment	This assessment covers 7 byproduct species, all exclusively caught by Ecuadorian vessels within Ecuadorian waters, and landed at Ecuadorian ports. All 7 species is either Least Concern or Data Deficient on the IUCN Red List, and none appears in the CITES appendices. Ecuador is a High-Risk flag state, and so all 7 species were subjected to Step 3 assessment. 6 of the species also passed the Category C assessment, and were scored as Approved, Source with Caution. However, common dolphinfish (*Coryphaena hippurus)* is not subjected to regular stock assessment, therefore the stock did not pass the Category C assessment, and this byproduct was scored as "Not Approved". All the other species passed the Step 3 risk assessment via Path 2.	
3. Approval validity	Valid from 07/2025	Valid until 07/2026

4. By-product assessment outcomes		
By-product species name	**Flag country(ies)**	**MarinTrust approval status**
Thunnus albacares - Yellowfin tuna	Ecuador	Approved source with caution
Katsuwonus pelamis - Skipjack tuna	Ecuador	Approved source with caution
Opisthonema spp. - Pacific thread herring*/pinchagua*	Ecuador	Approved source with caution
Coryphaena hippurus - Common dolphinfish	Ecuador	Not approved
Scomber japonicus - Pacific chub mackerel*/macarela*	Ecuador	Approved source with caution
Merluccius gayi - South Pacific hake	Ecuador	Approved source with caution
Auxis rochei - Bullet tuna	Ecuador	Approved source with caution

Guidance for on-site auditor
For the audit, the auditor will check how the facility manages by-products deemed medium risk. Any by-products downrated from high to medium risk will require additional due diligence checks.

It is important that facilities check all raw materials from and verify their suppliers especially if there is a perceived risk of sourcing from known or suspected IUU fishing activity. This requires checking supplier records or procedures in place to understand how the supplier can ensure there is no IUU in the raw material they provide. For raw materials risk rated medium, additional or more frequent checks may be required until the facility is certain that the raw materials are not from IUU fishing activity.

The audit requirements are covered in clause 2.11.3 of the MarinTrust Global Standard for Responsible Supply of Marine Ingredients (the MarinTrust Standard) and associated interpretation guidance.

Approved by-products

- No further checks are required beyond those included in the MarinTrust Standard.

Additional checks of Approved Source with Caution by-products

- Review supplier records or procedures in place.

Additional checks of by-products Approved Source with Caution via Step 3 assessment

- In addition to checks for medium risk Approved Source with Caution by-products, by-products that have had risk downgraded from high to medium at Step 3 (use **Appendix 1** to identify these by-product species), confirm that the relevant traceability information continues to be collected for this by-product. During the audit, a traceability check on any by-products downgraded from high to medium risk shall be included as part of the required traceability checks (Section 4).

Guidance for the applicant/certificate holder
The applicant/certificate holder is responsible for ensuring the relevant actions are taken to comply with the MarinTrust Standard.
The certificate holder is responsible for communicating any changes to the by-products sourced by submitting a scope extension request through the MarinTrust online Application Portal.

Appendix 1 – assessment outcomes

By-product species name	Flag country(ies)	IUCN Red List	CITES Appendices	Step 2 risk status	Step 3 required	Step 3 risk Outcome
Thunnus albacares - Yellowfin tuna	Ecuador	Least Concern	Not listed	High risk	Yes	Risk downgraded to Medium risk
Katsuwonus pelamis - Skipjack tuna	Ecuador	Least Concern	Not listed	High risk	Yes	Risk downgraded to Medium risk
Opisthonema spp. - Pacific thread herring/*pinchagua*	Ecuador	Least Concern	Not listed	High risk	Yes	Risk downgraded to Medium risk
Coryphaena hippurus - Common dolphinfish	Ecuador	Least Concern	Not listed	High risk	Yes	Remains high risk
Scomber japonicus - Pacific chub mackerel/*macarela*	Ecuador	Least Concern	Not listed	High risk	Yes	Risk downgraded to Medium risk
Merluccius gayi - South Pacific hake	Ecuador	Least Concern	Not listed	High risk	Yes	Risk downgraded to Medium risk
Auxis rochei - Bullet tuna/botella	Ecuador	Least Concern	Not listed	High risk	Yes	Risk downgraded to Medium risk

Appendix 2 – detailed assessment outcomes

(step 2 and step 3 if applicable)

Step 2 outcomes

Flag state	Risk rating	Flag score	Port score	General score	Flag State is contracting party or cooperating non-contracting party to all relevant RFMOs	'Carded' under EU Carding system	Flag state party to PSMA	Flag state mandatory vessel tracking for commercial seagoing fleet	WGI Governance rank
Ecuador	High	2.58	2.11	2.43	1	3	1	1	35.38%

Step 3 outcomes

Category C assessment

Species name		***Thunnus albacares* - Yellowfin tuna**	
Fishing area and stock		**FAO 77 and 87 (Eastern Central Pacific and Southeast Pacific)**	
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

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.

The Eastern Pacific Ocean (EPO) yellowfin tuna stock is managed and assessed by the Inter-American Tropical Tunas Commission (IATTC). A new risk-based approach was introduced to the management

of the stock in 2022, with Stock Status Indicators (SSIs) developed using catch and other data collected from the EPO as a whole. This approach continued in 2024 (IATTC 2025). SSIs are considered to be important alternatives to formal stock assessments, particularly where those stock assessments may be too unreliable to form the basis for management advice (IATTC 2022). Fishery removals are a key component of the modelling used to generate SSI's, and their development and use is evidence that managers have sought out alternative mechanisms where stock assessment uncertainty is high. The most recent full stock assessment was conducted in 2020.

