MarinTrust Whole fish fishery assessment report

Anchovy (*Engraulis ringens*)
in FAO 87, from 16° south to southern border

Re-approval
WF13

Table 1: Whole fish fishery assessment scope

Fishery name	**Anchovy (*Engraulis ringens*) in FAO 87, from 16° south to southern border**
MarinTrust report code	**WF13**
Type 1 species (common name, Latin name)	*Anchovy (Engraulis ringens)*
Fishery location	**FAO 87, from 16° south to southern border**
Gear type(s)	*Purse seine (industrial fleet)*
Management authority (country/state)	*Ministry of Production (PRODUCE)*

Table 2: Applicant and Certification Body details

Application details			
Applicant(s)		*Mollendo (Pesquera Diamante SA), Matarani (TASA), Pisco (Austral Group SAA), Chancay (Austral Group SAA), Ilo (Austral Group SAA), Coishco (Austral Group SAA)*	
Applicant country		*Peru*	
Certification Body details			
Name of Certification Body		NSF / Global Trust Certification Ltd	
Contact Information for CB (e.g. email address/address/telephone number)		NSF-MarinTrust@nsf.org Clientservicesie@nsf.org	
Fishery Assessor name		Ana Elisa Almeida Ayres	
CB Peer Reviewer name		Matthew Jew	
Number of assessment days	4	**Assessment period**	08/2024-08/2025

Table 3: Assessment outcome

Assessment outcome (See Table 4 for a summary of assessment determination)		*Approve*
Approval validity	Valid from *(08/2024)*	Valid until *(08/2025)*
CB peer reviewer evaluation		*Agree with assessment determination*
Fishery Assessment Peer Review Group external peer reviewer evaluation		*Agree with assessment determination*

Table 4: Assessment determination

Assessment determination **Summary of assessment and outcome**
Anchovy (*Engraulis ringens*) ["*anchoveta*", in Spanish] is found throughout the south-eastern Pacific Ocean, ranging from Zorritos (4°30' S) in northern Peru to Chiloé (42°30' S) in southern Chile. Two stocks have been identified in Peruvian water: 1. The northern-central Peruvian stock, assessed and managed by Peru; 2. The southern Peru/northern Chile stock (this report), assessed and managed unilaterally by each country. In Chile, it corresponds to the regions of Arica and Parinacota, Tarapacá and Antofagasta (XV-II) The anchovy fishery is the largest monospecific fishery of the world. This report assesses the purse seine fishery of the anchovy fishery from 16° south to southern border of Peru. Public and specific information about bycatch in the southern Peruvian anchovy fishery is scarce and the client did not provide the requested data. Most of ETP public data found for Peruvian anchovy fishery is from northern Peru, as there is a Fisheries Improvement Project (FIP) in place for its anchovy industrial purse-seine fishery, and from anchovy purse seine fishery operating in northern Chile, due the proximity of the area. The species composition of the accompanying fauna is highly variable and influenced by environmental conditions, especially El Niño events. For deciding which species would be included in this assessment, it was used the main species of accompanying fauna reported from 2021-2023 by northern Chile and southern Peru anchovy fisheries. Besides anchovy, these species were included in this assessment: Eastern Pacific bonito - *Sarda chiliensis chiliensis* (*bonito*), Chilean jack mackerel - *Trachurus murphyi* (*jurel*), chub mackerel - *Scomber japonicus* (*caballa*) and Carrot/red squat lobster - *Pleuroncodes monodon* (*munida*). None of the species of this assessment is categorised as Endangered or Critically Endangered on International Union for Conservation of Nature's Red List of Threatened Species - IUCN's Red List neither appears in the Convention on International Trade in Endangered Species of Wild Fauna and Flora – CITES appendices; therefore, all species were eligible for approval for use as MarinTrust Whole fish raw material. The Peruvian fishing sector is governed by the General Fisheries Law (LGP Law Nº 25977) promulgated on December 21, 1992. The Supreme Decree No. 021-2008-PRODUCE approved the Regulations of Legislative Decree No. 1084, the Law on maximum catch limits per vessel, which contains the complementary rules to it and establishes the procedures for applying the fishing management regime applicable to the extraction intended for indirect human consumption of the anchovy and white anchovy resources (*Engraulis ringens* and *Anchoa nasus*). The highest authority is the Ministry of Production – PRODUCE (*Ministerio de la Producción*). Under PRODUCE, there is a Vice-ministerial Office of Fishery and Aquaculture. Marine Institute of Peru – IMARPE is an entity attached to the PRODUCE, which conducts scientific research and provides advice and technical support to the government on fisheries issues. Each year, fishing is divided into two seasons. At least during the last decade, hydroacoustic surveys have been conducted and environmental and biological data have been collected by IMARPE before the first fishing season every year. The stock is assessed based on these data and a Maximum Limit of Total Allowable Catch - LMTCP (*Límite Máximo de Captura Total Permisible*) is recommended.

The implementation and enforcement of fisheries laws and regulations is one of the stated functions of PRODUCE, through the General Directorate of Supervision, Inspection and Sanction – DGSFS (*Dirección General de Supervisión, Fiscalización y Sanción*). Monitoring is conducted at sea by compliance observers and at port by PRODUCE. Third-party operators conduct landing operations verification at designated landing sites as well. The national observer program (*Programa Bitácoras de Pesca* – PBP), fishing and Landings Surveillance Program (PVCPDAM), Vessel Departure Control checks and the Satellite Surveillance System of fishing vessels (SISESAT) are used to monitor industrial fishing operations. The surveillance system is so strong, that is difficult not to comply.

The catch of anchovy in the area is regulated through an annual LMTCP set by PRODUCE based on the decision table provided by IMARPE with options of exploitation rates. Temporal bans are set to protect the stock when the number of juveniles in the catch surpasses a 10% limit. Different fishing parameters are estimated by IMARPE, including the maximum sustainable level - MSY, the biomass and the fishing mortality that will lead to the MSY (B_{MSY} and F_{MSY}, respectively). When the fishery reaches the LMTCP established by the season, the fishery is closed. The LMTCP has been decided based on catches corresponded to 80% of MSY, which has not been surpassed this threshold in recent years. Since 2009 catches and fishing mortality have been below MSY and F_{MSY}. The biomass of the anchovy stock is currently below MSY, but for the first season of 2024, landings reached only 3.60% of LMTCP.

Annual landings of Eastern Pacific bonito, Chilean jack mackerel and Chub mackerel, which were assessed under category C, are recorded and they all presented a biomass above the limit reference point in the most recent assessment. Carrot/red squat lobster, assessed under category D, passed the Productivity-Susceptibility Analysis (PSA).

In Peru, there are two onboard observer programs that report incidental catches in the pelagic fisheries (PBP and SALVAMARES). There are many interactions of anchovy fishery with Endangered, Threatened, Protected- ETP species, but the mortality rates are low and there are several measures in place to minimise the impacts on them.

The fishery does not have a significant negative impact on physical habitats as the gear used by the industry, purse seine, is pelagic, meaning that does not have a direct impact on the seabed.

Several management measures are in place to protect the species (temporally spawning and recruitment closures), Minimum Landing Size (MLS), restricted areas and access to the fishery, updates on LMTCP according to fishing and environmental biological factors through the year, etc, which protect the environment and the species which rely on anchovy. Although anchovy is prey of several species, studies indicated that these species' dietary necessities have been adequately met in recent years and anchovy fishery is not exerting an adverse influence on species recovery.

The assessor recommends the approval of anchovy stock in FAO 87, from 16° south to southern border of Peru for the production of fishmeal and/or fish oil under the current MarinTrust Whole fish Standard (v 3.0).

Summary of CB peer review	Despite the lack of absolute clarity on catch data, the assessor made a decision on species classification that is well supported and justified through a detailed rationale. The management (M1 and M2) and ecosystem (E1, E2, and E3) are fully detailed and the rationales support the scoring criteria. Anchovy (*Engraulis ringens*) was properly categorized and assessed under Category A. It passed all subcategories and scoring clauses. Eastern Pacific bonito (*Sarda chiliensis chiliensis)*, Chilean jack mackerel (*Trachurus murphyi)*, and Chub mackerel (*Scomber japonicus*) were all assessed under Category C. All three species are subject to a stock assessment where fishery removals are considered in the process and current biomass estimates are above limit reference points (or proxy). Finally, Carrot/red squat lobster (*Pleuroncodes monodon*) was assessed under Category D. The attribute scores and subsequently average scores were calculated correctly and passes Category D per Table D(b). Therefore the decision for approval under MarinTrust Wholefish v3.0 standard is supported by the CB.
Summary of external peer review (see Appendix 1 for the full peer review report)	In despite of the General Fisheries Law (LGP Law Nº 25977) promulgated on December 21, 1992, this fishery is not managed under LGP, it is managed under Legal Decree 1084 (or DL 1084, which created the system of quotas by fishing vessels. I think it is important to make clear that. In the Table 4: assessment determination is stated that: • "Specific information about bycatch in the southern Peruvian anchovy fishery is scarce". That is not right, the third party companies in charge of the control take data on by catch in landing points. Also the private Salvamares Program (cited several times in the assessment) takes detailed data about that. • "Most of data available for Peruvian anchovy fishery is from northern Peru". That is not right, the same systems and kind of data is collected in both management zones. • "Hydroacoustic surveys are conducted and environmental and biological data are collected by IMARPE before each fishing season". At least during the last decade just one survey in the south was performed before the first fishing season every year. However, upon the recent agreements between Imarpe (peru) and Ifop (Chile), this year ther wll be executed two coordinated and simultaneous surveys to assess the spawning and the biomasa of anchovy in the south of Peru and northern Chile (SPNCH). The goal is to

	perform these at least once a year before the second fishing season in Peru. The first survey will be executed during august-September, and the latter between november-december. • "The catch of anchovy in the area is regulated through an annual Maximum Limit of Total Allowable Catch - LMTCP (Límite Máximo de Captura Total Permisible) set by PRODUCE based on the recommendations given by IMARPE". Specifically, what IMARPE does is submit a report on the situation of anchovy, including a "decision table" with options for the exploitation rate (E) with a maximum possible quota of 35% of the adult population; this is made following an official protocol. Imarpe does not provide a specific recommendation to set the maximum allowable catch. • "The biomass of the anchovy stock is currently below MSY, but for the first season of 2024, landings reached only 3.60% of LMTCP". Obviously, this report was drafted when the fishing season was just starting. Anyway, to date (August 27th, 2024) landings were 36 K tons, so just 14% of the provided quota. This is explained by the low fishing effort, the system for closing areas where juvenile fish is observed over 10% per catch makes no attractive to perform long trips from the north aboard industry vessels. In turn, this is because there is no fleet permanently based in the south of Peru. • "Carrot/red squat lobster, assessed under category D, passed the Productivity-Susceptibility Analysis (PSA". This is unnecessary, there is a continuous scientific monitoring on the state of this population in despite it is not target of a fishery, it is an underexploited and abundant specie. • "Several management measures are in place to protect the species (temporally spawning and recruitment closures), Minimum Landing Size (MLS)". The minimum size is applied to fishing sets, not to landings. • "catch's bycatch restrained to 5%". This is 5% volume of the obtained catch, not in number as in the case of anchovy. • "Despite the lack of absolute clarity on catch data, the assessor made a decision on species classification that is well supported and justified through a detailed rationale". This is wrong, all the data is available on request to the Ministry of Production. There is a law of transparency in Peru, even without explaining why for the data is requested it is an obligation of the Ministry, Imarpe etc to provide the data. In Table 7: Species categorisation table, is stated that: • "Specific information about bycatch in the southern Peruvian anchovy fishery is scarce". This does not seem

	right as explained in my previous comment. Besides, there is an electronic logbook aboard every industry vessel, also detailed data is collected about by catch at landing points. • "The Peruvian anchovy fishery reports from the Marine Institute of Peru – IMARPE sometimes only cite the name of species found during the expeditions and do not provide their amount, neither their percentage on total landings. It is hard to compile landings data as Peru publishes daily reports of the landings and rarely publish a report with compiled quantitative data of the accompanying fauna". It is true that the data made publicly available is about target species (anchovy in this case), but data on all species caught is also collected, and can be requested under the provisions of the transparency law. • "No quantitative data was provided for these species in this region in IMARPE (2023) report". This is unfair since all data is available on request. Also, SNP produces workshops on anchovy where all data is made publicly available. Finally, in despite all these observations, I agree all the scorings made by the assessor. In M1.3 it is stated that: • "Although discards are not officially documented". The truth is that after the promulgation of the DS-024-2016, which created the system for dynamic closing of areas where juvenile fish are observed over 10% in number (not in volume), there has been observed too few events of discarded fish. The DS-024 created the stimulus to not to discard in return of not being imposed a fine or further sanctions. In M1.4 it is stated that: • "The LGP Law Nº. 25.977, which is the most important law in the fishing sector, is based on sustainability as stated on its first article". Not for anchovy, in the case of anchovy the legal instrument to be cited is the DL-1084 (before described, it was promulgated in 2008, 16 years ago). • "Since September 2019, there has been a technical consultation meeting every two weeks, which involves SNP, relevant government departments and the national industry society. Anyone in the group can put something on the agenda for discussion". Also SNP (National Fisheries Society) uses to perform, in cooperation with Produce, Imarpe, Ihma and others, 2 annual workshops on the diagnosis of the state of the population. • "The methodology for the evaluation of the status of the southern stock was reviewed in 2015 by IMARPE.

