# 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 / nsf-marintrust@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 8 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. All species passed the Step 3 risk assessment via Path 2. They have also passed the Category C assessment, and were scored as Approved, Source with Caution. | |
| **3. Approval validity** | Valid from July 2025 | Valid until July 2026<br>Extension to November 2026 |
| **4. Assessment cycle** | Initial | |


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| 5. 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 | Approved source with caution |
| *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 |


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**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.


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# Appendix 1 – assessment outcomes

**Step 2 Assessment Outcomes**

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


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## Step 3 Assessment Outcomes

*Assessor note: All species identifed as requiring Step 3 in Table above, will have additional assessment information presented here.*

| By-product species name | Flag country(ies) | Fishing Area(s) | Stock name | Category C Assessment Outcome | Traceability information | Step 3 Risk Outcome |
|---|---|---|---|---|---|---|
| *Thunnus albacares* - Yellowfin tuna | Ecuador | FAO 77, 87 | Eastern Central Pacific and Southeast Pacific | Pass | Path 2 – Yes | Risk downgraded to Medium risk |
| *Katsuwonus pelamis* - Skipjack tuna | Ecuador | FAO 77, 87 | Eastern Central Pacific and Southeast Pacific | Pass | Path 2 – Yes | Risk downgraded to Medium risk |
| *Opisthonema* spp. - Pacific thread herring/*pinchagua* | Ecuador | FAO 87 | | Pass | Path 2 – Yes | Risk downgraded to Medium risk |
| *Coryphaena hippurus* - Common dolphinfish | Ecuador | FAO 87 | | Pass | Path 2 – Yes | Risk downgraded to Medium risk |
| *Scomber japonicus* - Pacific chub mackerel/*macarela* | Ecuador | FAO 87 | | Pass | Path 2 – Yes | Risk downgraded to Medium risk |
| *Merluccius gayi* - South Pacific hake | Ecuador | FAO 87 | | Pass | Path 2 – Yes | Risk downgraded to Medium risk |
| *Auxis rochei* - Bullet tuna/botella | Ecuador | FAO 87 | | Pass | Path 2 – Yes | Risk downgraded to Medium risk |
| **Comments on Step 3 Assessment:** *Assessor note: N/A* | | | | | | |


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# 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% |


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# 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<br>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<br>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,*


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*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.


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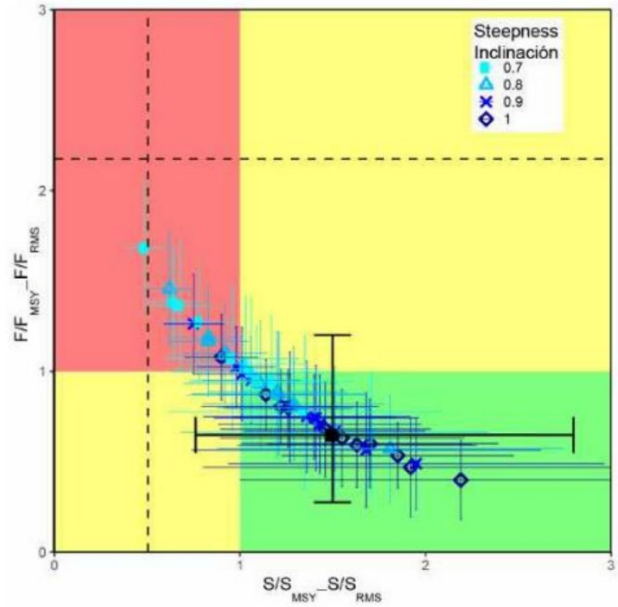



*Figure 1. Kobe plot for yellowfin tuna in the EPO of estimates of spawning stock size (S) and fishing mortality (F). Coloured panels are separated by the target reference points SMSY and FMSY. Limit reference points are approximately indicated by the dashed lines, although these vary between models.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


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| Species name | | *Katsuwonus pelamis* - Skipjack 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<br>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<br>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.