Table 1. Total annual catches (t) of yellowfin, skipjack, and bigeye tunas, by all types of gear combined, in the Pacific Ocean. The EPO totals for 1995-2024 include discards from purse-seine vessels with carrying capacities greater than 363 t (IATCC, 2025).

	YFT			SKJ			BET			Total		
	EPO	WCPO	Total	EPO	WCPO	Total	EPO	WCPO	Total	EPO	WCPO	Total
1995	244,639	442,805	687,444	150,661	977,478	1,128,139	108,210	110,385	218,595	503,510	1,530,668	2,034,178
1996	266,928	425,669	692,597	132,335	999,701	1,132,036	114,706	107,168	221,874	513,969	1,532,538	2,046,507
1997	277,575	481,019	758,594	188,285	939,497	1,127,782	122,274	133,495	255,769	588,134	1,554,011	2,142,145
1998	280,606	536,845	817,451	165,489	1,244,132	1,409,621	93,954	152,415	246,369	540,049	1,933,392	2,473,441
1999	304,638	474,648	779,286	291,249	1,070,280	1,361,529	93,078	162,524	255,602	688,965	1,707,452	2,396,417
2000	286,863	506,028	792,891	230,479	1,194,139	1,424,618	148,557	148,094	296,651	665,899	1,848,261	2,514,160
2001	425,008	504,501	929,509	157,676	1,100,714	1,258,390	130,546	134,459	265,005	713,230	1,739,674	2,452,904
2002	443,458	489,995	933,453	167,048	1,253,634	1,420,682	132,806	157,958	290,764	743,312	1,901,587	2,644,899
2003	415,933	563,926	979,859	300,470	1,245,155	1,545,625	115,175	143,471	258,646	831,578	1,952,552	2,784,130
2004	296,847	595,888	892,735	217,249	1,354,765	1,572,014	110,722	182,599	293,321	624,818	2,133,252	2,758,070
2005	286,492	551,822	838,314	283,453	1,418,105	1,701,558	110,514	154,748	265,262	680,459	2,124,675	2,805,134
2006	180,519	537,076	717,595	309,090	1,479,366	1,788,456	117,328	165,386	282,714	606,937	2,181,828	2,788,765
2007	182,141	565,930	748,071	216,324	1,663,353	1,879,677	94,260	165,365	259,625	492,725	2,394,648	2,887,373
2008	197,328	644,365	841,693	307,699	1,649,067	1,956,766	103,350	171,317	274,667	608,377	2,464,749	3,073,126
2009	250,413	558,914	809,327	239,408	1,761,272	2,000,680	109,255	169,294	278,549	599,076	2,489,480	3,088,556
2010	261,871	564,607	826,478	153,092	1,680,215	1,833,307	95,408	139,796	235,204	510,371	2,384,618	2,894,989
2011	216,720	530,946	747,666	283,509	1,536,806	1,820,315	89,460	168,119	257,579	589,689	2,235,871	2,825,560
2012	213,310	625,697	839,007	273,519	1,731,944	2,005,463	102,687	167,245	269,932	589,516	2,524,886	3,114,402
2013	231,170	578,467	809,637	284,043	1,831,413	2,115,456	86,029	154,783	240,812	601,242	2,564,663	3,165,905
2014	246,784	618,262	865,046	265,490	1,985,110	2,250,600	96,054	169,046	265,100	608,328	2,772,418	3,380,746
2015	260,265	589,128	849,393	334,049	1,788,545	2,122,594	104,820	145,709	250,529	699,134	2,523,382	3,222,516
2016	255,465	660,291	915,756	345,163	1,788,760	2,133,923	92,952	156,656	249,608	693,580	2,605,707	3,299,287
2017	224,800	710,202	935,002	327,629	1,609,970	1,937,599	102,860	130,595	233,455	655,289	2,450,767	3,106,056
2018	253,305	696,706	950,011	291,352	1,843,398	2,134,750	94,479	154,404	248,883	639,136	2,694,508	3,333,644
2019	242,248	682,704	924,952	350,992	2,044,477	2,395,469	97,145	131,808	228,953	690,385	2,858,989	3,549,374
2020	231,603	726,403	958,006	298,583	1,721,476	2,020,059	104,893	146,497	251,390	635,079	2,594,376	3,229,455
2021	263,755	747,354	1,011,109	328,616	1,684,029	2,012,645	79,953	132,915	212,868	672,324	2,564,298	3,236,622
2022	298,897	689,051	987,948	298,136	1,715,934	2,014,070	68,217	140,838	209,055	665,250	2,545,823	3,211,073
2023	306,170	739,277	1,045,447	390,549	1,631,322	2,021,871	67,233	140,673	207,906	763,952	2,511,272	3,275,224
2024	294,493	*	294,493	645,260	*	645,260	51,936	*	51,936	991,689	*	991,689

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

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.

In the full stock assessments for this stock, multiple reference models are utilised to create a risk-based understanding of stock status. The most recent results, from 2020, indicated that "*the probability of the spawning biomass being below SMSYd [i.e. the target reference point] is low (12%)*" (IATTC 2024a), and that the probability of the biomass being below the limit reference point SLIMIT is zero.