	Therefore, some institutions seem to collaborate in the preparation of those reports". There are also voluntarily convoked scientific auditory to Imarpe's results , as it happened during 2000, 2008, 2018 and 2024. FAO made an auditory requested by PRODUCE, which has satisfactory results, as all the others, though improvements have been introduced both in methods and equipment. In M2.3 it is stated that: • "Off the coast of Peru, under-reporting of landed catches and discards of juvenile anchovies have been reported. In contrast to the north-central anchovy stock, however, there are paucity of data on the severity of this issue for southern stocks. Some stocks of Peruvian anchovy have reported discards in industrial fisheries recent years due to the presence of excessive numbers of juveniles (Grillo et al., 2019; Diaz 2017; Wosnitza-Mendo et al, 2010)". This was true before 2016. The DS-024-2016 created the stimulus to discard or unreporting catches since every landing is audited by third party entities. • "Since 2016, fishing vessels have been required to disclose their fishing locations and the percentage of juveniles in their catches. IMARPE evaluates such data to identify critical fishing zones with a high frequency of juvenile catches". This is not correct, that task is made not for Imarpe but the General Direction of Monitoring and Sanction of PRODUCE. However, sometimes Imarpe can recommend to close certain reasons, but it is not its regular task. In clause A1,2 it is stated that: • "Since 1982, the IMARPE has monitored anchovy populations using acoustic techniques through twice-yearly hydroacoustic cruises along the geographical range of the anchovy population". In the south, Imarpe performs just one survey per year, though under the GEF-UNDP Humboldt 2 Project, there are ongoing coordination's to perform at least an acoustics simultaneous survey all along the SPNCH. In clause A2.3 it is stated that: • "For the first season of 2024, a LMTCP of 251,000 was established, but landings reached only 9,098 tons (3.60% of LMTCP)", To date (August 27th) landings were 36 K (14% of the quota).

	In clause A2.4 it is stated that: • "IMARPE methods to assess the anchovy stock were peer reviewed by an international panel of experts in 2009 and again by FAO experts in 2014". Imarpe use to voluntarily request international scientific auditory, as it happened in 1992, 1994-95, 1997-98, 2000, 2010, 2018 and 2024. In clause A3.1 it is stated that: • "In order to monitor the resources and compliance of fishing fleets, four programs are in place: the logbooks program (PBP) with onboard observers since 1996, to cover the fleet behaviour, species and size composition of catches, discards, and interactions with other species and the habitat; gathering information at the landing ports; the satellite vessel tracking system (SISESAT); and scientific surveys (FishChoice, 2019". There is a fifth program, and it is private: the Salvamares Program, which collect data from several sources, including ETP species interaction, this is, using fishing vessels as observers of the ecosystem. In clause C1.1 it is stated that: • "The landings of Chilean jack mackerel in 2023 were 187,000 t, 106,000 of which is attributed to the industrial purse seine fleet". It is pertinent to talk about landings in Chile, it looks as out of context.
Notes for on-site auditor	N/A

Table 5: General results

Section	Outcome (Pass/Fail)
M1 - Management Framework	Pass
M2 - Surveillance, Control and Enforcement	Pass
E1 - Impacts on ETP Species	Pass
E2 - Impacts on Habitats	Pass
E3 - Ecosystem Impacts	Pass

Table 6: Species-specific results

See Table 7 for further details of species categorisation.

Category	Species name (common & Latin name)	Outcome (Pass/Fail/n/a)	
Category A	Anchovy (*Engraulis ringens*)	A1	Pass
		A2	Pass
		A3	Pass
		A4	Pass
Category C	Eastern Pacific bonito (*Sarda chiliensis chiliensis)*	Pass	
Category C	Chilean jack mackerel (*Trachurus murphyi)*	Pass	
Category C	Chub mackerel (*Scomber japonicus*)	Pass	
Category D	Carrot/red squat lobster (*Pleuroncodes monodon*)	Pass	

Table 7: Species categorisation table

List of all the species assessed. Type 1 species are assessed against Category A or Category B. Type 1 species must represent 95% of the total annual catch. Type 2 species are assessed against Category C or Category D. Type 2 species may represent a maximum of 5% of the annual catch. Species that comprise less than 0.1% of the catch are not required to be assessed or listed here.

Species name (common & Latin name)	Stock	CITES listed yes/no	IUCN Red list Category	% catch composition	Management (Y/N)	Category (A, B, C or D)
Anchovy (Engraulis ringens)	Anchovy in FAO 87, from 16° south to southern of Peru stock FAO 87	No	LC[1]	>95	Y	A
Eastern Pacific bonito (Sarda chiliensis chiliensis)	Eastern Pacific bonito in Chilean Exclusive Economic Zone (EEZ)	No	LC[2]	<2	Y	C
Chilean jack mackerel (Trachurus murphyi)	Chilean jack mackerel in Chilean EEZ	No	Data Deficient [3]	<2	Y	C
Chub mackerel (Scomber japonicus)	Chub mackerel in Chilean EEZ	No	LC[4]	<2	Y	C
Carrot/red squat lobster (Pleuroncodes monodon)	Carrot/red squat lobster Chilean EEZ	No	Not assessed	<2	Y	D
Rationale The Peruvian anchovy (*anchoveta*) fishery is the largest monospecific fishery of the world. The						

[1] https://www.iucnredlist.org/species/183775/102904317
[2] https://www.iucnredlist.org/species/170352/170089277
[3] https://www.iucnredlist.org/species/183965/8207652
[4] https://www.iucnredlist.org/species/170306/170083106

species composition of the accompanying fauna is highly variable and influenced by environmental conditions, especially El Niño events. “Public and specific information about bycatch in the southern Peruvian anchovy fishery is scarce and the client did not provide the requested data. The Peruvian anchovy fishery reports from the Marine Institute of Peru – IMARPE sometimes only cite the name of species found during the expeditions and do not provide their amount, neither their percentage on total landings. It is hard to compile landings data as Peru publishes daily reports of the landings and rarely publish a report with compiled quantitative data of the accompanying fauna. However, the southern Peruvian anchovy stock is a shared stock with Chile and Chile has some reports with quantitative data of catches for its northern region, which will be used herein considering the proximity to southern Peru, although the fisheries management is done separately by each country authority. Therefore, for deciding which species would be included in this assessment, it was used the main species of accompanying fauna that reported from 2021-2023 in available reports from southern Peru and northern Chile.

During the 5-days-operation of EUREKA LXXIV in April 2023, Eastern Pacific bonito - *Sarda chiliensis chiliensis* (*bonito*) seemed to be one of the main species of accompanying fauna identified from 16° south to southern border of Peru with Chile (IMARPE, 2023), followed by Chilean jack mackerel - *Trachurus murphyi* (*jurel*) [Figure 1]. No quantitative data was provided for these species in this region in IMARPE[1] (2023) report.

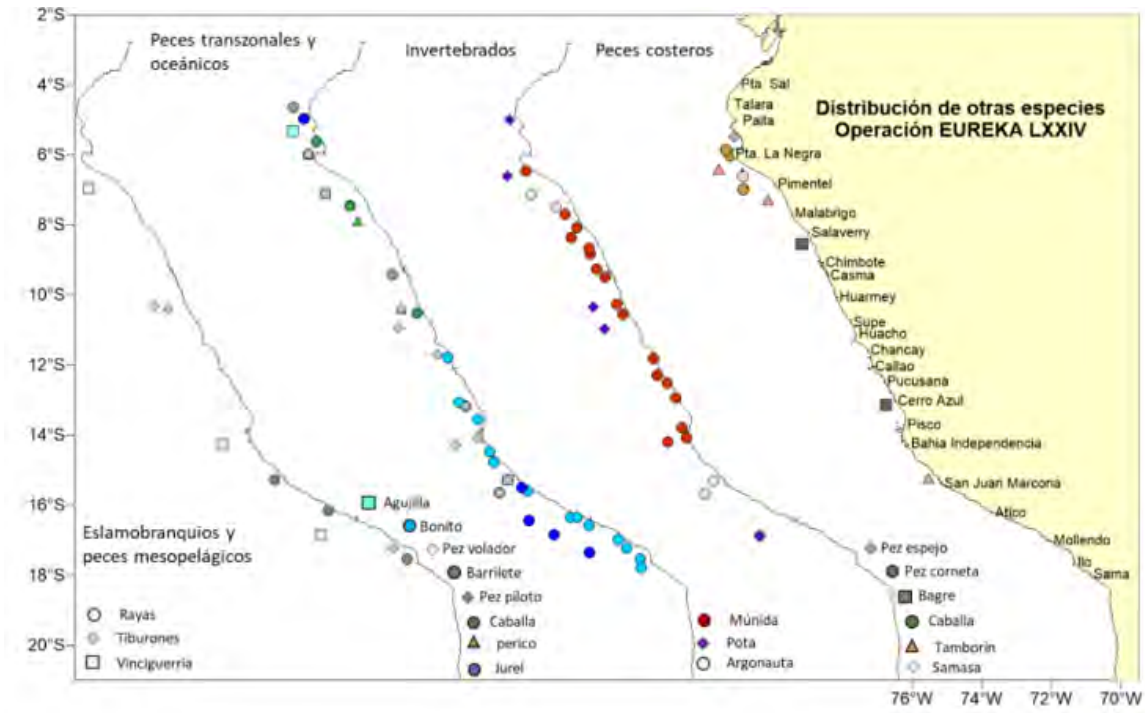

Figure 1. Distribution of species during EUREKA LXXIV operation from 17 to 21 April 2023 (IMARPE, 2023). The area covered by this assessment starts from 16° south to southern border Peru.

Chilean authorities collected bycatch data for anchovy industrial fishery in northern Chile from January to December 2022 and reported 94.33% of anchovy catches, 3.1% of jack mackerel, 2.38% of chub mackerel - *Scomber japonicus* (*caballa*) and 0.19% of jellyfish – Scyphozoa class (*medusa*) [Figure 2]. However, the species of the jellyfish is not specified and this specimen has not been cited in any IMARPE report. Thus, jellyfish is not included in this assessment.

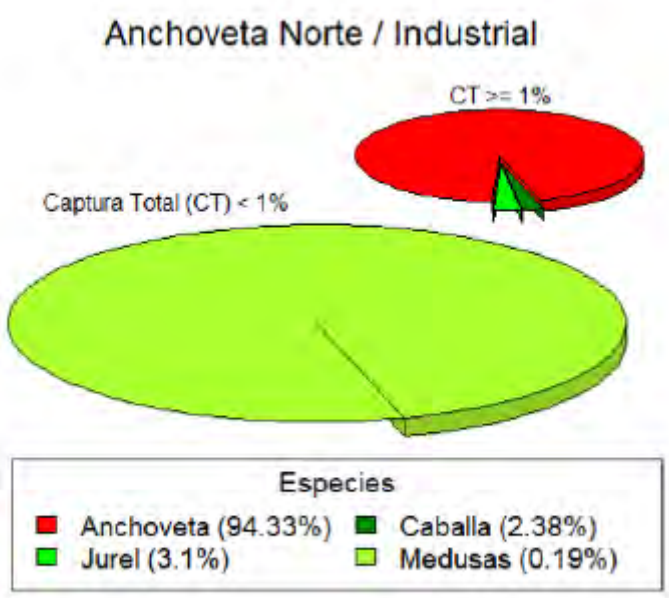

Figure 2. Catch composition of Chilean industrial fleet operating in Northern Chile in 2022 (IFOP, 2023).

In 2021, IMARPE reported 1.28% catches of carrot/red squat lobster - *Pleuroncodes monodon* (*munida*) in southern Peru and about 98.20% of anchovy (Figure 3). In the initial MarinTrust assessment, the client reported that anchovy usually composed about 95% of the catches and remaining catches were of Chilean jack mackerel, Pacific Chub mackerel and carrot/red squat lobster.

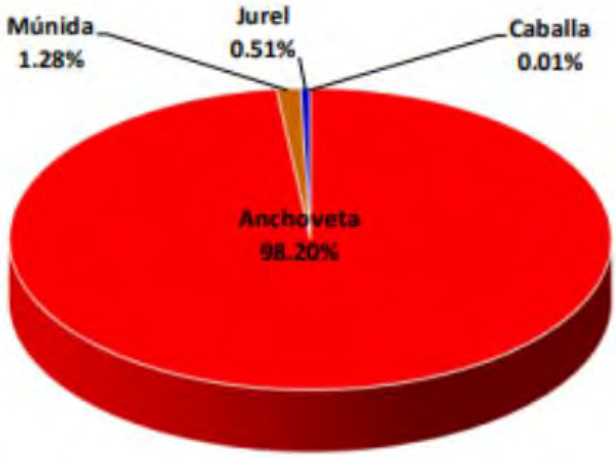

Figure 3. Composition of species from industrial fleets operating in southern Peru in March, April and June of 2021 (IMARPE, 2021).

Considering that in southern Peru anchovy usually composes > 95% of the catches, Chilean jack mackerel and chub mackerel are usually found as accompanying fauna in Chile and Peru anchovy fishery and the main reported species in southern Peru in the most recent data available was Eastern Pacific bonito, anchovy was considered Type 1 species and these other cited species were considered Type 2 species for this assessment, as in the previous year.

References

IFOP. 2023. Programa de investigación y monitoreo del descarte y la captura de pesca incidental en pesquerías pelágicas, 2022-2023. SUBSECRETARÍA DE ECONOMÍA Y EMT/Agosto 2023. https://www.ifop.cl/wp-content/contenidos/uploads/RepositorioIfop/InformeFinal/2023/P-581191_seccion2.pdf

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IMARPE[1]. 2023. Informe de la operación eureka lXXIV. (17 al 21 de abril de 2023). https://cdn.www.gob.pe/uploads/document/file/4641378/ANEXO-OF.%20525-2023-PCD-Informe%20final%20Eureka%20LXXIV-DGIOCC-DGIHSA.pdf?v=1685719506

Management requirements

This section, or module, assesses the general management regime applied to the fishery under assessment. It comprises two parts, M1, which evaluates the management framework, and M2, which evaluates surveillance, control and enforcement within the fishery.

1.1. All management criteria must be met (pass) for a fishery to pass the Management requirements.

1.1.1. The sub-criteria offer a structured evidence base to demonstrate that the fishery sufficiently meets the management criteria. It is not expected that sub-criteria are assessed independently of the main criterion.

