# By-Product assessment report

*BP133*

*Dimolfin SA*

| Report code | BP133 | Date of issue | October 2026 |
|---|---|---|---|

| 1. Application details | | |
|---|---|---|
| **Applicant** | Dimolfin 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** | Silvia Manglano Otaduy | |
| **CB internal peer reviewer name** | Matthew Jew | |
| **Internal peer review evaluation** | Agree with evaluation | |
| **Number of Assessment days** | 1 | |
| **Comments on the assessment** | This re-approval covers 3 by-product species: Pacific chub mackerel, Pacific Thread herring, and Frigate tuna. These originate under the flag state of Ecuador. All species were considered High Risk at Step 2 and were subject to Step 3 Category C assessments & Traceability. They pass Step 3 Category C and through Path 2 Traceability have had their risk rating downgraded to achieve "Approved source with caution" status. | |
| **3. Approval validity** | Valid from 10/2026 | Valid from 10/2027 |
| **4. Assessment cycle** | Re-Approval | |

**5. By-product assessment outcomes**

| By-product species name | Flag country(ies) | Fishing Area(s) | MarinTrust approval status |
|---|---|---|---|
| Pacific chub mackerel ESP: macarela (*Scomber japonicus*) | Ecuador | FAO 87 | Approved source with caution |
| Pacific Thread herring ESP: sardina crinuda (*Ophisthonema spp*) | Ecuador | FAO 87 | Approved source with caution |
| Frigate tuna - ESP: melva (*Auxis thazard*) | Ecuador | FAO 87 | 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? |
|---|---|---|---|---|---|
| Pacific chub mackerel - ESP: macarela (*Scomber japonicus*) | Ecuador | Least concern | Not listed | High risk | Yes |
| Pacific Thread herring - ESP: sardina crinuda (*Ophisthonema spp*) | Ecuador | Least concern | Not listed | High risk | Yes |
| Frigate tuna - ESP: melva (*Auxis thazard*) | Ecuador | Least concern | Not listed | High risk | Yes |

## Step 3 Assessment Outcomes

| By-product species name | Flag country(ies) | Fishing Area | Stock name | Category C Assessment Outcome | Traceability information | Step 3 Risk Outcome |
|---|---|---|---|---|---|---|
| Pacific chub mackerel ESP: macarela (*Scomber japonicus*) | Ecuador | FAO 87 | Ecuadorian Pacific chub mackerel | Pass | Path 2 - Yes | Risk downgraded to Medium Risk |
| Pacific Thread herring ESP: sardina crinuda (*Ophisthonema spp*) | Ecuador | FAO 87 | Ecuadorian Pacific Thread herring | Pass | Path 2 - Yes | Risk downgraded to Medium Risk |
| Frigate tuna ESP: melva (*Auxis thazard*) | Ecuador | FAO 87 | Ecuadorian Frigate tuna | Pass | Path 2 - Yes | Risk downgraded to Medium Risk |
| **Comments on Step 3 Assessment:** 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** | | Pacific chub mackerel (*Scomber japonicus*)<br>ESP: 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 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.**

Removals of *Scomber japonicus* are fully incorporated into the stock assessment process through the integration of commercial landing data, fishery-dependent CPUE information, biological sampling, and fishery-independent acoustic survey data collected by *Instituto Publico de Investigación de Agricultura y Pesca* (IPIAP) [1]. Landings from the small pelagic purse-seine fleet are routinely recorded through official monitoring programmes and constitute a key input to annual stock assessments and management advice [1].

The 2024 stock assessment uses these fishery removals together with abundance, size composition, and acoustic biomass indices to estimate stock status and biological reference points, including biomass and fishing mortality relative to MSY-based targets [1]. The resulting outputs are subsequently used to inform the multispecies harvest strategy and annual management measures applied to the fishery.


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Therefore, fishery removals of *S. japonicus* are explicitly accounted for within the stock assessment process and are used directly in evaluating stock status and determining management responses. As such, the requirements of this clause are met [1].