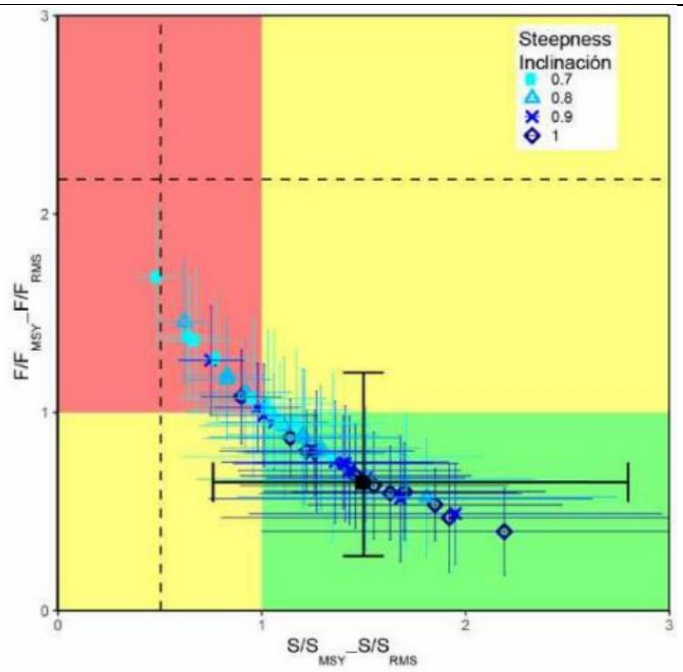

Figure 1. Kobe plot for yellowfin tuna in the EPO of estimates of spawning stock size (S) and fishing mortality (F). Coloured panels are separated by the target reference points SMSY and FMSY. Limit reference points are approximately indicated by the dashed lines, although these vary between models. The solid black circle represents all models combined (IATTC 2024a).

The species is considered, in its most recent stock assessment, to have a biomass above the limit reference points (or proxy), C1.2 is met

References

IATTC (2022). Stock Status Indicators (SSIs) for tropical tunas in the Eastern Pacific Ocean. 13th Meeting of the IATTC Scientific Advisory Committee, Document SAC-13-06 Corr https://www.iattc.org/GetAttachment/22511b5b-ba2b-4126-9ba2-0bffee89f4d5/SAC-13-06%20-%20Stock%20status%20indicators%20(SSIs)%20for%20tropical%20tunas%20in%20the%20EPO

IATTC (2024a). The tuna fishery in the Eastern Pacific Ocean in 2023. https://www.iattc.org/GetAttachment/1ed36788-07ce-4bf4-80e4-10c6c3b2b14d/No-22-2024_Tunas,-stocks-and-ecosystem-in-the-eastern-Pacific-Ocean-in-2023.pdf

IATCC (2025). The tuna fishery in the Eastern Pacific Ocean in 2024. https://www.iattc.org/GetAttachment/0f3c1e8c-0ae6-41f3-a3a9-5d5891b5cc4e/SAC-16-01_The-tuna-fishery-in-the-Eastern-Pacific-Ocean-in-2024.pdf

Species name	***Katsuwonus pelamis* - Skipjack tuna**
Fishing area and stock	**FAO 77 and 87 (Eastern Central Pacific and Southeast Pacific)**
	Category C Stock Status - Minimum Requirements

C1	**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

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.

One stock of skipjack is defined in the eastern Pacific Ocean (EPO). Catch data is available and it is used by the IATTC to assess the stock status of skipjack tuna in the EPO. In 2024, a benchmark stock assessment was conducted using an integrated statistical age-structured catch-at-length model in Stock Synthesis. Several data sources were used to fit the model, including data from sixteen defined fisheries and five "surveys". The fisheries are classified by gear type (purse-seine, longline) and purse-seine set. The "surveys" data included: a) catch-per-set indices for purse-seine sets, by set type (OBJ, NOA), where the relationship between catch-per-set and abundance remains uncertain; b) an index based on recently developed echosounder buoy data; c) absolute biomass from a spatiotemporal Petersen-type model applied to tag-recapture data; and d) an index of relative biomass from a tagging biomass model that uses a flexible effort assumption. A reference model was developed based on the most plausible assumptions and sensitivity analyses were conducted by changing the assumptions of the reference model (IATCC, 2024b).

Catches are available on Table 1 above.

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

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.

According to the reference model, current fishing mortality remains below the threshold associated with the MSY proxy, while the spawning biomass exceeds the dynamic level linked to the same benchmark. Furthermore, there is less than a 10% chance that the spawning biomass surpasses the established limit reference point. This conclusion holds true across all sensitivity models as well.