M1 Management framework

M1.1	**M1.1 There is an organisation responsible for managing the fishery.**	
	M1.1.1 The management and administration organisations within the fishery are clearly identified.	
	M1.1.2 The functions and responsibilities of the management organisations include the overall regulation, administration, science and data collection and enforcement roles, and are documented and publicly available.	
	M1.1.3 Fishers have access to information and/or training materials through nationally recognised organisations.	
Outcome	*Pass*	

Rationale

The Peruvian fishing sector is governed by the General Fisheries Law (LGP Law Nº 25977) promulgated on December 21, 1992. The Supreme Decree No. 021-2008-PRODUCE approved the Regulations of Legislative Decree No. 1084, the Law on maximum catch limits per vessel, which contains the complementary rules to it and establishes the procedures for applying the fishing management regime applicable to the extraction intended for indirect human consumption of the anchovy and white anchovy resources (*Engraulis ringens* and *Anchoa nasus*).

The highest authority is the Ministry of Production – PRODUCE (*Ministerio de la Producción*). Under PRODUCE, there is a Vice-ministerial Office of Fishery and Aquaculture.

PRODUCE formulate, design, execute and supervise the national and sectoral policy of fishing, aquaculture, micro and small business and industry. Regarding the fisheries sector, PRODUCE regulates the activity and promotes the harmonious development of the productive ecosystems of fisheries (Gob[1], 2024).

Vice-ministerial Office of Fishery and Aquaculture responsibilities include the creation and implementation of management plans, the conduct of fisheries research, the establishment of the regulatory framework for fisheries management, and the issuance and administration of regulations. Through Ministerial Resolutions and Supreme Decrees, annual catch limits and technical measures governing the fishery are published on the PRODUCE website.

Marine Institute of Peru – IMARPE (*Instituto del Mar del Perú*) is an entity attached to PRODUCE,

which conducts scientific research and provides advice and technical support to the government on fisheries issues. IMARPE is a specialized technical body, whose functions are oriented towards the generation of scientific knowledge that allows the Peruvian State to have scientific and timely advice for the sustainable use of the living resources of the sea and continental waters (Gob[2], 2024). IMARPE is responsible for conductions of stock assessments, recommendations of annual catches limits, establishment of temporary authorizations for the extraction of fishes, as well as maximum tolerance of juvenile specimens as bycatch.

National Fisheries Society – SNP (*Sociedad Nacional de Pesquera*) is a non-profit organization created by the fishing industry, which main aim is to lead the growth of fishing and aquaculture industries in Peru by combating illegal activities and supporting the protection of the environment through sustainable fishing, sound science, and creative techniques. SNP's goals include representing the industry in government forums and meetings and facilitating cooperation with government and regional departments that promote and grow Peru's fishing and aquaculture industries. SNP also organizes workshops for dissemination of information to fishermen (República Sostenible, 2023).

There are also other private and non-governmental organizations in Peru, such as SALVAMARES and World Wide Fund for Nature – WWF that work closer to the fishing sector, promoting trainings, workshops and guides for good practices (SNP, 2024 and WWF, 2023).

In IMARPE website, it is possible to obtain several information of fishery, such as daily data of landings, biweekly reports with information of landings and sizes of the species caught, investigation reports that were used as support for the creation of Ministerial Resolutions, graphs of landings, fishing effort, sizes, distribution of catches, Catch Per Unit Effort - CPUE per fishing season, marine species identification guides, and others: https://www.imarpe.gob.pe/imarpe/index2.php?id_seccion=reportes

In Peru government website, several communications and reports can be accessed, such as communications of temporal and special fisheries closures, reports of the situation of specific fish stocks and exploitation perspectives for fishing seasons, results of hydroacoustic evaluation cruises performed by IMARPE, updated of Maximum Limit of Total Allowable Catch - LMTCP (*Límite Máximo de Captura Total Permisible*) through the year, etc: https://www.gob.pe/institucion/produce/informes-publicaciones. The reports provide the support data for the management decisions for the fisheries.

In conclusion, **there is an organisation responsible for managing the fishery,** represented mainly by PRODUCE in collaboration with several other organizations (Vice-ministerial Office of Fishery and Aquaculture, IMARPE, SNP).

References

Gob[1]. 2024. Información institucional. Ministerio de la Producción. https://www.gob.pe/institucion/produce/institucional

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M1.2	**M1.2**	**Fishery management organisations are legally empowered to take management actions.**
	M1.2.1	There are legal instruments in place to give authority to the management organisation(s) which can include policies, regulations, acts or other legal mechanisms.
	M1.2.2	Vessels wishing to participate in the fishery must be authorised by the management organisation(s).
	M1.2.3	The management system has a mechanism in place for the resolution of legal disputes.
	M1.2.4	There is evidence of the legal rights of people dependent on fishing for food or livelihood.
Outcome	*Pass*	

Rationale

The LGP Law Nº 25.977 is the most important law in the fishing sector and it was approved in 1992. There was a modification of the law in 2008, through Legislative Decree 1.027 related to the process of grant licenses for fishing activities by PRODUCE and that takes into account socioeconomic factors:

“Article 9. The Ministry of Production, based on scientific evidence available and socioeconomic factors, determines, depending on the type of fisheries, the fisheries management systems, allowable catch quotas, seasons and zones of fishing, regulation of fishing effort, fishing methods, minimum sizes of capture and other regulations that require the preservation and rational exploitation of resources hydrobiological.

The administrative rights granted are subject to the ordering measures that, by means of a legal provision of a general nature, dictates the Ministry. (…)

Article 44. Concessions, authorizations and permits are specific rights that the Ministry of Production grants a specific term for the development of activities fishing activities, in accordance with the provisions of this Law and under the conditions determined by its Regulation.

It is the responsibility of PRODUCE to verify that the administrative rights granted are exercised in strict observance of the specifications set forth in the title itself granted as well as in accordance with the conditions and legal provisions issued, in order to ensure that these are used in accordance with the interest of the Nation, the common good and within the limits and principles established

in this law, in the special laws and in the norms regulations on the matter.

In case of non-compliance, the Ministry of Production, through the technical bodies corresponding, issues the administrative resolution of expiration of the right granted that allow its reversion to the State, prior to the initiation of the respective administrative procedure, which ensure respect for the right of defence of the administered and with strict subjection to due procedure."

The Supreme Decree No. 012-2001-PE dictates a consultation process for changing the regime of access to the extractive activity:

“11.2 To proceed with modifying the regime of access to the extractive activity, the Ministry of Fishing shall previously have the following information:

a) The will expressed in writing by the companies representing at least the 80% of the total volume of the capacity of the winery of the resources under the access regime if you intend to modify, together with 80% of the total installed capacity of them fishing industrial establishments that hold a license dedicated to processing those same resources;
b) The corresponding information from IMARPE; y,
c) The recommendations of a panel of internationally recognized scientists in terms of research, specifically convened to assess the situation of the resource and its fishing.

11.2 The regime of access to the aquaculture activity is constituted by the authorizations and concessions granted in accordance with the regulations on the matter.

11.3 The regime of access to the fishing processing activity is constituted by the installation authorizations and operating licenses granted in accordance with the provisions of the Chapter IV of Title III of this Regulation.”

People dependent on fishing for subsistence, as well as artisanal fisheries or companies and investigation institutions are exempt of payment of fishing concessions, authorizations and permits predicted on Article 44º of the LGP Law Nº 25.977. The Law also predict a fund for promoting and supporting the financing of fishing activities, primarily in artisanal and subsistence areas, through the granting of credits under preferential conditions, the National Fish Development Fund.

Recently, in May 2023, it was approved the Law 31,749 that recognizes traditional ancestral and artisanal fishing as distinct categories from small scale fishing, with the purpose of establishing public policies aimed at providing better living conditions for fishermen, maintaining their traditional and cultural connection with the sea, lakes, lagoons and rivers; promote the preservation of these for the extraction of hydrobiological resources within the five nautical miles for their subsistence, tourism and commercial activities (El Peruano, 2024). Differentiating the categories of fishing will facilitate the approval of different fisheries management measures for each activity, taking into account its characteristics and impact on the marine environment adjacent to the coast.

Regarding authority given to IMARPE, the Legislative Decree Nº 95, modified by the Urgency Decree Nº 015-2020 establishes:

“Article. 1 Marine Institute of Peru – IMARPE:
Marine Institute of Peru - IMARPE, is a Specialized Technical Public Organization attached to the Ministry of Production, which has legal status under Internal Public Law. It constitutes a budget statement. (…)

Article 4. Roles of Marine Institute of Peru - IMARPE

Marine Institute of Peru - IMARPE, in accordance with the provisions of the previous articles, has the following roles:

a) Approve, execute and evaluate scientific and technological research plans, programs and projects, linked to its purpose;

b) Develop scientific research on marine and continental resources, the ecological factors of interaction and those that promote the development of fishing and aquaculture;

c) Develop oceanographic and limnological investigations of the Peruvian sea and continental waters respectively;

d) Develop technological research on extraction, preservation on board and landing;

e) Provide the Ministry of Production with the scientific bases for the rational administration of marine and continental resources;

f) Promote the development of scientific and technological research, as well as the training, improvement and specialization of scientific and technical researchers;

g) Assume, by delegation of the Government, its representation before international organizations regarding its purpose;

h) Participate with other Public Organizations in the formulation of scientific and technological policies;

i) Coordinate, with the academy, such as universities, institutes, among others, as well as with natural or legal persons, investigations of mutual interest;

j) Disseminate the results of their studies and research to the scientific community and the general public;

k) Sign agreements and/or contracts with individuals and/or legal entities, national and international, to promote national technical-scientific development in matters within its competence, subject to the pertinent legal provisions; and,

l) Others that are established by legal device."

The Presidency of the Council of Ministers – PCM (*Presidencia de Consejo de Ministros*) holds the authority for managing conflicts at the national level and coordinates with all levels of government to ensure proper social management. In cases such as the fishing sector, the intervention is focused on PRODUCE due to the specificity of the issues (FisheryProgress, 2022).

Allegations and appeals addressed to sanctioning bodies can be presented to PRODUCE or the corresponding Regional Directorates. The mechanism is set out in Supreme Decree 17/2017.

The three-year audit conducted by MRAG for FisheryProgress of the Fishery Improvement Project Progress - FIP of Peru anchovy - industrial purse-seine fishery in northern region (FishChoice, 2019) describes some mechanisms to avoid disputes has been handled:

"a) PRODUCE publish their proposed regulations and consult on them before they become official regulations. This was described by stakeholders at the FIP review meeting. Some evidence of this would be useful for full assessment.

The Oannes network is a communication network for the fishing industry. There are 30,000 users in this network and email list. Oannes runs social networks for the fishing industry to generate dialogue. They also represent the fishing industry in meetings with government and in FIP meetings, they can use the information from their networks to express what the sector desires. The networks contain fishermen from all sectors as well as scientists.

Since September 2019, there has been a technical consultation meeting every two weeks, which involves SNP, relevant government departments and the national industry society. Anyone in the

group can put something on the agenda for discussion. This is the main conflict resolution system, and examples were provided of the system solving disputes.

There is a "Forum for sustainable fisheries and aquaculture" (http://www.fpas.pe/) whose objective is to promote dialogue and research among the different actors in fisheries and aquaculture in Peru. Forum members include regulators, NGOs, companies and academics. The forum organizes multiple meetings per year both in Lima and regionally to discuss relevant topics such a management issues. There is also an electronic suggestions platform. This forum has increased the ability for all parties to be involved.

b) The management system includes consultation processes and there are many ways the government engages with forums and representative groups to gather opinions and solve issues. SG 80 is likely to be met.

c) The private industry network run by Oannes, and the and the public-private forum involves fishers from all sectors and provide opportunity for all affected parties to be involved. The management system itself has informal and formal mechanisms by which all interested parties can be involved. Government meets with stakeholders and receive their proposals as standard practice. SG80 is likely to be met."

In conclusion, the **legal framework governing Peru's fishing sector** not only establishes clear guidelines for sustainable fisheries management, safeguarding the nation's marine resources in line with both environmental and socioeconomic considerations, but also legally **empowers various organizations to take decisive management actions.**

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M1.3	**M1.3**	**There is an organisation responsible for collecting data and (scientifically) assessing the fishery.**
	M1.3.1	The organisation(s) responsible for collecting data and assessing the fishery is/are clearly identified.
	M1.3.2	The management system receives scientific advice regarding stock, non-target species and ecosystem status.
	M1.3.3	Scientific advice is independent from the management organisation(s) and transparent in its formulation through a clearly defined process.
Clause outcome	*Pass*	

Rationale

IMARPE is the entity attached to PRODUCE, which conducts scientific research and provides advice and technical support to the government on fisheries issues. IMARPE is a specialized technical body, whose functions are oriented towards the generation of scientific knowledge that allows the Peruvian State to have scientific and timely advice for the sustainable use of the living resources of the sea and continental waters (Gob[2], 2024). IMARPE is responsible for conductions of stock assessments, recommendations of annual catches limits, establishment of temporary authorizations for the extraction of fishes, as well as maximum tolerance of juvenile specimens as bycatch.

Two to four scientific surveys encompassing the entire Peruvian coastline are conducted annually by IMARPE. Surveys collect oceanographic and environmental data, and are used to estimate total biomass, eggs and larvae production, anchovy population size structure, and reproductive status of the stocks. To address environmental variability, which is particularly influential in the Peruvian upwelling system, IMARPE employs remote sensing and in situ observations at sea and on land to conduct extensive and ongoing monitoring of the ecosystem. In addition, during atypical environmental conditions, a "Eureka" operation conducts hydroacoustic evaluation surveys with data acquired simultaneously by multiple industrial fishing vessels under the direction of IMARPE (Oliveros-Ramos *et al.*, 2021).

Based on a predefined protocol, the IMARPE assess the stock and issues catch guidelines (IMARPE, 2015):

1. First, the stock size, structure, and biomass are estimated from the hydroacoustic surveys;
2. Size structure are projected under diverse circumstances (exploitation, growth, and mortality, which will vary according on anticipated environmental conditions during the projection period);
3. A decision table is built to recommend a Maximum Limit of Total Allowable Catch - LMTCP (*Límite Máximo de Captura Total Permisible*), according to different scenarios

When population numbers are low, and the environment is unstable, further surveys are conducted. Although discards are not officially documented, they are indirectly factored into stock estimates via acoustic surveys and population length frequency statistics. Moreover, the Supreme

Decree 024/2016 create the dynamic system of closing of areas where juvenile fish was caught over 10% of the catch considering the number of fish, a system that contributes for a reduction of discards for this species.