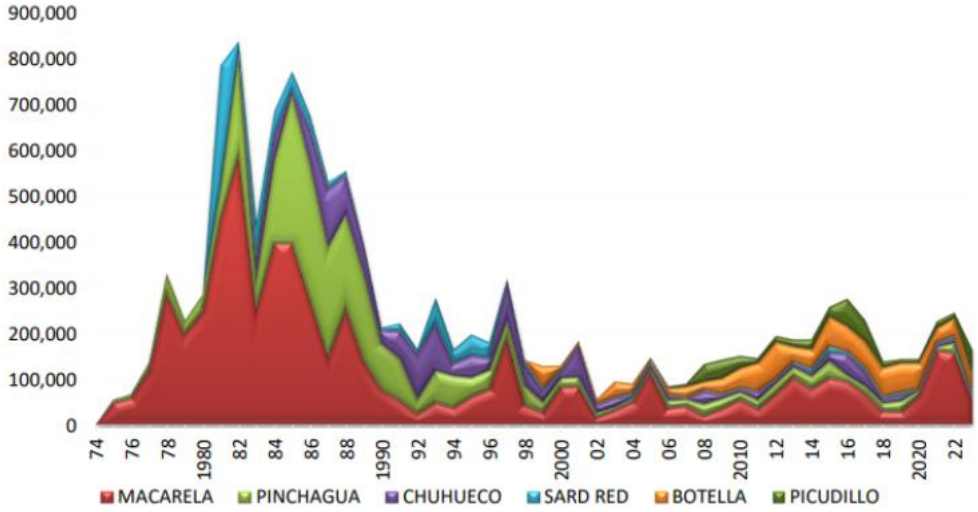
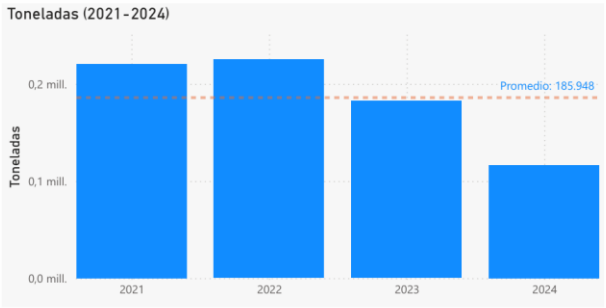



*Figure 1. Landings of the main small pelagic species in Ecuador, 1975–2023. Pacific chub mackerel (Scomber japonicus) is shown in red ("Macarela"), Pacific thread herring (Opisthonema spp.) in light green ("Pinchagua"), frigate tuna (Auxis spp.) in orange ("Botella"), Source: IPIAP (2024).*

*Table 1. Fleet-wide landings of small pelagic fish (coastal purse-seine), 2021–2024, by species. Source: MPCEIP-SRP [3].*

**Flota cerquera costera**
**Desembarques de pelágicos pequeños**
**Toneladas (2021-2024)**

| 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** |




**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 2024 IPIAP assessment estimated stock biomass at approximately 352,000 t, equivalent to 38% of unfished biomass ($B_0$), slightly below the target reference point of BMSY = 374,000 t (40% $B_0$). Although the assessment estimated a 61% probability that biomass is below BMSY, it also concluded that there is a low probability that biomass is below the limit reference point, indicating that the stock remains above the level at which serious conservation concerns would arise [1].

As a result, while biomass is estimated to be marginally below the target reference point, the stock is not considered depleted and remains above the limit reference point used to safeguard stock


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productivity. The assessment therefore indicates that S. japonicus continues to be managed within biologically sustainable limits under Ecuador's small pelagic management framework [1].