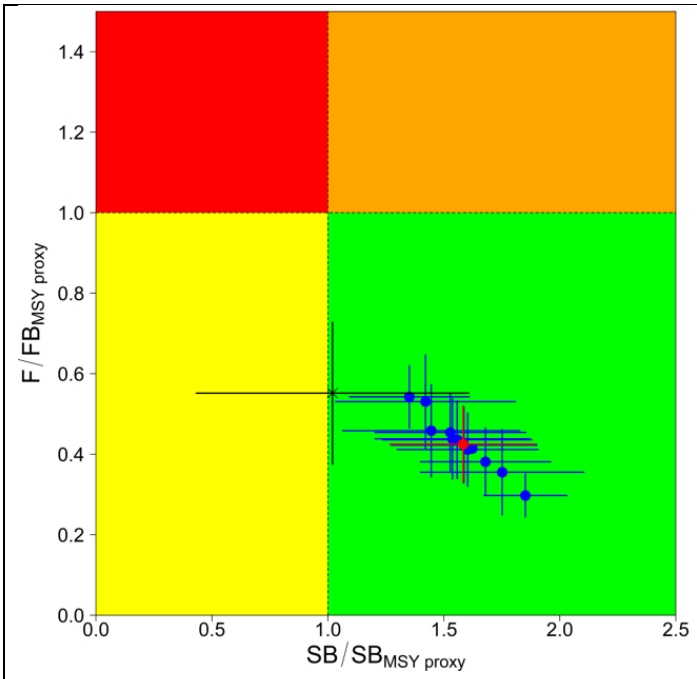

*Figure 2. Kobe plot showing the most recent stock status estimates from all the models. The x-axis is SBcurrent/0.3*dynamic SB0. Each dot is based on the average F over the most recent three years, 2021-2023, and the error bars represent the 80% confidence intervals of model estimates. The red dot and error bars represent the estimates from the reference model. The black cross and error bars represent the estimates from the model that removed the ECHO index (IATCC, 2024b).*

The species is considered, in its most recent stock assessment, to have a biomass above the limit reference points (or proxy), C1.2 is met.

References

IATCC. 2024b. DOCUMENT SAC-15-04 REV STOCK ASSESSMENT OF SKIPJACK TUNA IN THE EASTERN PACIFIC OCEAN: 2024 BENCHMARK ASSESSMENT. https://www.iattc.org/GetAttachment/f57dece1-81ba-4771-8fa8-3362320a368a/SAC-15-04_Skipjack-tuna-benchmark-assessment-2024.pdf

Species name		***Opisthonema* spp. - Pacific thread herring/*pinchagua***	
Fishing area and stock		**FAO 87**	
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

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.

Fishery removals are not negligible, and removals (landings data) corresponding to the period 1975 – 2023 are included in the latest stock assessment (ref. 3.2 Datos e información (3.2 Data and information) – a) Estadísticas de desembarques (a) Landing statistics) in Canales and Jurado, 2024).

Table 2. Small pelagic landings in Ecuador in tons (2021-2024)(IPIAP 2025).

ESPECIES	2021	2022	2023	2024
MACARELA	164.707	158.121	54.931	29.496
BOTELLA	30.972	40.133	40.108	76.188
PICUDILLO	15.587	12.348	52.403	9.558
PINCHAGUA	7.127	22.064	7.742	32.657
ANCHOVETA	13	55	24.126	
CHUHUECO	6.184	9.250	8.210	294
SARDINA REDONDA	2.679	4.906	1.192	359
ROLLIZO	164	66	1.332	119
SARDINA DEL SUR		119		
JUREL	1	27	6	84
ANCHOA	3	5	49	0
Total	**227.436**	**247.096**	**190.098**	**148.753**

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

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.

The most recent assessment of the status of the stock (Canales and Jurado, 2024) concluded that the adult biomass is estimated on average around 86 thousand tons equivalent to 49% of the virgin biomass against a management objective equivalent to safeguarding 40% of the virgin adult biomass. Stock status is summarised in the below Kobe diagram BELOW together with the uncertainty measures, highlighting practically no risk of overfishing or overexploitation.

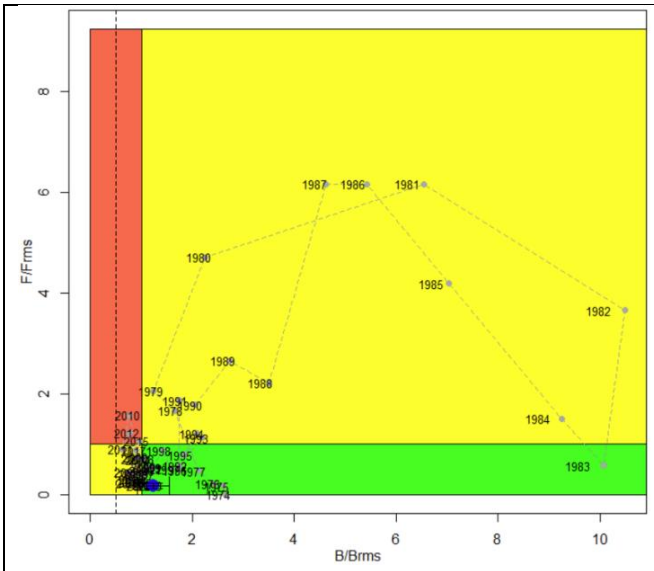

Figure 3. Kobe diagram for the stock (B/BMSY -= 1.23 (Risk_SE = 0.08); F/FMSY = 0.18 (Risk_SP = 0) (Canales and Jurado, 2024).

The species is considered, in its most recent stock assessment, to have a biomass above the limit reference points (or proxy), C1.2 is met.

References

Canales C. M. and Jurado, V. 2024. Evaluation of Ecuador's Small Pelagic Resource Stock 2023: https://institutopesca.gob.ec/wp-content/uploads/2024/07/Informe_Evaluacion_2024.pdf

IPIAP. 2025. Desembarques de pelágicos pequeños Toneladas (2021-2024). https://institutopesca.gob.ec/wp-content/uploads/2025/05/Panel-desembarques-FLOTA-CERQUERA-2021-2024.pdf

Species name		***Coryphaena hippurus* - Common dolphinfish/*Dorado***	
Fishing area and stock		**FAO 87**	
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.	Fail
	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.	Fail
		Clause outcome:	FAIL

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.