IMARPE performs stock assessments, which are reviewed by the PRODUCE before setting the LMTCP for the stock.

Reports of stock assessments and advice on LMTCP for the anchovy stocks can be found on Peru government website under the PRODUCE-IMARPE option: https://www.gob.pe/institucion/imarpe/informes-publicaciones?sheet=40.

In IMARPE website, it is possible to obtain several information of fishery, which are used as support for the management decisions, such as daily data of landings, biweekly reports with information of landings and sizes of the species caught, investigation reports that were used as support for the creation of Ministerial Resolutions, graphs of landings, fishing effort, sizes, distribution of catches, CPUE per fishing season and others: https://www.imarpe.gob.pe/imarpe/index2.php?id_seccion=reportes.

In conclusion, the management of Peru's fisheries is underpinned by the crucial role of **IMARPE, the organization responsible for collecting data and conducting scientific assessments of the fishery.**

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M1.4	**M1.4**	**The fishery management system is based on the principles of sustainable fishing and a precautionary approach.:**
	M1.4.1	A policy or long-term management objective for sustainable harvesting based on the best scientific evidence and a precautionary approach is publicly available and implemented for the fishery.
Outcome	*Pass*	

Rationale

The LGP Law Nº. 25.977, which is the most important law in the fishing sector, is based on sustainability as stated on its first article:

"Article 1. The purpose of this Law is to regulate the fishing activity in order to promote their sustainable development as a source of food, employment and income and of ensure a responsible use of hydrobiological resources, optimizing the economic benefits, in harmony with the preservation of the environment and conservation of biodiversity."

The Supreme Decree No. 021-2008-PRODUCE approved the Regulations of Legislative Decree No. 1084, the Law on maximum catch limits per vessel, which contains the complementary rules to it and establishes the procedures for applying the fishing management regime applicable to the extraction intended for indirect human consumption of the anchovy and white anchovy resources (*Engraulis ringens* and *Anchoa nasus*) and on article 4º is stated that:

"Maximum Catch Limits per Vessel (LMCE) aims to improve the conditions for the modernization and efficiency of fishing activity; to promote its sustainable development as a source of food, employment and income; and, to ensure responsible use of hydrobiological resources, in harmony with the preservation of the environment and the conservation of biodiversity."

In the description of PRODUCE and IMARPE in government website, the commitment to sustainability is explicitly mentioned:

PRODUCE
Gob[1](2024): "Our mission is to promote the development of agents in the productive sector, promoting innovation, quality and environmental sustainability, contributing to the competitiveness of the sector."

IMARPE
Gob[2] (2024): "We are a specialized technical body of the Ministry of Production, whose functions are oriented towards the generation of scientific knowledge that allows the Peruvian State to have scientific, truthful and timely advice for the sustainable use of the living resources of the sea and continental waters."

Stock assessment is carried out by IMARPE, estimating the population structure from the results of hydroacoustic surveys and projected under several harvest scenarios. Harvest scenarios are projected up to the next reproductive peak, and use different population parameters (e.g., growth, mortality) according to the environmental conditions (favourable or unfavourable) predicted during the period. The results are presented in the form of a decision table (IMARPE, 2015) used by PRODUCE to set the LMTCP for the current fishing season (Oliveros-Ramos *et al*., 2021).

The fishing season starts 15 days after authorization by PRODUCE. Between the authorization date and the beginning of the fishing season, an exploratory fishing trip is supervised by IMARPE. The objective is to update knowledge on the spatial distribution of the resource and particularly to identify areas with a high proportion of juveniles, in order to set temporal closures. The catch during the exploratory fishing is taken into account for the final setting of the LMTCP (Oliveros-Ramos *et al*., 2021).

During the anchovy assessment procedure, the estimated quantity and weight of juvenile animals landed during a fishing season (as a fraction of the LMTCP) are computed and reported to PRODUCE. This figure, referred to as the "juvenile LMTCP," provides an additional management criterion that strengthens the protection of juvenile individuals: it permits PRODUCE to close the fishery once landings reach the juvenile LMTCP, even if the full LMTCP has not been reached, thereby protecting the more diverse population during warming events (Oliveros-Ramos *et al*., 2021).

In conclusion, the **Peruvian fishery management system is firmly rooted in the principles of sustainable fishing and a precautionary approach.**

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M1.5	**M1.5**	**There is a clearly defined decision-making process which is transparent, with processes and results made publicly available.**
	M1.5.1	There is participatory engagement through which fishery stakeholders and other stakeholders can access, provide information, consult with, and respond to, the management systems' decision-making process.
	M1.5.2	The decision-making process is transparent, with results made publicly available.
	M1.5.3	The fishery management system is subject to periodic internal or external review to validate the decision-making process, outcomes and scientific data.
Outcome	*Pass*	

Rationale

According to LGP Law Nº 25.977: "Article. 3. The State encourages the widest participation of natural or legal Peruvian persons in the fishing activity and also promotes foreign investment subject to the relevant provisions of Peruvian legislation."

SNP's goals include representing the industry in government forums and meetings and facilitating cooperation with government and regional departments that promote and grow Peru's fishing and aquaculture industries. Article 7º of the SNP's Ethical Code is devoted to complaints about the decision-making process. The government and SNP have made agreements to comply with transparent decision-making processes and deliver speedy resolutions to fisheries issues. Consequently, SNP will sponsor and ensure that the Peruvian State, in accordance with these commitments, will facilitate consultation and the effective participation of the industry, fishing workers, fishermen, and other institutions and organisations interested in the development of standards and policies pertaining to fisheries management. SNP used to perform in cooperation with PRODUCE, IMARPE and Humboldt Institute for Marine and Aquatic Research - IHMA (*Instituto Humboldt de Investigación Marina y Acuícola*) and others, two annual workshops on diagnosis of the state of the population.

According to the three-year audit conducted by MRAG for FisheryProgress of the Fishery Improvement Project Progress - FIP of Peru anchovy - industrial purse-seine fishery in northern region (FishChoice, 2019) the performance indicator "Decision making processes" of the component "Fishery specific management system" has been met and there were several advances on the participatory process in Peru fisheries last years:

"a) PRODUCE publish their proposed regulations and consult on them before they become official regulations. This was described by stakeholders at the FIP review meeting. Some evidence of this would be useful for full assessment.

The Oannes network is a communication network for the fishing industry. There are 30,000 users in this network and email list. Oannes runs social networks for the fishing industry to generate dialogue. They also represent the fishing industry in meetings with government and in FIP meetings, they can use the information from their networks to express what the sector desires. The networks contain fishermen from all sectors as well as scientists.

Since September 2019, there has been a technical consultation meeting every two weeks, which

involves SNP, relevant government departments and the national industry society. Anyone in the group can put something on the agenda for discussion. This is the main conflict resolution system, and examples were provided of the system solving disputes.

There is a "Forum for sustainable fisheries and aquaculture" (http://www.fpas.pe/), whose objective is to promote dialogue and research among the different actors in fisheries and aquaculture in Peru. Forum members include regulators, NGOs, companies and academics. The forum organizes multiple meetings per year both in Lima and regionally to discuss relevant topics such a management issues. There is also an electronic suggestions platform. This forum has increased the ability for all parties to be involved.

b) The management system includes consultation processes and there are many ways the government engages with forums and representative groups to gather opinions and solve issues. SG 80 is likely to be met.

c) The private industry network run by Oannes, and the and the public-private forum involves fishers from all sectors and provide opportunity for all affected parties to be involved. The management system itself has informal and formal mechanisms by which all interested parties can be involved. Government meets with stakeholders and receive their proposals as standard practice. SG80 is likely to be met."

Scott (2020) reinforces compliance with consultation process in the report of analyses of relevant information directed by the Marine Stewardship Council - MSC certification requirements:

"(SI-a | SG 80) The Forum for Sustainable Fishing and Aquaculture has been strengthened. Stakeholders participating from the forum include governmental entities, non-governmental entities, academia and fishing companies. (SI b | SG 80) There is now evidence that consultation procedures take place regularly and that feedback is accepted and considered by fishing managers, as shown by the adoption of regulations for the DHC fishery following consultations in 2016 and 2017. (SI c | SG 80) PRODUCE has implemented an online platform for any interested parties to provide suggestions for improvements, facilitating public participation and engagement".

In Peru government website, several communications and reports can be accessed, such as communications of temporal and special fisheries closures, reports of the situation of specific fish stocks and exploitation perspectives for fishing seasons, results of hydroacoustic evaluation cruises performed by IMARPE, updated of fishing LMTCPs through the year, etc: https://www.imarpe.gob.pe/imarpe/index2.php?id_seccion=reportes. The reports provide the support data for the management decisions for the fisheries.

From stock assessment results, LMTCPs are set for the next fishing season based on formulas explicitly set out in decision tables by IMARPE. The protocol for establishing the LMTCP is transparent, as is a summary of the most recent season of fishery data, such as landings and CPUE.

Legislation has been enacted in a timely manner to respond to general decisions, such as when a facility must be closed due to the presence of juveniles. The temporal and special closure of fisheries is announced online and is based on information provided by captains of fishing vessels through electronic logbooks to DGSFS, which gives access of this data to IMARPE for given advice. For anchovy, this process is regulated through Supreme Decree N° 024-2016-PRODUCE.

According to the most recent assessment report, the department of Pelagic Fishery Directorate of

IMARPE (*Seguimiento de la Pesquería Pelágica*) and the Direction of Supervision and Inspection of PRODUCE (*Dirección de Supervisión y Fiscalización*) contributed with biological fishing information to the assessment (IMARPE[1], 2024). IMARPE performs the stock assessment, which are reviewed by the PRODUCE before setting the LMTCP for the stock. There are also voluntarily convoked scientific auditory to IMARPE's results, as it happened during 2000, 2008, 2018 and 2024. The methodology for the evaluation of the status of the southern stock was reviewed in 2015 by IMARPE. Therefore, some institutions seem to collaborate in the preparation of those reports.

According to MBA (2023): "IMARPE methods to assess the anchovy stock were peer reviewed by an international panel of experts in 2009 and again by FAO experts in 2014 {FAO 2014}. FAO experts provided a series of recommendations to IMARPE such as using integrative, indirect methods for stock assessment, long-term projections, harvest control rules for different environmental conditions, and including catches and biomass of all fleets, etc. However, it was concluded that there is a high standard scientific support towards the management of fisheries in Peru {FAO 2014}."

Peru and Chile are also carrying out the project "Catalysing Implementation of a Strategic Action Programme for the Sustainable Management of Shared Living Marine Resources in the Humboldt Current System (HCS)" which includes among its objectives to establish mechanisms for data-sharing and collaborative stock assessment of the shared anchovy stock (between IMARPE and IFOP) [GEF, 2024], which could be considered an external review of the assessment process specifically for the southern Peruvian stock.

In conclusion, the **fishery management system in Peru is characterized by a clearly defined and transparent decision-making process with processes and results made publicly available**, active participation from a wide range of stakeholders and periodic reviews.

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M2 Surveillance, control and enforcement

M2.1	**M2.1**	**There is an organisation responsible for monitoring compliance with fishery laws and regulations.**
	M2.1.1	There is an organisation responsible for monitoring compliance with specific monitoring, control and surveillance (MCS) mechanisms in place.
	M2.1.2	There are relevant tools or mechanisms used to minimise IUU fishing activity.
	M2.1.3	There is evidence of monitoring and surveillance activity appropriate to the intensity, geography, management control measures and compliance behaviour of the fishery.
Outcome	*Pass*	

Rationale

The implementation and enforcement of fisheries laws and regulations is one of the stated functions of PRODUCE, through DGSFS. Fisheries' activities and landings are controlled under a specific program approved by Ministerial Resolution N° 027-2003-PRODUCE.

Monitoring is conducted at sea via compliance observers. There is also monitoring of landings at port from PRODUCE. Third-party operators conduct landing operations verification at designated landing sites.

The Fishing and Landings Surveillance Program (PVCPDAM), Vessel Departure Control checks and the Satellite Surveillance System of fishing vessels (SISESAT) are used to monitor industrial fishing operations (Arias Schreiber 2012).

Current fisheries regulation mandates that industrial vessels operate a Satellite Tracking System (SISESAT) designed to keep them at least 5 nautical miles distance from the coast. In 2016, DGSFS built a mobile application and integrated it with the SISESAT system. According to PRODUCE, the software enables qualified inspectors to examine the location, speed, heading, and distance of fishing vessels to the coast with greater precision than traditional satellite systems. As per PRODUCE Supreme Decrees N° 10-2010, N° 5-2012, and N° 01-2013, mandatory Vessel Monitoring Systems (VMS) are in force. In addition, the electronic/radio log is necessary for the fisheries (PRODUCE, 2016). All designated landing spots are monitored around-the-clock to ensure that only vessels with permits are permitted to land catch.

Landings and size composition of the industrial fleet are monitored continuously (24/7) at every landing site. Currently, IMARPE and PRODUCE onboard observers collect information from up to 80% of fishing trips, with VMS mandatory for the industrial fleet.

Therefore, **there is an organization responsible for monitoring compliance with fishery laws and regulations in Peru,** which is PRODUCE, through DGSFS, supported by specific MCS mechanisms.

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M2.2	**M2.2**	**There is a framework of sanctions which are applied when infringements against laws and regulations are discovered.**
	M2.2.1	The laws and regulations provide for penalties or sanctions that are adequate in severity to act as an effective deterrent.
	M2.2.2	There is no evidence of systematic non-compliance.
Outcome	*Pass*	

Rationale

As mandated by the Regulations of the Organization and Functions of PRODUCE, a list of penalties and applicable legislation, fines, and fishing bans are published in PRODUCE website.