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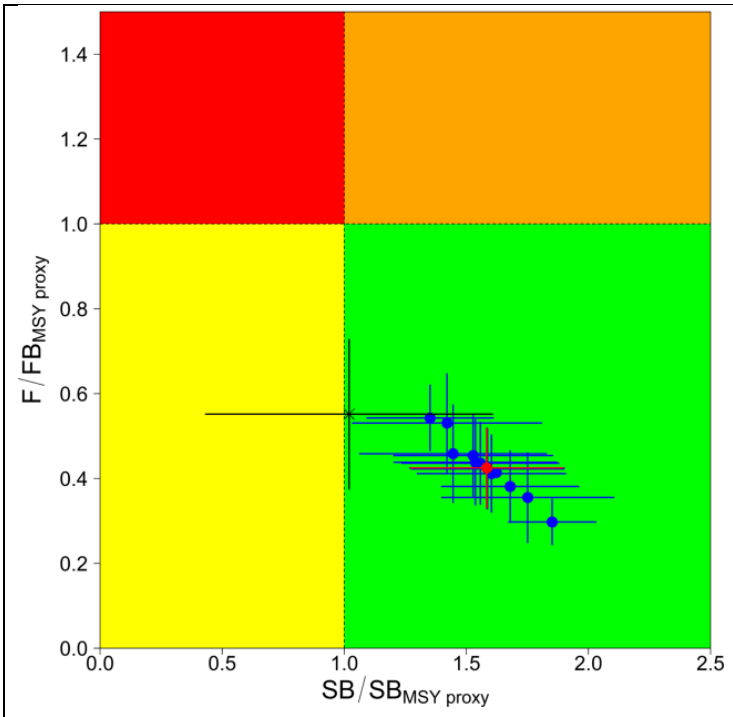



*Figure 2. Kobe plot showing the most recent stock status estimates from all the models. The x-axis is SBcurrent/0.3*dynamic SB0. Each dot is based on the average F over the most recent three years, 2021-2023, and the error bars represent the 80% confidence intervals of model estimates. The red dot and 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<br>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 | Pass |


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| | | | |
|---|---|---|---|
| | | removals by the fishery under assessment are considered by scientific authorities to be negligible. | |
| | | | **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.


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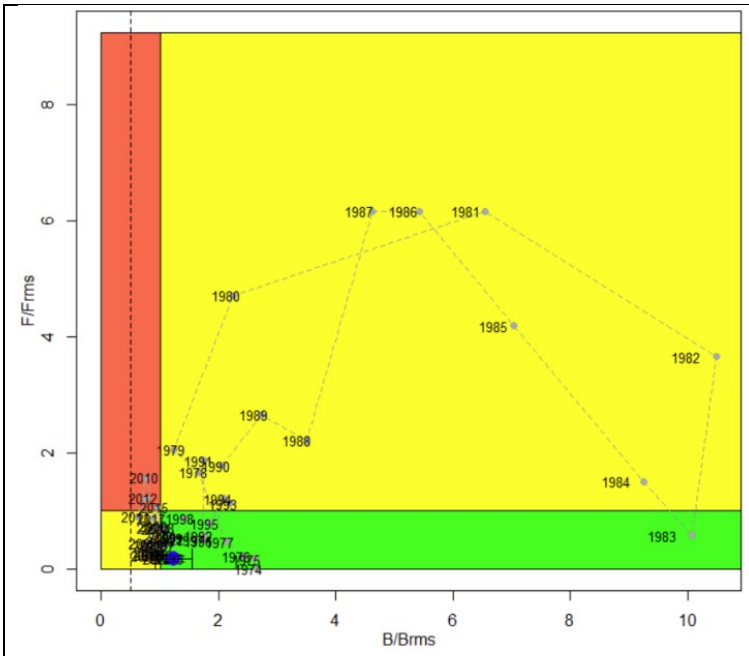



*Figure 3. Kobe diagram for the stock (B/BMSY -= 1.23 (Risk_SE = 0.08); F/FMSY = 0.18 (Risk_SP = 0) (Canales and Jurado, 2024).*

**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<br>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<br>removals by the fishery under assessment are considered by scientific authorities to be negligible. | Pass |
| | | **Clause outcome:** | Pass |


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**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**.

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).