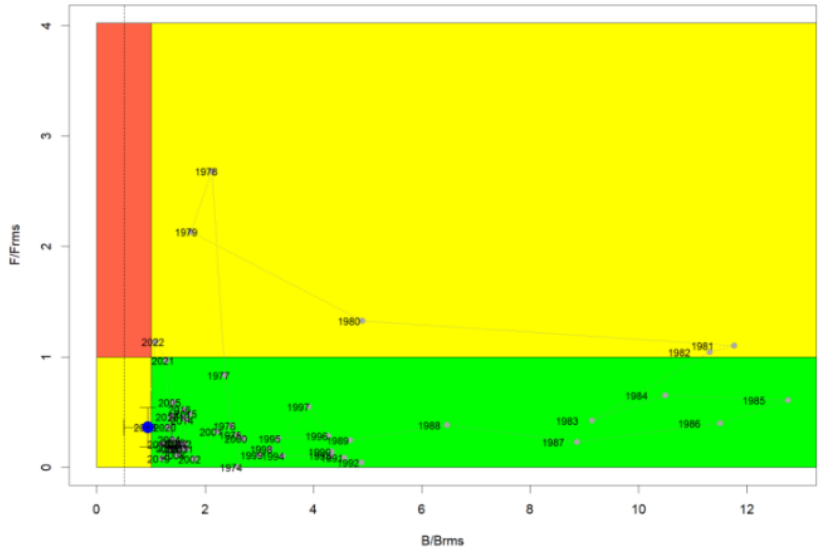



*Figure 2. Kobe chart for Pacific chub mackerel in Ecuadorian waters. The blue dot is the most recent estimate of stock status. Source: IPIAP, 2024.*

**References**

IPIAP, 2024. Evaluacion Del Stock De Recursos Pelagicos Pequeños Del Ecuador 2023 (*Stock assessment of Ecuador's small pelagic resources 2023*). https://institutopesca.gob.ec/wp-content/uploads/2024/07/Informe_Evaluacion_2024.pdf


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| | | | |
|---|---|---|---|
| **Species name** | | Pacific Thread herring (*Opisthonema spp.)*<br>ESP: sardina crinuda | |
| **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 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.**

Removals of *Opisthonema spp.* (Figure 1) are incorporated into the stock assessment process through the use of commercial catch and landing information collected from the Ecuadorian small pelagic fishery. The assessment integrates fishery-dependent data, including historical catches and fishing effort information, together with biological and population parameters to estimate stock status and fishing mortality relative to management reference points.

The 2024 IPIAP assessment explicitly evaluates fishing mortality and stock dynamics using the recorded removals from the fishery, demonstrating that catches are accounted for within the analytical framework used to assess the stock. The resulting estimates of fishing mortality, biomass, biomass-per-recruit and spawning potential are derived from a model parameterized with fishery removal data and associated monitoring information.

**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 for *Opisthonema spp.* indicates that the stock remains above the limit reference point (or proxy). The 2024 IPIAP assessment estimated stock biomass at approximately 86,000 t, equivalent to 49% of the unfished biomass ($B_0$) and above the biomass target reference point (BMSY = 70,000 t, corresponding to 40% of $B_0$). The assessment concluded that the probability of biomass being below BMSY is negligible and, consequently, the probability of biomass being below the limit reference point is also negligible [1].

These results are consistent with the Kobe plot, which shows the stock remaining outside the overfished and overfishing zones in recent years, with biomass above BMSY and fishing mortality at sustainable levels (Figure X [1]). Although the stock experienced periods of elevated fishing


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mortality during the late 1970s and 1980s, the stock status improved substantially thereafter and has remained predominantly within the sustainable management area in recent decades.