Other regulations pertinent to the application of sanctions in the fishing industry include:
• General Fisheries Law N° 25977 (Articles 76 to 83)
• Supreme Decree N° 012-2001-PE Regulation of the General Fisheries Law (Articles 126 to 150)
• Supreme Decree N° 016-2007-PRODUCE: Regulation of fishing and aquaculture inspections and sanctions: Inspectors' inspection powers, including the ability to issue fines for noncompliance
• Supreme Decree N° 024-2016-PRODUCE: Control and inspection measures (fines, licence revocations)

In PRODUCE website (Gob[1], 2024), applications of sanctions and appeals are published as Directorial Resolutions. On the search bar, it is possible to find a few applied in the last years and no evidence of systematic non-compliance was identified there.

Therefore, **there is a framework of sanctions which are applied when infringements against laws and regulations are discovered.**

References

Gob[1]. 2024. Información institucional. Ministerio de la Producción. https://www.gob.pe/institucion/produce/institucional

M2.3	**M2.3 There is substantial evidence of widespread compliance in the fishery, and no substantial evidence of IUU fishing.** *In reaching a determination for M2.3, the assessor should consider if the following is in place:*	
	M2.3.1	The level of compliance is documented and updated routinely, statistically reviewed and available.
	M2.3.2	Fishers provide additional information and cooperate with management/enforcement agencies/organisations to support the effective management of the fishery.
	M2.3.3	The catch recording and reporting system is sufficient for effective traceability of catches per vessel and supports the prevention of IUU fishing.
Outcome	*Pass*	

Rationale

One of the objectives of the current management efforts is to organise data gathered by industrial fishing vessels and stimulate additional technology innovation and development to enable more effective ecosystem evaluation and monitoring.

The government made Vessel Monitoring System-VMS data from fleets available to the Global Fishing Watch (GFW) application beginning in October 2018. At the time, Peru was the first country in Latin America to give these data to the GFW platform, which aims to increase openness in fishing operations and eliminate Illegal, Unreported and Unregulated - IUU fishing globally, including vessels from industrial fleets.

The fishery is closed to new vessels, and all designated landing points are monitored around-the-clock to ensure that only vessels with permits are permitted to land catch. PRODUCE implemented a fishing closure to prevent unlawful activity and to limit the annual catch (Senate Bill N° 544-2019-PRODUCE).

The Protocol (N° 54-2019-MP-FN) published by PRODUCE intends to establish a mechanism that must be adopted to undertake surveillance operations against illegal fishing of marine fish species. Document N° 0005-2016-PCC / TC – Case of Judicial Resolutions in Fisheries was issued by the Constitutional Court (*Tribunal Constitucional*). With this judgement, the Constitutional Court concluded the request for conflict-of-jurisdiction fishery licences provided by judicial decisions.

PRODUCE has published Ministerial Resolution N° 306-2020, in which it specifies the criteria for determining the LMTCP for the Direct Human Consumption (DHC) sub-fishery. After a new Executive Table was convened in October 2021, the DS N° 024-2021-PRODUCE was authorised, implementing fisheries traceability system for the fishing industry, and with plans to gradually make it binding for the small-scale sector. Resolution stipulates that the combined LMTCP for the DHC and Indirect Human Consumption - IHC sub-fisheries should not exceed the IMARPE-recommended catch rate for the anchovy stock. The DGSFS of PRODUCE has issued Directive N°061-2020-PRODUCE/DGSFS-PA, which establishes the rules by which PRODUCE will continue to supply IMARPE with information regarding unlawful and undeclared fishing in the Peruvian anchovy

fishery. This information is also used to determine IMARPE's LMTCP recommendations.

Since 2016, fishing vessels have been required to disclose their fishing locations and the percentage of juveniles in their catches. IMARPE evaluates such data to identify critical fishing zones with a high frequency of juvenile catches, in order to recommend temporary closures of these zones to PRODUCE, which is responsible for establishing the closure. This form of protection for the juvenile population is especially critical during warming events, when the increasing overlap in the spatial distribution of adults and juveniles makes the latter more susceptible to capture. In addition, an electronic landing monitoring programme has been implemented, and a self-sampling procedure for fishing vessels has been promoted, both for fishing effort monitoring and biological, population, and ecological monitoring (e.g., size structure of anchovy, bycatch) – including the monitoring of anchovy size structure and bycatch (PRODUCE 2016; Oliveros-Ramos *et al*., 2021).

In conclusion, **there is substantial evidence of widespread compliance in the fishery, and no substantial evidence of IUU fishing.**

References

Oliveros-Ramos, R., Ñiquen, M., Csirke, J., & Guevara-Carrasco, R., 2021. Management of the Peruvian Anchovy (*Engraulis ringens)* fishery in the context of climate change. Adaptive management of fisheries in response to climate change, 237. FAO Fisheries and Technical Paper No. 667., Pages 237-244. https://www.fao.org/3/cb3095en/cb3095en.pdf

PRODUCE. 2016. Decreto Supremo N° 024-2016. Establece medidas para fortalecer el control y vigilancia de la actividad extractiva para la conservación y aprovechamiento sostenible del recurso Anchovy. https://busquedas.elPeruviano.pe/dispositivo/NL/1453690-4

Species requirements

This section, or module, comprises of four species categories. Each species in the catch is subject to an assessment against the relevant species category in this section (see clauses 1.2 and 1.3 and Table 6).

Type 1 species can be considered the 'target' or 'main' species in the fishery under assessment. They make up the bulk of the catch and a subjected to a detailed assessment. Type 1 species must represent 95% of the total annual catch. If a species-specific management regime is in place for a Type 1 species, it shall be assessed under Category A. If there is no species-specific management regime in place for a Type 1 species, it shall be assessed under Category B.

Type 2 Species can be considered the 'non-target' species in the fishery under assessment. They comprise a small proportion of the annual catch and are subjected to a relatively high-level assessment. Type 2 species may represent a maximum of 5% of the annual catch. If a species-specific management regime is in place for a Type 2 species, it shall be assessed under Category C. If there is no species-specific management regime in place for a Type 2 species, it shall be assessed under Category D.

Species that comprise less than 0.1% of the catch are not required to be assessed or listed here.

Category A species

2.1. All clauses must be met for a species to pass the Category A assessment.

2.1.1. If a species fails any of the Category A clauses, it should be re-assessed as a Category B species.

A1 Data collection

A1.1	**A1.1 Landings data are collected such that the fishery-wide removals of this species are known.**
Outcome	*Pass*

Rationale

In Peru, landing data is monitored by independent third-party operators (SGS) in designated landing sites (Figure 4). IMARPE collects these data and use to assess the stock. It is possible to follow daily data of landings in IMARPE website. In 2023, 26,137 tons of anchovy were landed in southern Peru (IMARPE[2], 2024).

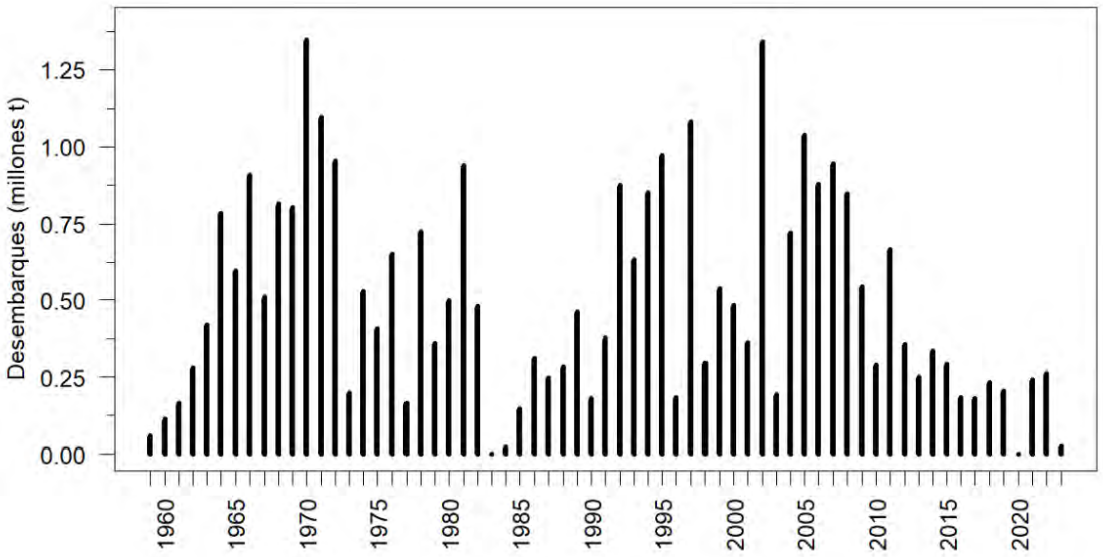

Figure 4. Annual landings of anchovy (millions t) registered in the southern region of the Peruvian coast, from 1959 to 2023 (IMARPE[2], 2024).

References

IMARPE[2]. 2024. Información complementaria sobre perspectivas de explotación para la primera temporada de pesca 2024 de la anchoveta sur del Perú. https://cdn.www.gob.pe/uploads/document/file/5990086/5307455-informacion-complementaria-sobre-perspectivas-de-explotacion-para-la-primera-temportada-de-pesca-2024-de-la-anchoveta-sur-del-peru.pdf?v=1709737916

A1.2	**A1.2 Sufficient additional information is collected to enable an indication of stock status to be estimated.**
Outcome	*Pass*

Rationale

IMARPE is the scientific institute in charge in carrying out most of the research that PRODUCE uses to develop fishery management policies in Peru. Since 1982, the IMARPE has monitored anchovy populations using acoustic techniques through one hydroacoustic cruise per year along the geographical range of the anchovy population. In these surveys, monitors oceanographic conditions and carries out direct biomass estimates and onboard sampling to estimate size structure and reproductive parameters (IMARPE, 2020). The IMARPE's PBP deploys observers aboard fishing vessels in order to collect biological samples, while a private company collects them at ports. All data are analysed and used to calculate the catch quotas for the two anchovy fishing seasons per year for both the northern-central and southern stock (Arias Scheiber & Halliday 2013; Arias Schreiber 2013). When conditions are anomalous, real-time monitoring is intensified.

References

Arias Schreiber, M. & Halliday, A. 2013. Uncommon among the commons? Disentangling the sustainability of the Peruvian anchovy fishery. Ecology and Society 18(2): 12. http://dx.doi.org/10.5751/ES-05319-180212

Arias Schreiber, M. 2013. Institutions for sustainable fisheries governance – the case of the commercial Peruvian anchovy fishery. Phd Dissertation, Bremen University. http://elib.suub.uni-bremen.de/edocs/00103233-1.pdf

IMARPE. 2020. Ecosystem impacts of fishing the low trophic level Peruvian anchovy in the Northern Humboldt Current Ecosystem. https://cedepesca.net/wp-content/uploads/2021/01/Tam-Ecosystem-impacts-2020.pdf

A2 Stock assessment

A2.1	**A2.1**	**A stock assessment is conducted at least once every 3 years (or every 5 years if there is substantial supporting information that this is sufficient for the long-term sustainable management of the stock) and considers all fishery removals and the biological characteristics of the species.**
Outcome	*Pass*	

Rationale

The situation of the anchovy available in the southern region is analysed from three sources of information, such as the Pelagic Resources Hydroacoustic Evaluation Cruises carried out during the year, the CPUE of the industrial purse seine fleet and a model of population dynamics (IMARPE[1], 2024). The stock assessment is conducted annually by IMARPE and it covers the Peruvian part of the stock (which is shared with Chile), considering the whole fishing year. A mid-year evaluation is performed to evaluate the status of the stock before the second fishing season.

References

IMARPE[1]. 2024. Situación de la anchoveta disponible en la región sur del mar peruano durante el 2023 y perspectivas de explotación para la primera temporada de pesca de 2024. https://cdn.www.gob.pe/uploads/document/file/5990085/5307455-situacion-de-la-anchoveta-disponible-en-la-region-sur-del-mar-peruano.pdf

A2.2	**A2.2**	**The assessment provides an estimate of the status of the biological stock relative to a reference point or proxy.**
Outcome	*Pass*	

Rationale

The platform Stochastic Surplus Production Model in Continuous Time - SPICT was used to evaluate the status of the southern anchovy stock by IMARPE in 2023. Input data included an acoustic biomass time series between 1985 and 2023, CPUE of industrial purse seine fleet from 2017-2023 and catches between 1959 and 2023 (IMARPE[1], 2024). Different parameters are estimated, including the maximum sustainable level - MSY, the biomass and the fishing mortality that will lead to the MSY (B_{MSY} and F_{MSY}, respectively) and the LMTCP. In 2023, it was established MSY = 0.877 million tons, B_{MSY} = 0.922 million tons, F_{MSY} = 0.951 tons/year and (IMARPE[1], 2024).

References

IMARPE[1]. 2024. Situación de la anchoveta disponible en la región sur del mar peruano durante el 2023 y perspectivas de explotación para la primera temporada de pesca de 2024. https://cdn.www.gob.pe/uploads/document/file/5990085/5307455-situacion-de-la-anchoveta-disponible-en-la-region-sur-del-mar-peruano.pdf

A2.3	**A2.3 The assessment provides an indication of the volume of fishery removals which is appropriate for the current stock status.**
Outcome	*Pass*

Rationale

Based on the results of the stock assessment model indicated above, a decision table is built by IMARPE for establishing the LMTCP (Figure 5), which include different scenarios of fishing mortality rates – F, exploitation rate - E (which takes into account fishing mortality and natural mortality) and the risk of the biomass falling below the MSY level. PRODUCE set a precautionary catch limit recommended (80% of MSY) as catch quota level for 2024 (R.M. N° 59-2024-PRODUCE) and divided into two equal parts for each of the corresponding fishing seasons (January - June and July - December). The LMTCP can be modified through the year according to fishing and environmental biological factors. For the first season of 2024, a LMTCP of 251,000 was established, but landings reached only 9,098 tons (3.60% of LMTCP). Thus, the LMTCP was maintained for the second season (R.M. N° 258-2024-PRODUCE).