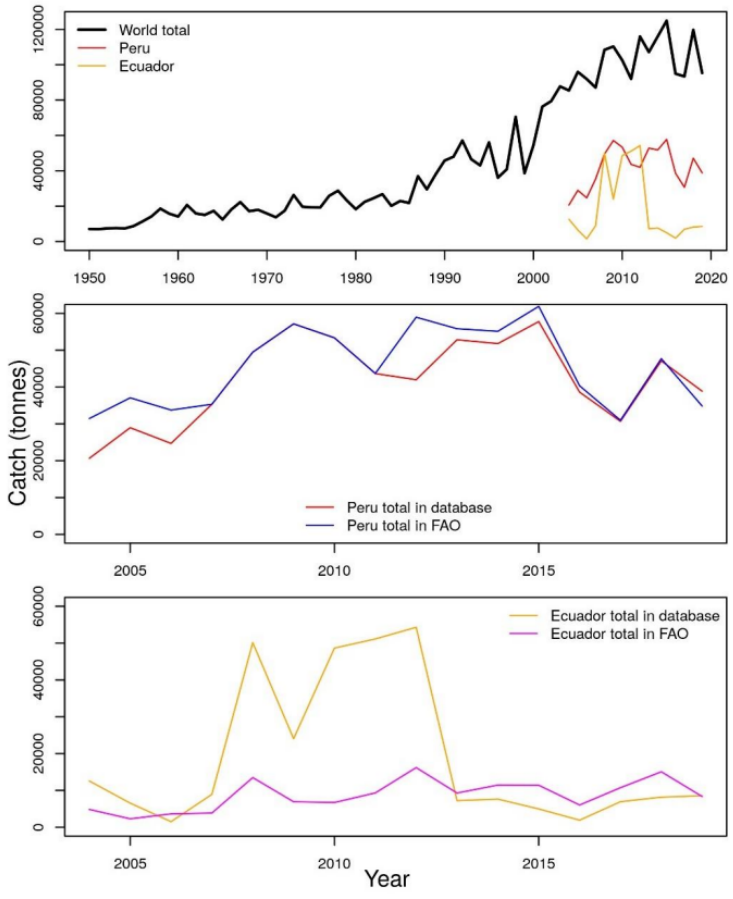



*Figure 4. World and country landings and contrast between catch data in the stock assessment database and in FAO databases for the Peru and Ecuador (Roa-Ureta et al., 2024).*

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


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**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).

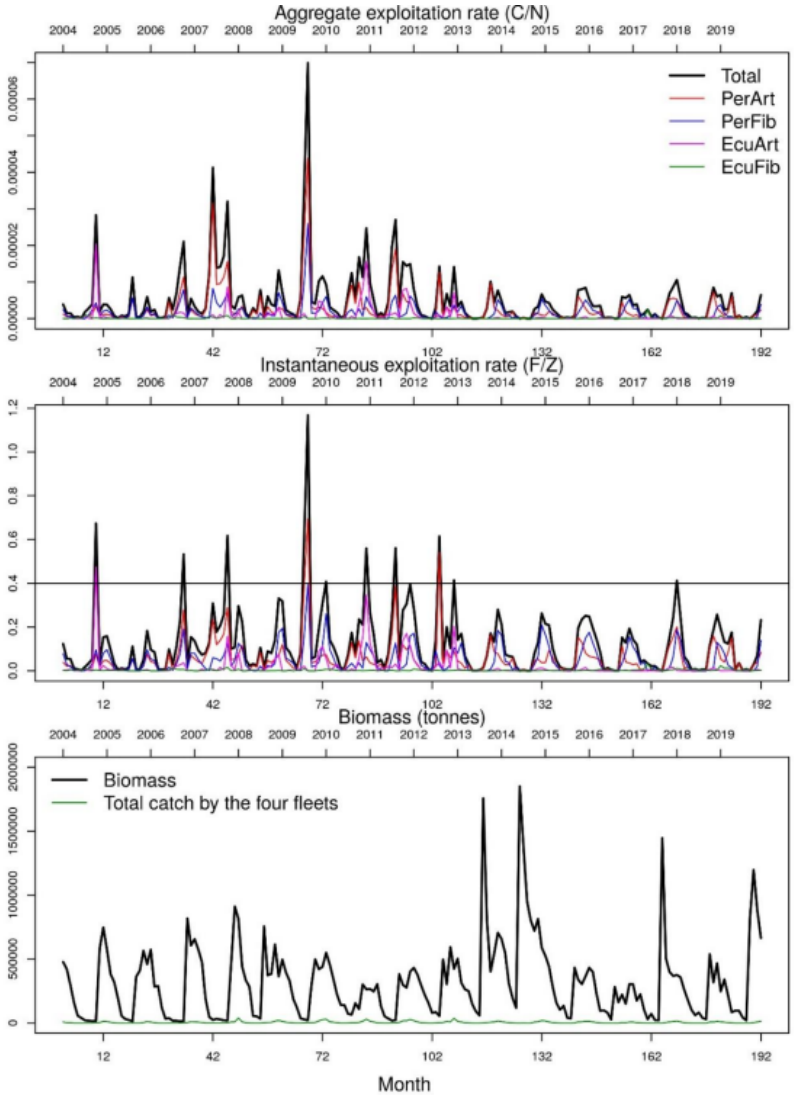



*Figure 5. Top panel: Aggregate exploitation rate for each fleet and in total. Middle panel: instantaneous exploitation rate per fleet and in total. Bottom panel: stock biomass and catch in weight.*


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| **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**<br><br>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<br>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<br>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.