The stock structure of dolphinfish in the Pacific Ocean is not known, and regular stock assessments are not undertaken (Fishsource, 2025). A stock assessment was published in 2024 but it has used data that is more than 6 years old now. The fishery is considered "data poor" in Peru and Ecuador (IATTC, 2021). To assess the dolphinfish stock in the Southeast Pacific, a monthly database was developed containing fishing effort, catch, and average fish weight data from two Peruvian and two Ecuadorian fleets, covering the period from January 2004 to December 2019. A hierarchical statistical inference framework was applied, linking a multi-year, multi-fleet generalized depletion model—based on catch, effort, and mean weight data—to a Pella-Tomlinson surplus production model fitted to annual biomass estimates generated by the depletion model. In order to calibrate the surplus production model, an additional dataset of total annual catches dating back to 1988 was assembled using FAO landing statistics from both countries' fleets. The biomass dynamics in the production model incorporated environmental forcing, allowing parameter values to vary between warm El Niño–Southern Oscillation (ENSO) years and cooler, non-ENSO periods. The depletion model was implemented in R, while the surplus production model was developed in ADMB (Roa-Ureta et al., 2024). However, considering the age of the data used, current fishery removals has not been included in the stock assessment and **C1.1 is not met.**

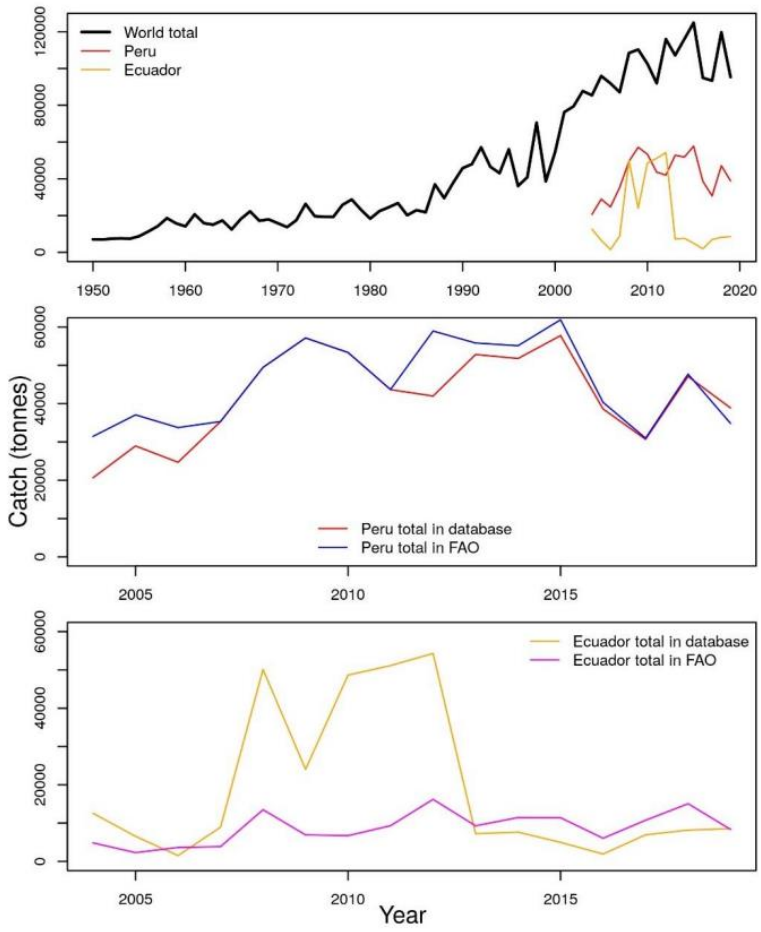

Figure 4. World and country landings and contrast between catch data in the stock assessment database and in FAO databases for the Peru and Ecuador (Roa-Ureta et al., 2024).

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.

The most recent stock assessment of dolphinfish in the Southeast Pacific found that biomass levels were above the limit reference point. Unlike traditional assessments for longer-lived fish species, biomass here was derived from generalized depletion models tailored to the fast-growing, short-lived nature of dolphinfish. These models estimated abundance in numbers and converted it to biomass using mean weight data, accounting for high turnover and rapid population fluctuations. Throughout the 2004–2019 period, exploitation rates remained well within sustainable limits. Given this, current removals are considered low risk by scientific standards, with no indication of overfishing and the stock is not overfished (Roa-Ureta et al., 2024). However, considering the life cycle of the species is only 3.9 years old (Froese and Pauly, 2025) and the last stock assessment used data of 6 years ago, the current status of the stock is unknown since the last available data is already outdated considering the life history of the species. **C.1.2 is not met.**