F_{2023}	E_{2023}	Captura 2024 (millones t)	Biomasa remanente 01/01/25 (millones t)	Riesgo ($B_{2024} < B_{2023}$) (%)	Riesgo ($B_{2024} < B_{MRS}$) (%)
0.00	0.00	0.000	1.212	23	33
0.02	0.02	0.024	1.192	24	34
0.05	0.03	0.047	1.173	25	35
0.07	0.05	0.070	1.154	26	36
0.10	0.06	0.092	1.136	27	37
0.12	0.07	0.114	1.117	28	38
0.15	0.09	0.135	1.100	29	40
0.17	0.10	0.156	1.082	30	41
0.20	0.11	0.177	1.065	31	42
0.22	0.13	0.197	1.047	32	43
0.25	0.14	0.217	1.031	33	44
0.27	0.15	0.237	1.014	35	45
0.29	*0.16	0.256	0.998	36	46
0.32	0.18	0.274	0.982	37	47
0.34	0.19	0.293	0.966	38	48
0.37	0.20	0.311	0.951	39	49
0.39	0.21	0.329	0.936	40	49
0.42	**0.22	0.346	0.921	41	50
0.44	0.23	0.363	0.906	41	51
0.47	0.24	0.380	0.892	42	51
0.49	0.25	0.396	0.878	43	52
0.51	0.27	0.412	0.864	44	53
0.54	0.28	0.428	0.850	45	53
0.56	0.28	0.443	0.837	45	54
0.59	0.29	0.459	0.824	46	54
0.61	0.30	0.473	0.811	47	55
0.64	0.31	0.488	0.798	47	55
0.66	0.32	0.502	0.785	48	55
0.69	0.33	0.516	0.773	48	56
0.71	0.34	0.530	0.761	49	56
0.74	0.35	0.544	0.749	49	56
0.76	0.36	0.557	0.737	50	57
0.78	0.37	0.570	0.726	50	57
0.81	0.37	0.582	0.714	50	57
0.83	0.38	0.595	0.703	51	58
0.86	0.39	0.607	0.692	51	58
0.88	0.40	0.619	0.681	52	58
0.91	0.40	0.631	0.671	52	58
0.93	0.41	0.642	0.660	52	58
0.96	0.42	0.654	0.650	52	59
0.98	0.43	0.665	0.640	53	59
1.00	0.43	0.676	0.630	53	59
1.03	0.44	0.686	0.620	53	59
1.05	0.45	0.697	0.610	53	59
1.08	***0.45	0.707	0.601	54	59

(*) Nivel de explotación correspondiente al promedio del periodo 2012-2023,
(**) Nivel de explotación equivalente a aquel capaz de llevar a la biomasa a su nivel de referencia.
(***) Nivel de explotación correspondiente al 80% del MRS

Figure 5. Decision Table for the establishment of the LMTCP of anchovy in the southern region of the Peruvian sea for the year 2024 (IMARPE, 2024[1]).

References

IMARPE[1]. 2024. Situación de la anchoveta disponible en la región sur del mar peruano durante el 2023 y perspectivas de explotación para la primera temporada de pesca de 2024. https://cdn.www.gob.pe/uploads/document/file/5990085/5307455-situacion-de-la-anchoveta-disponible-en-la-region-sur-del-mar-peruano.pdf

A2.4	A2.4 The assessment is subject to internal or external peer review.
Outcome	*Pass*

Rationale

According to the most recent assessment report, the department of Pelagic Fishery Directorate of IMARPE and the Direction of Supervision and Inspection of PRODUCE contributed with biological fishing information to the assessment (IMARPE[1], 2024). IMARPE performs the stock assessment, which are reviewed by the PRODUCE before setting the LMTCP for the stock. The methodology for the evaluation of the status of the southern stock was reviewed in 2015 by IMARPE. Therefore, some institutions seem to collaborate in the preparation of those reports.

According to MBA (2023): "IMARPE methods to assess the anchovy stock were peer reviewed by an international panel of experts in 2009 and again by FAO experts in 2014 {FAO 2014}. FAO experts provided a series of recommendations to IMARPE such as using integrative, indirect methods for stock assessment, long-term projections, harvest control rules for different environmental conditions, and including catches and biomass of all fleets, etc. However, it was concluded that there is a high standard scientific support towards the management of fisheries in Peru {FAO 2014}."

IMARPE had voluntary requested internation scientific auditory in 1992, 1994-95, 1997-98, 2000, 2010, 2018 and 2024.

Peru and Chile are also carrying out the project "Catalysing Implementation of a Strategic Action Programme for the Sustainable Management of Shared Living Marine Resources in the Humboldt Current System (HCS)" which includes among its objectives to establish mechanisms for data-sharing and collaborative stock assessment of the shared anchovy stock (between IMARPE and IFOP) [GEF, 2024], which could be considered an external review of the assessment process specifically for the southern Peruvian stock.

References

MBA. 2023. Draft Assessment for Review Anchovy, Peruvian (Chile, Peru) *Engraulis ringens.* Monterrey Bay Aquarium. Seafood Watch. https://www.seafoodwatch.org/globalassets/sfw/pdf/expert-review/2022/100322/seafood-watch-peruvian-anchoveta-chile-peru-27723.pdf

GEF. 2024. Catalysing Implementation of a Strategic Action Programme for the Sustainable Management of Shared Living Marine Resources in the Humboldt Current System (HCS). https://www.thegef.org/projects-operations/projects/9592

IMARPE[1]. 2024. Situación de la anchoveta disponible en la región sur del mar peruano durante el 2023 y perspectivas de explotación para la primera temporada de pesca de 2024. https://cdn.www.gob.pe/uploads/document/file/5990085/5307455-situacion-de-la-anchoveta-disponible-en-la-region-sur-del-mar-peruano.pdf

A2.5	**A2.5 The assessment is made publicly available.**
Outcome	*Pass*
Rationale Reports of stock assessments and advice on LMTCP for the anchovy stocks can be found on Peru government website (Gob[3], 2024) under the PRODUCE-IMARPE option: https://www.gob.pe/institucion/imarpe/informes-publicaciones?sheet=40	
References Gob[3]. 2024. Instituto del Mar del Perú. Informes y publicaciones. https://www.gob.pe/institucion/imarpe/informes-publicaciones?sheet=40	

A3 Harvest strategy

A3.1	**A3.1 There is a mechanism in place by which total fishing mortality of this species is restricted.**
Outcome	*Pass*

Rationale

In order to monitor the resources and compliance of fishing fleets, there area few programs in place: the logbooks program (PBP) with onboard observers since 1996, to cover the fleet behaviour, species and size composition of catches, discards, and interactions with other species and the habitat; gathering information at the landing ports; the satellite vessel tracking system (SISESAT), scientific surveys (FishChoice, 2019). Salvamares program also contribute to the monitoring as is a private program collecting data form several sources, including ETP interactions.

As indicated previously, the catch of anchovy in the area is regulated through an annual LMTCP set by PRODUCE based on the recommendations given by IMARPE. Catches are monitored on a daily basis during the fishing season and it is closed when the LMTCP is reached (if it is not, a date limit is previously set). Temporal bans are also set to protect the stock when the number of juveniles in the catch surpasses a 10% limit.

References

FishChoice. 2019. Three-Year Audit Template. https://fisheryprogress.org/sites/default/files/indicators-documents/Peruvian_Anchovy_IHC_FIP_Review_2019_GB2338_5.pdf#overlay-context=node/3546/actions-progress

A3.2	**A3.2 Total fishery removals of this species do not regularly exceed the level indicated or stated in the stock assessment. Where a specific quantity of removals is recommended, the actual removals may exceed this by up to 10% ONLY if the stock status is above the limit reference point or proxy.**
Outcome	*Pass*

Rationale

Anchovy catches are closely monitored by the authorities. The LMTCP has not been surpassed in recent years (Figure 6). Since 2009 catches and fishing mortality have been below MSY and FMSY. The available anchovy biomass in the southern region of the sea Peruvian is highly variable and, in general terms, fluctuates around its level of reference, although it has been found below the BMSY in 2022 and 2023 (IMARPE[3] 2024). During the first season of 2024, landings reached only 3.60% of the LMTCP.

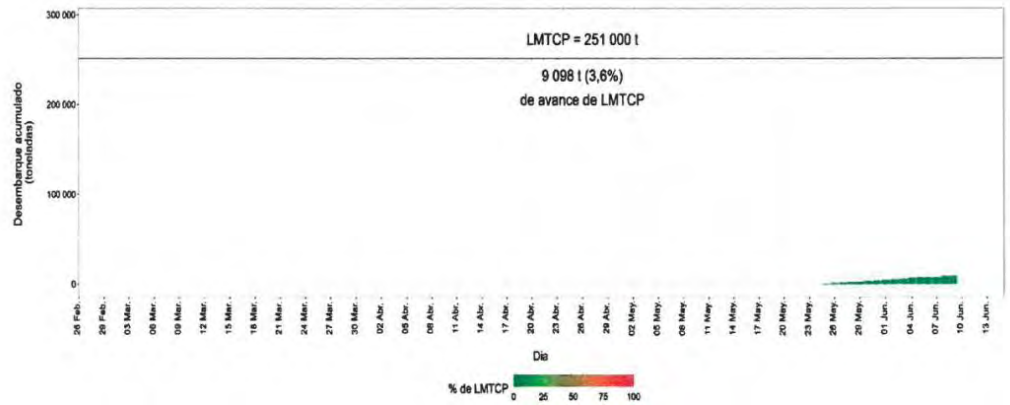

Figure 6. Accumulated landings of anchovy and percentage of quota progress in the southern region of the Peruvian coast during the first fishing season of 2024 (January 03rd - June 09th). Source: IMARPE[3](2024).

References

IMARPE[3]. 2024. Informe de avance de la primera temporada de pesca 2024 de anchoveta (*Engraulis ringens*) en la región sur del mar peruano (enero – junio 2024) y perspectivas de explotación para la segunda temporada del año (julio – diciembre 2024). https://cdn.www.gob.pe/uploads/document/file/6655844/5785971-anexo-al-of-0669-2024-imarpe-pcd.pdf?v=1721149376

A3.3	**A3.3 Commercial fishery removals are prohibited when the stock has been estimated to be below the limit reference point or proxy (small quotas for research or non-target catch of the species in other fisheries are permissible).**
Outcome	*Pass*

Rationale

A harvest control rule that anticipates reducing the fishing effort when biomass is low is not in place for the fishery. However, the fishing season is not started by the PRODUCE when the stock is below the limit biomass. When the fishery reaches the LMTCP established by the season, the fishery is closed. The LMTCP has been decided based on catches corresponded to 80% of MSY. Temporal bans are also set to protect the stock when the number of juveniles in the catch surpasses a 10% limit. The stock is currently considered to be above the biomass limit reference point (IMARPE[1], 2024).

References

IMARPE[1]. 2024. Situación de la anchoveta disponible en la región sur del mar peruano durante el 2023 y perspectivas de explotación para la primera temporada de pesca de 2024. https://cdn.www.gob.pe/uploads/document/file/5990085/5307455-situacion-de-la-anchoveta-disponible-en-la-region-sur-del-mar-peruano.pdf

A4 Stock status

A4.1	**A4.1**	**The stock is at or above the target reference point; OR IF NOT: the stock is above the limit reference point or proxy and there is evidence that a fall below the limit reference point would result in fishery closure; OR IF NOT: the stock is estimated to be below the limit reference point or proxy, but fishery removals are prohibited.**
Outcome	*Pass*	

Rationale

According to the results of the Surplus Production Model, the anchovy biomass available in the southern region of the Peruvian sea is highly variable, but it generally fluctuates around its reference level (B_{MSY}) of 922,000 tons, being below the biomass in 2022 and 2023 (Figure 7) [IMARPE[1], 2024]. A harvest control rule that anticipates reducing the fishing effort when biomass is low is not in place for the fishery. However, the fishing season is not started by the PRODUCE when the stock is below the limit biomass and when the fishery reaches the LMTCP established by the season, the fishery is closed. The LMTCP has been decided based on catches corresponded to 80% of MSY. During the first season of 2024, landings reached only 3.60% of the LMTCP. Since 2012 catches, average landings have been about 25% of MSY [IMARPE[1], 2024]. Moreover, temporal bans are also set to protect the stock when the number of juveniles in the catch surpasses a 10% limit. Thus, the stock is above the limit reference point or proxy and there is evidence that a fall below the limit reference point would result in fishery closure.

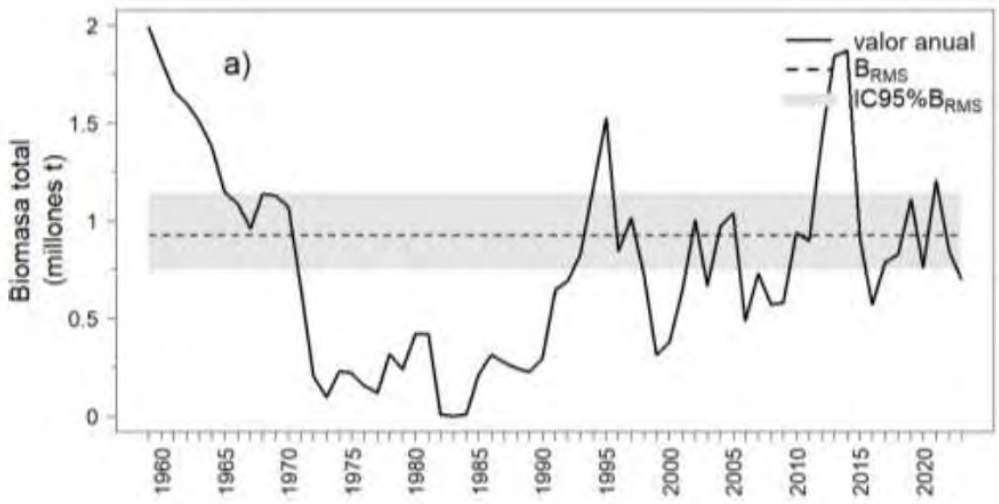

Figure 7. Anchovy biomass available in the in southern region of Peru from 1959 to 2023 and relationship with its reference level (B_{MSY}) according to that estimated by the Surplus Production Model (IMARPE[1], 2024).

References

IMARPE[1]. 2024. Situación de la anchoveta disponible en la región sur del mar peruano durante el 2023 y perspectivas de explotación para la primera temporada de pesca de 2024. https://cdn.www.gob.pe/uploads/document/file/5990085/5307455-situacion-de-la-anchoveta-disponible-en-la-region-sur-del-mar-peruano.pdf

Category B species

Category B species are assessed using a risk-based approach.