**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


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BMSY is estimated to be around 61%, but with a low probability that biomass is below the limit reference point.

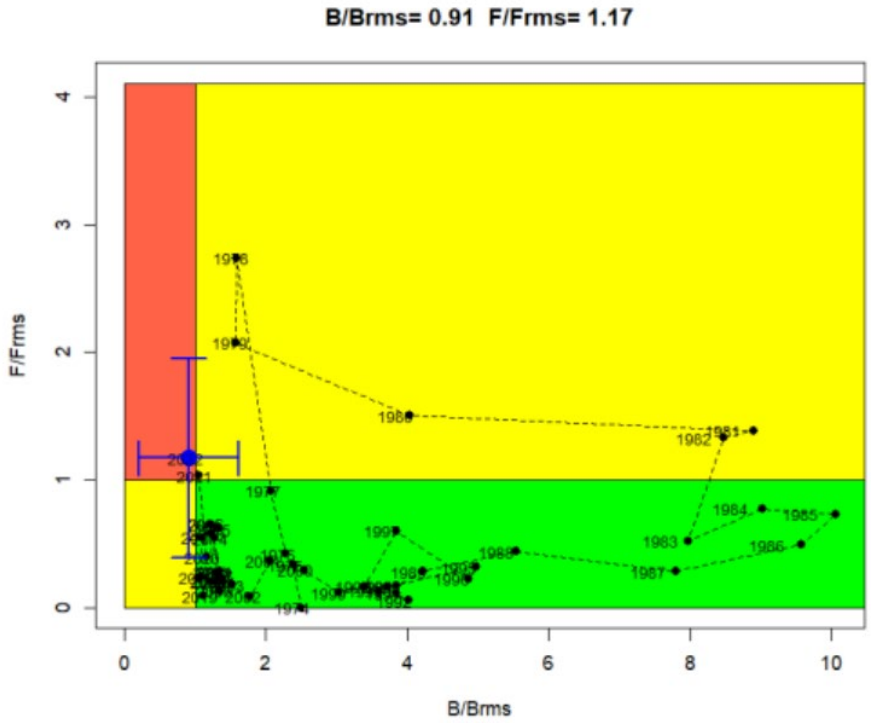



*Figure 6. Kobe plot for Pacific chub mackerel in the Ecuadorian small pelagic fishery. Blue dot is the current estimated status (Canales & Jurado 2024).*

**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

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|---|---|---|---|
| **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<br>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 | Pass |


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| | | | |
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| | | removals by the fishery under assessment are considered by scientific authorities to be negligible. | |
| | | **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.

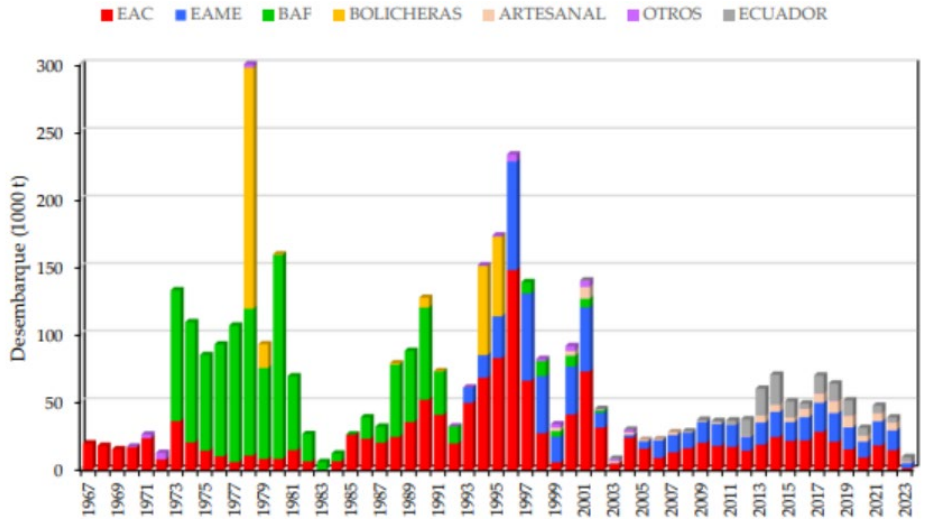



*Figure 7. Hake landings by fleet type, 1971-2023. As the stock is distributed in Ecuadorian and Peruvian waters, these data include Peruvian landings (IMARPE 2024).*