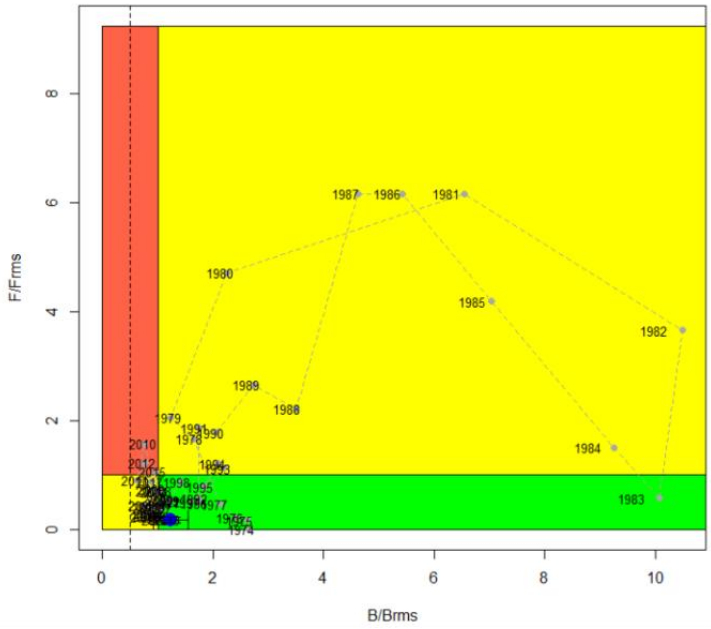



*Figure 3. Kobe chart for thread herrings in Ecuadorian waters. The blue dot is the most recent estimate of stock status. Source: IPIAP, 2024.*

**References**

IPIAP, 2024. Evaluacion Del Stock De Recursos Pelagicos Pequeños Del Ecuador 2023 (*Stock assessment of Ecuador's small pelagic resources 2023*). https://institutopesca.gob.ec/wp-content/uploads/2024/07/Informe_Evaluacion_2024.pdf


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| | | | |
|---|---|---|---|
| **Species name** | | Frigate tuna (*Auxis spp.*)<br>ESP: melva | |
| **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 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**.

Landings data from 1981 and onwards are available in IPIAP website and have been used for stock assessments of small pelagic fishes in Ecuador: https://institutopesca.gob.ec/peces-pelagicos-pequenos/.

Removals of *Auxis* spp. are fully incorporated into the stock assessment process through the integration of commercial landing data, fishery-dependent CPUE information, biological sampling, and fishery-independent acoustic survey data collected by the *Instituto Público de Investigación de Acuicultura y Pesca* (IPIAP) [1]. Landings from the small pelagic purse-seine fleet are routinely recorded through official monitoring programmes and constitute a key input to annual stock assessments and management advice [1] (Figure 1).

The 2024 stock assessment uses these fishery removals together with abundance indices, size-composition data, and acoustic biomass estimates to evaluate stock status and estimate biological reference points, including biomass and fishing mortality relative to MSY-based targets [1]. The resulting outputs are subsequently used to inform the multispecies harvest strategy and annual management measures applied to the fishery.

**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 stock assessment is conducted at the genus level (*Auxis spp.)* and therefore encompasses *Auxis thazard*. This assessment indicates that the stock remains above the limit reference point (or proxy). The 2024 assessment estimated B/BMSY = 1.07 and F/FMSY = 0.90 for the most recent assessment year, indicating that biomass is above the target reference point and fishing mortality is below the level associated with maximum sustainable yield. Kobe plot (Figure 4) *Auxis* spp. is neither overfished nor subject to overfishing. Although the historical time series shows occasional exceedances of FMSY, the most recent assessment year meets the target-based criterion, confirming an improvement in stock status and exploitation levels over time.


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For more information, the February 2025 hydroacoustic survey estimated *Auxis* spp. biomass at 56,343 t, representing approximately 24.9% of total small pelagic biomass, confirming that the species remains an important and abundant component of the small pelagic assemblage [3].

Taken together, the stock assessment results and fishery-independent survey data indicate that *Auxis spp.* biomass remains above the limit reference point and that the stock is being exploited at sustainable levels.