1.1. The risk matrix in Table B(a) shall be used when assessing a Category B species when estimates of Fishing mortality (F), Biomass (B) and reference points are available.

1.2. The risk matrix in Table B(b) shall be used when assessing a Category B species when no reference points are available.

B1	**A3.3**	**Commercial fishery removals are prohibited when the stock has been estimated to be below the limit reference point or proxy (small quotas for research or non-target catch of the species in other fisheries are permissible).**
Table used B(a) or B(b)	N/A	
Outcome	Choose an item.	
Rationale N/A		
References N/AA		

Category C species

1.3. All clauses must be met for a species to pass the Category C assessment.

1.3.1. Where a species fails this Category C clause, it should be assessed as a Category D species instead, except if there is evidence that the species is currently below the limit reference point.

C1.1	**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.**
Outcome	*Pass*	

Eastern Pacific bonito (*Sarda chiliensis chiliensis*) [*bonito*]

Rationale

Annual landings of Eastern Pacific bonito are recorded (Figure 8). There is a stablished mortality reference level and an annual catch limit divided by trimester. The F_{MSY} was estimated at 0.97 year^{-1} and the F_{2023} was 0.28 year^{-1}. The landings of Eastern Pacific bonito by purse seine fleet in 2023 were 68,380 tons, although the annual catch limit in 2023 for purse seine vessels with a hold capacity greater than 20 m^3 was of 43,826 tons (IMARPE[4], 2024).

Historically, the highest levels of fishing mortality were applied in the 1970s and 1980s. Since the mid-2000s there has been an increasing trend in the annual levels of fishing mortality, coinciding

with the increase in fishing effort and landings. Nevertheless, the mortality rate by annual fishing has been below the reference level for years (IMARPE[4], 2024).

The Stock Synthesis model is used for providing catches advice and population assessment, which included data of catches (1939-2023), among other variables. Thus, fishery removals of the species in the fishery under assessment are included in the stock assessment process.

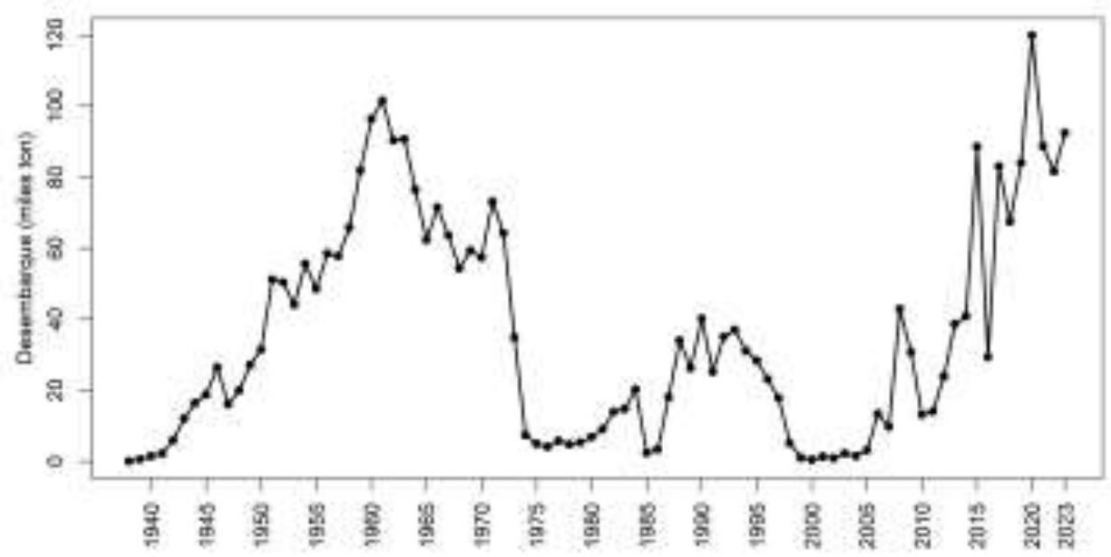

Figure 8. Annual landings of Eastern Pacific bonito from 1939 to 2023 (IMARPE[4], 2024).

References

IMARPE[4]. 2024. Informe sobre el desarrollo de la pesquería de bonito *Sarda chiliensis chiliensis* durante el 2023, situación actual y perspectivas de explotación para el 2024. https://cdn.www.gob.pe/uploads/document/file/5780230/5133561-informe-desarrollo-pesqueria-bonito-durante-el-2023-y-perspectivas-explotacion-2024.pdf?v=1706644360

C1.2	**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.**
Outcome	*Pass*	

Eastern Pacific bonito (*Sarda chiliensis chiliensis*) [*bonito*]

Rationale

IMARPE[4] (2024) shows that total biomass and spawning biomass of Eastern Pacific bonito has been variable over time. From 2000 to 2019, both total and spawning biomass show an increasing trend, reaching their highest level in 2019. Since 2020, biomass levels have started to decline, but they are still well above the reference level (Figure 9). Thus, the species is considered, in its most recent

stock assessment, to have a biomass above the limit reference point (or proxy).

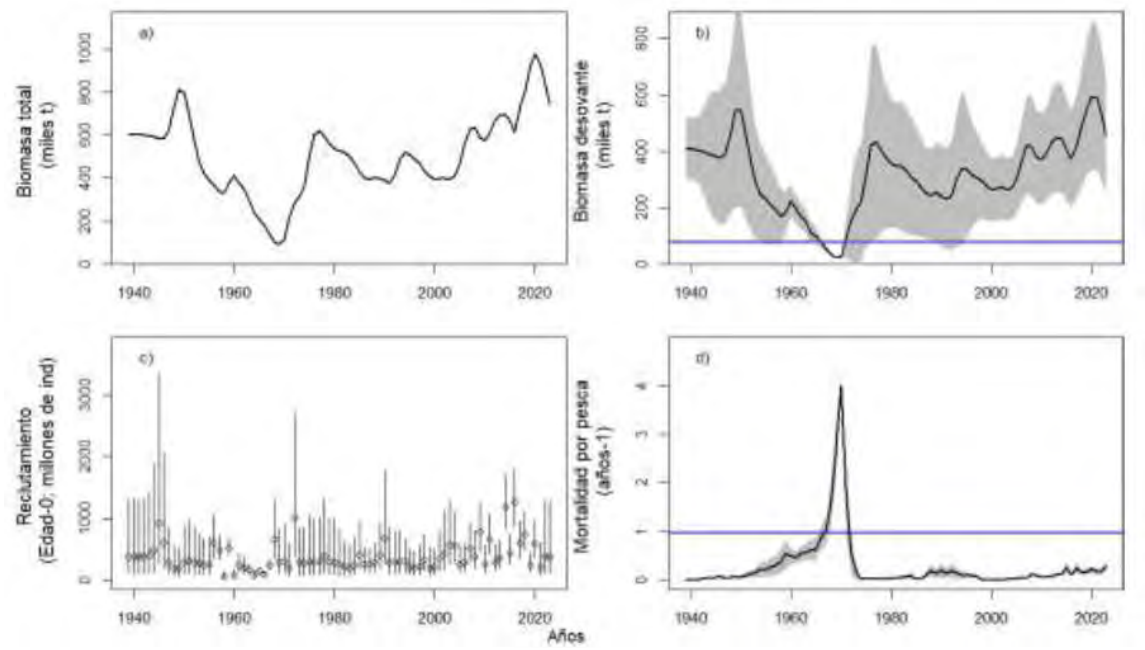

Figure 9. Estimated population indicators for the Peruvian Eastern Pacific bonito stock: a) Total annual biomass (thousand t); b) Annual Spawning Biomass (thousands t); c) Annual recruitment (millions of individuals), and d) Annual Fishing Mortality Rate. The horizontal lines in purple/blue express the target reference levels (B_{MSY} and F_{MSY}) [IMARPE[4], 2024].

References

IMARPE[4]. 2024. Informe sobre el desarrollo de la pesquería de bonito *Sarda chiliensis chiliensis* durante el 2023, situación actual y perspectivas de explotación para el 2024. https://cdn.www.gob.pe/uploads/document/file/5780230/5133561-informe-desarrollo-pesqueria-bonito-durante-el-2023-y-perspectivas-explotacion-2024.pdf?v=1706644360

C1.1	**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.**
Outcome	*Pass*	

**Chilean jack mackerel (*Trachurus murphyi)* [*"jurel"*]

Rationale

Annual landings of Chilean jack mackerel in Peru are recorded (Figure 10). There is an established mortality reference level and an annual catch limit. The annual catch limit in 2023 was 83,958 t for fleets of large scale. The landings of Chilean jack mackerel in 2023 were 187,000 t, 106,000 of which is attributed to the industrial purse seine fleet. The Joint Jack Mackerel (JJM) model is used for providing catches advice and population assessment, which included data of CPUE (2002-2023), catches (1970-2023), among other variables. Thus, fishery removals of the species in the fishery under assessment are included in the stock assessment process.

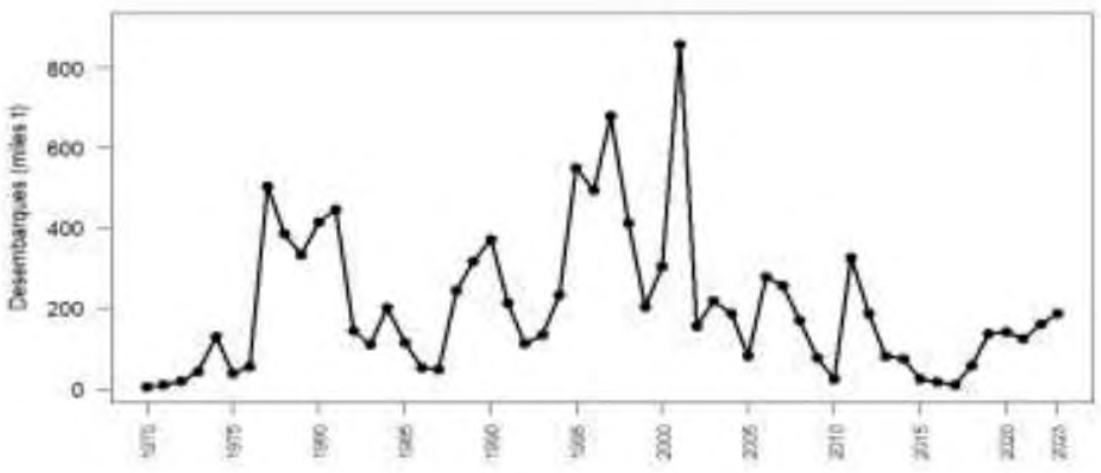

Figure 10. Annual landings of Chilean jack mackerel in Peru, from 1970 to 2023 (IMARPE[2], 2023).

References

IMARPE[2]. 2023. Informe sobre el desarrollo de la pesquería de jurel *Trachurus murphyi* durante el 2023, situación actual y perspectivas de explotación para el 2024. https://www.gob.pe/institucion/imarpe/informes-publicaciones/4987818-informe-sobre-el-desarrollo-de-la-pesqueria-de-jurel-trachurus-murphyi-durante-el-2023-situacion-actual-y-perspectivas-de-explotacion-para-el-2024-mediante-el-oficio-n-001521-2023-imarpe-pcd

C1.2	**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.**
Outcome	*Pass*

**Chilean jack mackerel (*Trachurus murphyi)* [*"jurel"*]

Rationale

There has been a progressive increase in Total Biomass (BT) and Spawning Biomass (BD) until 1990. Since then, the biomass remained relatively stable, with an increase from 2017-2022. In 2023 it was observed 5.5% decrease on the total biomass and 8.7% decrease on the spawning biomass in relation to 2022, but the spawning biomass is still above the necessary for maximum sustainable yield (Figure 11) [IMARPE[2], 2023]. Thus, the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy).

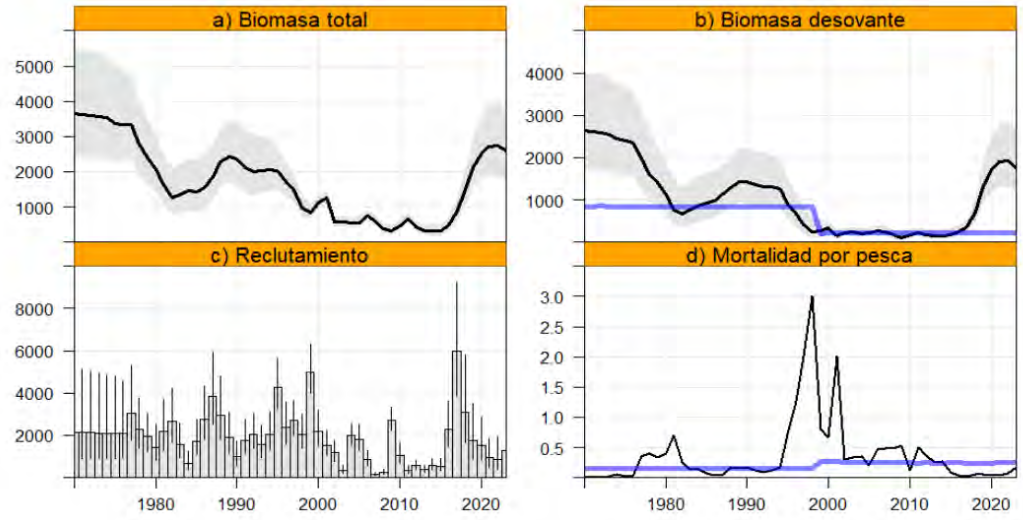

Figure 11. Estimated population indicators for the Chilean jack mackerel: a) Total annual biomass (thousand t); b) Annual spawning biomass (thousand t); c) Annual recruitment (millions of individuals), and d) Annual Fishing Mortality Rate. The horizontal lines in purple/blue express the target reference levels (B_{MSY} and F_{MSY}) [IMARPE [2], 2023].