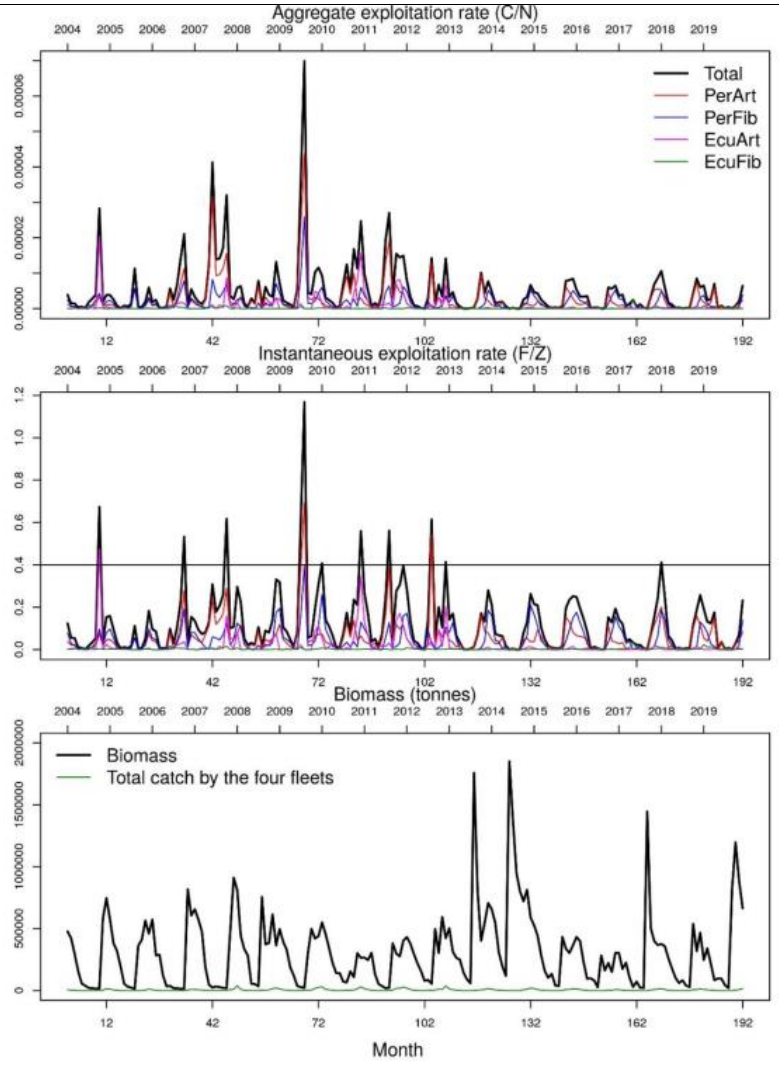

Figure 5. Top panel: Aggregate exploitation rate for each fleet and in total. Middle panel: instantaneous exploitation rate per fleet and in total. Bottom panel: stock biomass and catch in weight.

References

Fishsource, 2025. Common dolphinfish in the Eastern Pacific Ocean. https://www.fishsource.org/stock_page/1036

Froese, R. and D. Pauly. Editors. 2025. FishBase. World Wide Web electronic publication. www.fishbase.org, (04/2025).

Rubén H. Roa-Ureta, Gersson Román-Amancio, Pablo Marín-Abanto, Iván Guevara-Izquierdo, Ana Alegre Norza-Sior, Esteban Elías-Méndez and Manuel Peralta-Bravo, 2024. Stock assessment of the dolphinfish (*Coryphaena hippurus*) in the South East Pacific Ocean. https://institutopesca.gob.ec/wp-content/uploads/2024/04/Reporte-de-evaluacion-de-stock-de-perico-dorado-1.pdf

Species name		*Scomber japonicus* - Pacific chub mackerel/*macarela*	
Fishing area and stock		FAO 87	
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

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.

Data on size composition, landings, hydroacoustic cruises, and CPUE data were analysed using a statistical catch-at-age model in the last stock assessment provided by Canales & Jurado (2024). The stock assessment report discusses potential sources of uncertainty and includes recommendations for further study to reduce uncertainty in future. However, overall, the assessor considers the results to provide a reliable indication of stock status.

Recent catches of Pacific chub mackerel/*macarela* are shown in Table 2 above.

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

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.

The biomass target reference point for this stock (BMSY), defined as 40% of the unfished biomass, is estimated to be 374,000t. The 2024 stock assessment concluded that biomass was approximately 352,000t, equivalent to 38% of the unfished level and below the target reference point (Canales & Jurado, 2024). Due to uncertainty in the model, the probability that the stock biomass is below BMSY is estimated to be around

61%, but with a low probability that biomass is below the limit reference point

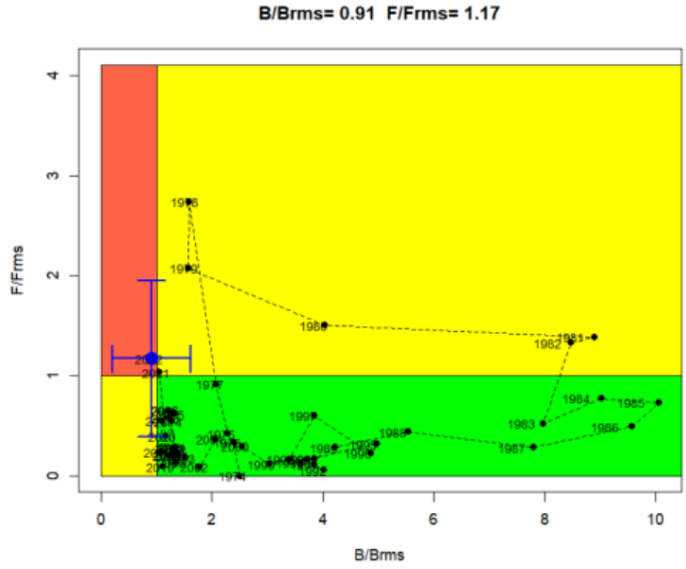

Figure 6. Kobe plot for Pacific chub mackerel in the Ecuadorian small pelagic fishery. Blue dot is the current estimated status (Canales & Jurado 2024).