**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”.


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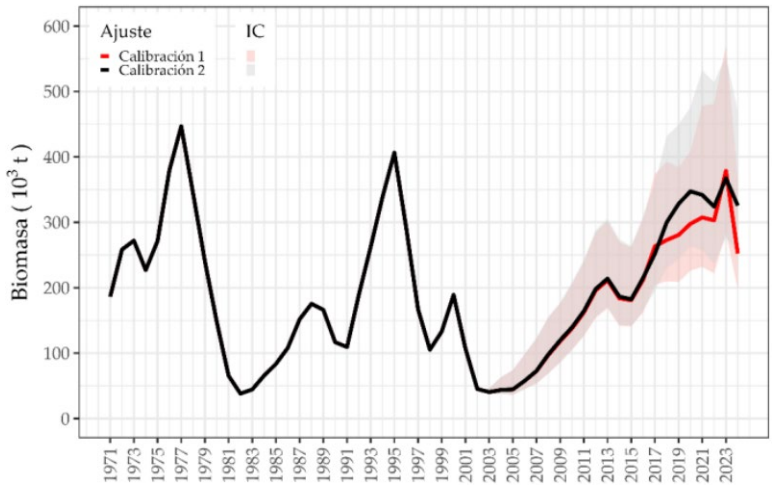



*Figure 8. Estimated hake biomass under two calibration approaches (IMARPE 2024).*

**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

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|---|---|---|---|
| **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<br>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<br>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*


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*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.

**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.

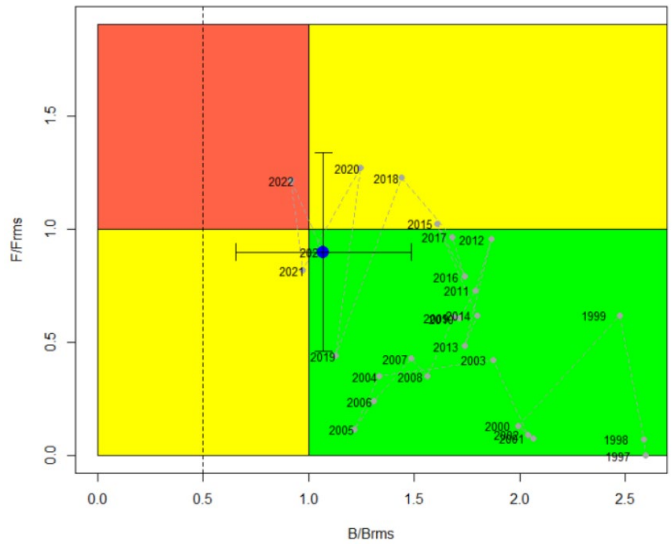



*Figure 9. Kobe chart for bullet tuna in Ecuadorian waters. The blue dot is the most recent estimate of stock status (Canales and Jurado, 2024).*

**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


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**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 ☐<br>*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 ☐<br>*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 ☐<br>*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** | *Coryphaena hippurus* - Common dolphinfish |
| **Path 1** | Yes ☐ No ☒ |
| Confirm all KDEs are provided | Yes ☐ No ☐ |
| **Path 2** | Yes ☒ No ☐ |


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| | | | | |
|---|---|---|---|---|
| | *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 ☐<br>*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 ☐<br>*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 ☐<br>*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 |


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**Guidance for Applicants/Certificate holders on improved traceability**

When by-product origin cannot be made more granular than major FAO Areas, or when the source fishery is taking place in the High Seas (i.e. outside of EEZs of all relevant nations), an assessor must evaluate the Coastal and Port scores for each nation that straddles that FAO Area. This may lead to higher risk outcomes for an applicant. To mitigate that risk, better practice involves securing KDEs from the source fishery of the by-products, thereby meeting Path 1 instead of Path 2.

**What does better practices look like?**
Comprehensive data collection and sharing: Collect detailed information using Key Data Elements (KDEs) including vessel identification and authorisation, species, catch areas, fishing method and dates. These are defined in the MarinTrust Standard clauses 2.11.2.2 and 3.2.5.

Supply chain transparency: Maintain detailed records at each step of the supply chain, from capture to final sale, to ensure traceability.

Interoperable systems and technologies to support the collection and transfer of this information.


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