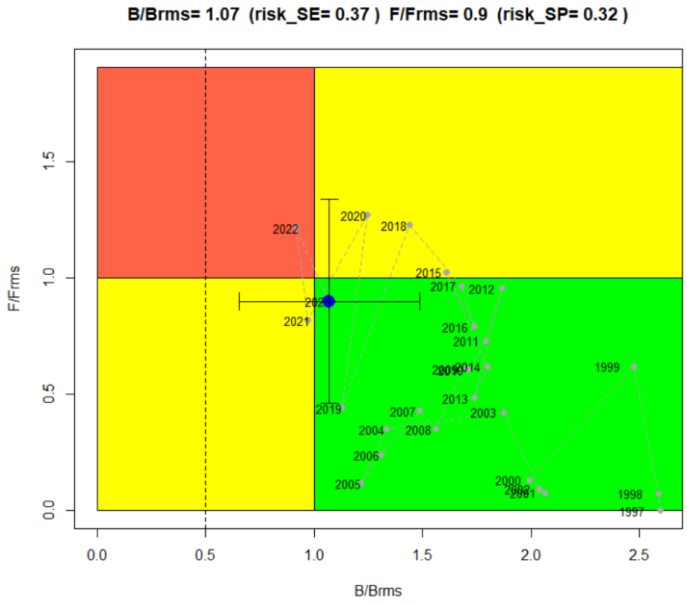



*Figure 4. Kobe diagram for Auxis spp. summarising 2023 status (blue point) with B/BMSY ≈ 1.07 and F/FMSY≈ 0.90; dotted trajectory shows previous years. Green quadrant indicates not overfished and no overfishing [2].*

**References**


[1] IPIAP. 2026. *Informe de capturas PPP-MT 2020–2025.*

[2] Canales, C. M. & Jurado, V. (2024). *Evaluación del stock de recursos pelágicos pequeños del Ecuador 2023. Informe Técnico IPIAP.* Guayaquil, May 2024, 150 p.

[3] *Instituto Público de Investigación de Acuicultura y Pesca* (IPIAP). (2025). *Informe del Crucero Hidroacústico 2025-02-01 PPP. Evaluación de biomasa y distribución de peces pelágicos pequeños.* Guayaquil, Ecuador, February 2025.

[*5] SRP (2021) National Action & Management Plan for the Small-Pelagic Fishery (2021–2025).*




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**Traceability information**

Information provided for Step 3 Path 1 or Path 2

| **Species name** | | Pacific chub mackerel (*Scomber japonicus*) \| ESP: macarela | | |
|---|---|---|---|---|
| **Path 1** | | Yes ☐ No ☒ | | |
| Confirm all KDEs are provided | | Yes ☐ No ☒ | | |
| **Path 2** | | Yes ☒ No ☐ | | |
| **Path 2 outcome** | **Flag country** | **Coastal score** | **Port score** | **Risk outcome** |
| | **Chile** | 2.13 | 2.39 | Downgraded to medium risk |
| | **Colombia** | 2.88 | 2.94 | |
| | **Ecuador** | 2.63 | 2.11 | |
| | **Peru** | 2.5 | 2.44 | |

| **Species name** | | Pacific Thread herring (*Ophisthonema spp.*) \| ESP: sardina crinuda | | |
|---|---|---|---|---|
| **Path 1** | | Yes ☐ No ☒ | | |
| Confirm all KDEs are provided | | Yes ☐ No ☒ | | |
| **Path 2** | | Yes ☒ No ☐ | | |
| **Path 2 outcome** | **Flag country** | **Coastal score** | **Port score** | **Risk outcome** |
| | **Chile** | 2.13 | 2.39 | Downgraded to medium risk |
| | **Colombia** | 2.88 | 2.94 | |
| | **Ecuador** | 2.63 | 2.11 | |
| | **Peru** | 2.5 | 2.44 | |

| **Species name** | | Frigate tuna (*Auxis thazard*) \| ESP: melva | | |
|---|---|---|---|---|
| **Path 1** | | Yes ☐ No ☒ | | |
| Confirm all KDEs are provided | | Yes ☐ No ☒ | | |
| **Path 2** | | Yes ☒ No ☐ | | |
| **Path 2 outcome** | **Flag country** | **Coastal score** | **Port score** | **Risk outcome** |
| | **Chile** | 2.13 | 2.39 | Downgraded to medium risk |
| | **Colombia** | 2.88 | 2.94 | |
| | **Ecuador** | 2.63 | 2.11 | |
| | **Peru** | 2.5 | 2.44 | |


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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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