The species is considered, in its most recent stock assessment, to have a biomass above the limit reference points (or proxy), C1.2 is met.

References

Canales C. M., Jurado V. (2024). Evaluación del stock de recursos pelágicos pequeños del Ecuador 2023. Informe Técnico. Guayaquil, Marzo 2023. 154 pp. https://institutopesca.gob.ec/wp-content/uploads/2023/05/Informe-Evaluacio%CC%81n2023final.pdf

Species name		***Merluccius gayi* - South Pacific hake**	
Fishing area and stock		**FAO 87**	
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

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.

A single South Pacific hake stock is considered to extend through Ecuadorian and Peruvian waters. Regular stock assessments are conducted by the Peruvian Instituto del Mar del Perú (IMARPE). The most recent assessment was conducted in 2024, and incorporated catch data from both countries.

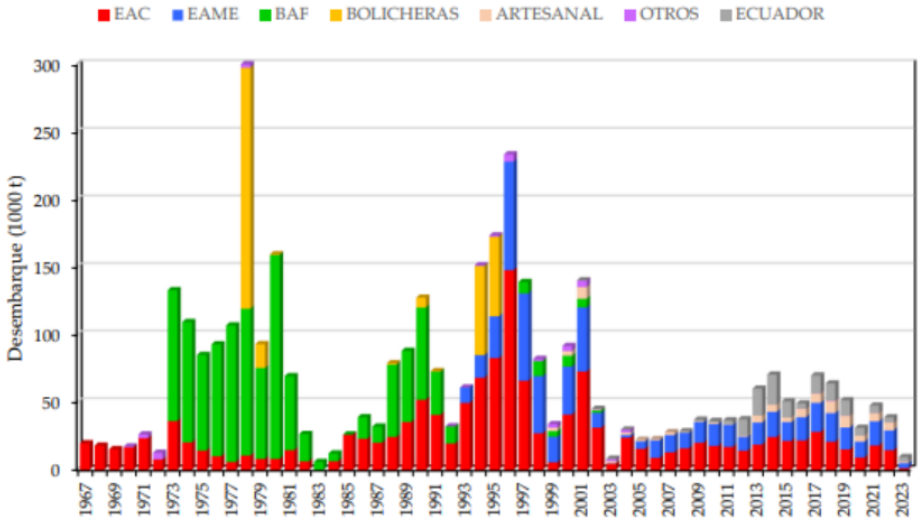

Figure 7. Hake landings by fleet type, 1971-2023. As the stock is distributed in Ecuadorian and Peruvian waters, these data include Peruvian landings (IMARPE 2024).

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

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.

The current biomass estimates produced by the two possible model calibrations were 325,489t and 252,370t. Although the stock assessment report does not appear to indicate specific biomass target or limit reference points, it states, “The current status of the Peruvian hake (*Merluccius gayi peruanus*) according to the results of the assessment model, remains above biological reference points”.

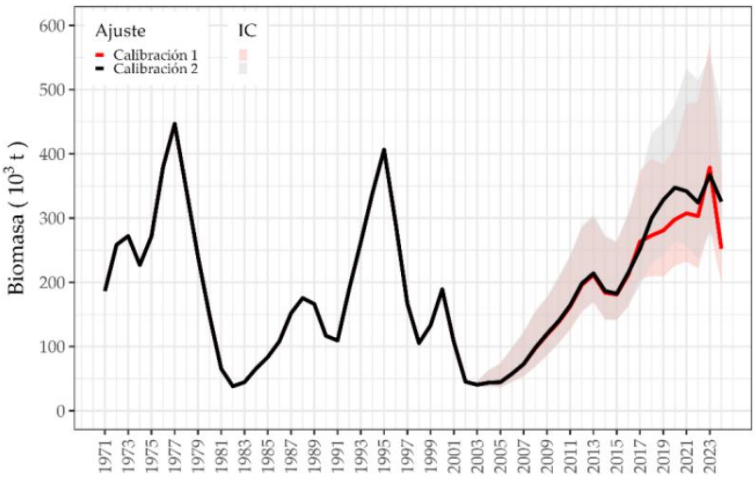

Figure 8. Estimated hake biomass under two calibration approaches (IMARPE 2024).

The species is considered, in its most recent stock assessment, to have a biomass above the limit reference points (or proxy), C1.2 is met

References

IMARPE (2024). Análisis De La Pesquería, Estado Poblacional Y Proyecciones De Pesca De La Merluza Peruana, Julio 2024 – Julio 2025 (Analysis Of The Fishery, Population Status, And Projections For The Peruvian Hake Fisheries, July 2024 – July 2025). https://cdn.www.gob.pe/uploads/document/file/6769050/5866400-analisis-de-la-pesqueria-estadopoblacional-y-proyecciones-de-pesca-de-la-merluza-peruana-merluccius-gayi-peruanus.pdf

Species name		***Auxis rochei* - Bullet tuna/*botella***	
Fishing area and stock		**FAO 87**	
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

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.

Stock assessments covering all the main species caught in the Ecuadorian small pelagic fishery have been conducted annually since 2019 by the Ecuadorian *Instituto Público De Investigación De Acuicultura Y Pesca* (IPIAP). Data incorporated into the most recent assessment, conducted in 2024, included catch data from 1975 – 2023; fishery-dependent sampling data collected by the IPIAP, including fishing areas, catch composition, size frequency data, and environmental conditions; CPUE estimates; and the outputs of a semi-regular hydroacoustic cruise survey (Canales and Jurado, 2024).

Updated catches of Bullet tuna/*botella* are shown in Table 2 above.

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

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.

The biomass target reference point for this stock (BMSY), defined as 40% of the unfished biomass, is estimated to be 69,000t. The 2024 stock assessment concluded that biomass was approximately 74,000t, equivalent to 43% of the unfished level and above the target reference point (Canales and Jurado, 2024). Due to uncertainty in the model, the probability that the stock biomass is below BMSY is estimated to be around 37%, but with a very low probability that biomass is below the limit reference point.

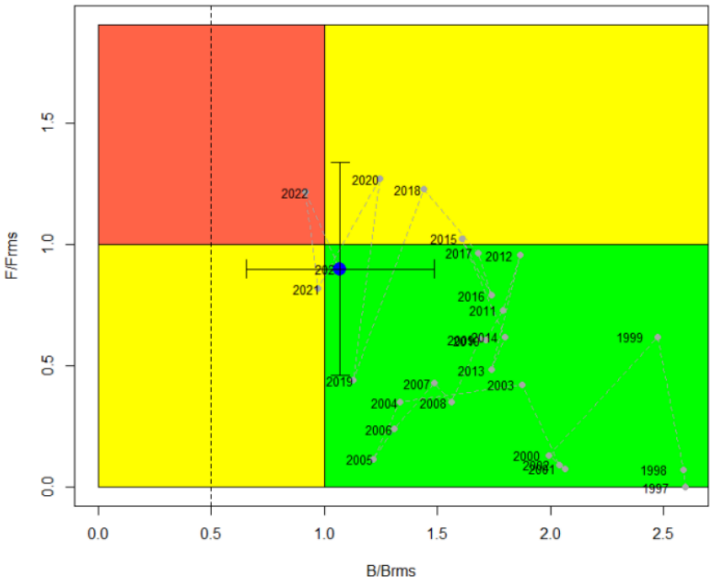

Figure 9. Kobe chart for bullet tuna in Ecuadorian waters. The blue dot is the most recent estimate of stock status (Canales and Jurado, 2024).

The species is considered, in its most recent stock assessment, to have a biomass above the limit reference points (or proxy), C1.2 is met

References

Canales C. M., Jurado V. (2024). Evaluación del stock de recursos pelágicos pequeños del Ecuador 2023. Informe Técnico. Guayaquil, Marzo 2023. 154 pp. https://institutopesca.gob.ec/wp-content/uploads/2023/05/Informe-Evaluacio%CC%81n2023final.pdf

Traceability information

Information provided for Step 3 Path 1 or Path 2

Species name	*Katsuwonus pelamis* - Skipjack tuna			
Path 1	Yes ☐ No ☒			
Confirm all KDEs are provided	Yes ☐ No ☐			
Path 2	Yes ☒ No ☐ *If yes for Path 2, complete the next section*			
Path 2 outcome	**Flag country**	**Coastal score**	**Port score**	**Risk outcome**
	Ecuador	Ecuador	Ecuador	Downgraded to medium risk

Species name	*Thunnus albacares* - Yellowfin tuna			
Path 1	Yes ☐ No ☒			
Confirm all KDEs are provided	Yes ☐ No ☐			
Path 2	Yes ☒ No ☐ *If yes for Path 2, complete the next section*			
Path 2 outcome	**Flag country**	**Coastal score**	**Port score**	**Risk outcome**
	Ecuador	Ecuador	Ecuador	Downgraded to medium risk

Species name	*Opisthonema spp.* - Pacific thread herring/*pinchagua*			
Path 1	Yes ☐ No ☒			
Confirm all KDEs are provided	Yes ☐ No ☐			
Path 2	Yes ☒ No ☐ *If yes for Path 2, complete the next section*			
Path 2 outcome	**Flag country**	**Coastal score**	**Port score**	**Risk outcome**
	Ecuador	Ecuador	Ecuador	Downgraded to medium risk

Species name	*Scomber japonicus* - Pacific chub mackerel/*macarela*
Path 1	Yes ☐ No ☒
Confirm all KDEs are provided	Yes ☐ No ☐
Path 2	Yes ☒ No ☐

	If yes for Path 2, complete the next section			
Path 2 outcome	**Flag country**	**Coastal score**	**Port score**	**Risk outcome**
	Ecuador	Ecuador	Ecuador	Downgraded to medium risk

Species name	*Merluccius gayi* - South Pacific hake			
Path 1	Yes ☐ No ☒			
Confirm all KDEs are provided	Yes ☐ No ☐			
Path 2	Yes ☒ No ☐ *If yes for Path 2, complete the next section*			
Path 2 outcome	**Flag country**	**Coastal score**	**Port score**	**Risk outcome**
	Ecuador	Ecuador	Ecuador	Downgraded to medium risk

Species name	*Auxis rochei* - Bullet tuna/*botella*			
Path 1	Yes ☐ No ☒			
Confirm all KDEs are provided	Yes ☐ No ☐			
Path 2	Yes ☒ No ☐ *If yes for Path 2, complete the next section*			
Path 2 outcome	**Flag country**	**Coastal score**	**Port score**	**Risk outcome**
	Ecuador	Ecuador	Ecuador	Downgraded to medium risk