References

IMARPE[2]. 2023. Informe sobre el desarrollo de la pesquería de jurel *Trachurus murphyi* durante el 2023, situación actual y perspectivas de explotación para el 2024. https://www.gob.pe/institucion/imarpe/informes-publicaciones/4987818-informe-sobre-el-desarrollo-de-la-pesqueria-de-jurel-trachurus-murphyi-durante-el-2023-situacion-actual-y-perspectivas-de-explotacion-para-el-2024-mediante-el-oficio-n-001521-2023-imarpe-pcd

C1.1	**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.**
Outcome	*Pass*	

Chub mackerel (*Scomber japonicus)* [*caballa*]

Rationale

Annual landings of chub mackerel are recorded (Figure 12). There is an established mortality reference level and an annual catch limit. The annual catch limit in 2023 for fleets of large scale was 26,558 t (R.M. N° 103-2023-PRODUCE) and 3,000 were added for updating biological-fishing information in July (R.M. N° 40- 2023-PRODUCE). The landings of chub Mackerel in 2023 were 58,654 t, from which 25,844 was attributed to the industrial fleet (IMARPE, 2023[3]). The Joint Jack Mackerel (JJM) is used for providing catches advice and population assessment, which included CPUE (2003-2023), catches (1960-2023), among other variables. Thus, fishery removals of the species in the fishery under assessment are included in the stock assessment process.

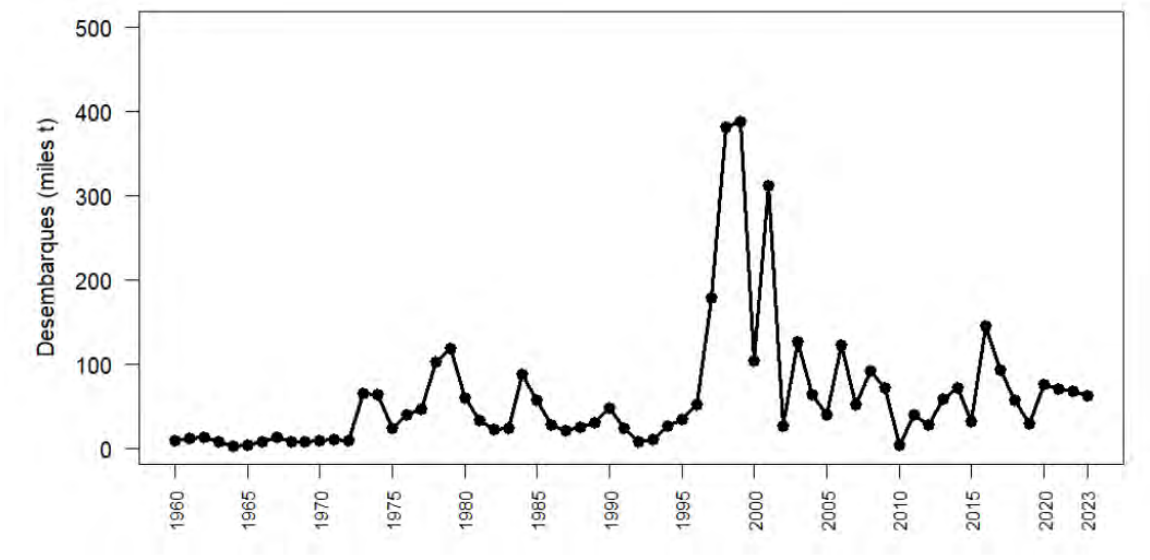

Figure 12. Annual landings of chub mackerel in Peru from 1960 to November 2023 (IMARPE, 2023[4]).

References

IMARPE[4]. 2023. Informe sobre el desarrollo de la pesquería de caballa *Scomber japonicus* durante 2023, situación actual y perspectivas de explotación para el 2024. https://cdn.www.gob.pe/uploads/document/file/5630613/4988054-informe-sobre-el-desarrollo-de-la-pesqueria-de-caballa.pdf?v=1704298253

C1.2	**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.**
Outcome	*Pass*	

Chub mackerel (*Scomber japonicus)* [*caballa*]

Rationale

There has been a progressive increase in total biomass and spawning biomass from 2011 to 2020, with a slight decrease afterwards (Figure 13). In 2024 total biomass reduced 22% and the spawning biomass 20% in relation to 2022, but the spawning biomass remains above B_{MSY} and fishing mortality is below the F_{MSY} [IMARPE[4], 2023]. Thus, the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy).

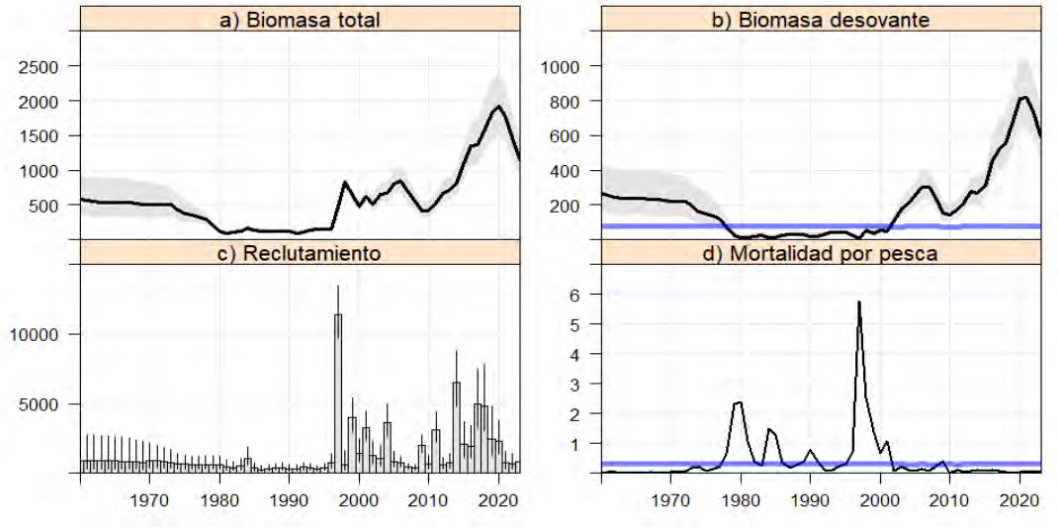

Figure 13. Estimated population indicators for chum mackerel present in Peruvian waters: a) Total annual biomass (thousand t); b) Annual spawning biomass (thousand t); c) Annual recruitment (millions of individuals), and d) Annual Fishing Mortality Rate. The horizontal lines in purple/blue express the target reference levels (BMSY and FMSY) [IMARPE[4], 2023].

References

IMARPE[4]. 2023. Informe sobre el desarrollo de la pesquería de caballa *Scomber japonicus* durante 2023, situación actual y perspectivas de explotación para el 2024. https://cdn.www.gob.pe/uploads/document/file/5630613/4988054-informe-sobre-el-desarrollo-de-la-pesqueria-de-caballa.pdf?v=1704298253

Category D species

Category D species are assessed against a risk-based approach.

1.4. The Productivity-Susceptibility Analysis (PSA) in Table D(a) shall be used when assessing Category D species.

1.5. Table D(b) shall be used to calculate the overall PSA risk rating for the Category D species.

1.6. Should the PSA indicate a high risk, further assessment shall be completed against the requirements in Table D(C).

Productivity Susceptibility Analysis (PSA) and scores

Table D(a) provides detailed values and scores for the species productivity and susceptibility attributes and attributes, the assessor shall use Table D(a) to the PSA table.
Table D(b) is used to calculate the overall PSA risk rating for the Category D species.

Species name	**Carrot/red squat lobster (*Pleuroncodes monodon)* [“*munida*”]**	
Productivity attributes	**Value**	**Score**
Average age at maturity	5-6[5]	2
Average maximum age	5[5]	1
Fecundity	1,000-50,000[6,7,8]	2
Average maximum size	8[5]	1
Average size at maturity	2.48-2.89 (size at 50% maturity)[9]	1
Reproductive strategy	Demersal spawner	2

[5] Kilada, R and E. Enzo Acuña 2015. Direct age determination by growth band counts of three commercially important crustacean species in Chile. Fish Res. 170; 134-143.

[6] Bustos, H.E. & M.A. Retamal. 1985. Estudio biológico pesquero del langostino colorado *Pleuroncodes monodon* H. Milne Edwards, 1837. Gayana, Zool., 49 (3-4): 151-164.

[7] Palma, S. & P. Arana. 1997. Aspectos reproductivos del langostino colorado (*Pleuroncodes monodon* H. Milne Edwards, 1837) frente a la costa de Concepción, Chile. Invest. Mar., Valparaíso, 25: 203-221.

[8] Roa, R. and F. Tapia. 1998. Spatial differences in growth and sexual maturity inside a large population of the squat lobster *Pleuroncodes monodon*. Mar. Ecol. Prog. Ser.:167:185-196.

[9] MSC. 2022. Chile Squat Lobsters Camanchaca Demersal Trawl Fishery. Final Draft Report. February 2022. First Reassesment. https://fisheries.msc.org/en/fisheries/chile-squat-lobsters-and-nylon-shrimp-camanchaca-demersal-trawl-fishery/@@assessments

Mean Trophic Level (MTL)	2[10,11,12]	1
Density dependence (to be used when scoring invertebrate species only)	Precautionary (no information found about it)	3
Susceptibility attributes		
Areal overlap (availability): Overlap of the fishing effort with a species concentration of the stock	<10% of the stock	1
Encounterability: The position of the stock/ species within the water column relative to the fishing gear, and the position of the stock/species within the habitat relative to the position of the gear	High, off the coast of Peru, this species exhibits mainly pelagic habits[13]	3
Selectivity of gear type: Potential of the gear to retain species	Retained	3
Post-capture mortality (PCM): The chance that, if captured, a species would be released and that it would be in a condition permitting subsequent survival	Retained	3
Average productivity score		1.62
Average susceptibility score		2.5
PSA risk rating (from Table D(b))		Pass
Compliance rating		Pass

Further assessment for Category D species

Should the PSA indicate a high risk, further assessment shall be completed against the requirements D1 and D2 – Table D(c).

D1	**D1. The potential impacts of the fishery on this species are considered during the management process, and reasonable measures are taken to minimise**

[10] Neira, S. & H. Arancibia. 2004. Trophic interactions and community structure in the upwelling system off Central Chile (33 – 390S). J. Expt. Mar. Biol. Ecol. 312: 349 – 366.

[11] Neira, S. & H. Arancibia. 2005. Rol de la predación en el colapso y recuperación de los stocks de langostino colorado y langostino amarillo en Chile central (33ºS a 39ºS). Libro de resúmenes. XXV Congreso de Ciencias del Mar, pp 106

[12] Andrade, V. and R. Baez. 1980. Crustaceos decapodos asociados a la pesqueria de *Herterocarpus reedi* Bahamonde 1955 en la zona central de Chile (1). Bol. Mus. Nac. Hist. Nat. Chile, 37: 261 - 267.

[13] Yapur-Pancorvo, A.L.; Quispe-Machaca, M.; Guzmán-Rivás, F.; Urzúa, Á.; Espinoza, P. The Red Squat Lobster Pleuroncodes monodon in the Humboldt Current System: From Their Ecology to Commercial Attributes as Marine Bioresource. Animals 2023, 13, 2279. https:// doi.org/10.3390/ani13142279

	these impacts.
Outcome	Choose an item.
Rationale **N/A**	
References **N/A**	

D2	D2. There is no substantial evidence that the fishery has a significant negative impact on the species.
Outcome	Choose an item.
Rationale N/A	
References **N/A**	

Ecosystem requirements

This section, or module, assesses the impacts that the fishery under assessment may have on key ecosystem components: ETP species, habitat and the wider ecosystem.

2.1. All ecosystem criteria must be met (pass) for a fishery to pass the Ecosystem Requirements.

2.1.1. The sub-criteria offer a structured evidence base to demonstrate that the fishery sufficiently meets the ecosystem criteria, it is not expected that sub-criteria are assessed independently of the main criterion.

E1 Impact on Endangered, Threatened or Protected species (ETP species)

E1.1	**E1.1**	**Information on interactions between the fishery and ETP species is collected.**
	E1.1.1	ETP species which may be directly affected by the fishery have been identified.
	E1.1.2	Interactions between the fishery and ETP species are recorded and reported to management organisations.
	E1.1.3	Collection and analysis of ETP information is adequate to provide a reliable indication of the impact the fishery has on ETP species.
Outcome	*Pass*	

Rationale

In Peru, there are two onboard observer programs that report incidental catches in the pelagic fisheries.

One is a public program conducted by the IMARPE's national observer program ("*Programa Bitácoras de Pesca* – PBP"). IMARPE has been operating PBP since 1996 and the information obtained with the program allows to characterize the dynamics of the fleet, quantify discards, characterize bycatch, describe the behaviour of the resources, their distribution and demographic structure, and quantify the interaction with superior predators, among others (Joo *et al.*, 2016).

The other program is a private one named SALVAMARES, which was created in 2017 because of the FIP in place for anchovy fishery in northern-central region of Peru. SALVAMARES consists in a system of training crew on-board to collect data on Endangered, Threatened, Protected - ETP interactions (CeDePesca, 2023). In October 2017, SNP and IMARPE signed a specific agreement to collaborate on activities related to this FIP, including workshops on the impacts of the fishery on top predators, bycatch species and ETP species.

Therefore, **information on interactions between the fishery and ETP species is collected.**

References

CeDePesca. 2023. Peruvian Anchovy (Indirect Human Consumption). https://cedepesca.net/proyectos/peruvian-anchovy-indirect-human-consumption/

Joo, R., Grados, D., Bouchon, M. y Diaz, E. 2016. Optimum sample size for a program of observers on board fishing vessels targeting Peruvian anchovy (*Engraulis ringens*). Revista Peruviana de Biología, 23(2), 169 – 182. http://www.scielo.org.pe/scielo.php?script=sci_arttext&pid=S1727-99332016000200009

E1.2	**E1.2 The fishery has no significant negative impact on ETP species.**
	E1.2.1 The information collected in relation to E1.1.3 indicates that the fishery does not have a significant negative impact on ETP species.
Outcome	*Pass*

Rationale

Specific information about the impacts of the anchovy fishery in southern region of Peru on ETP species is scarce, most of the public data available is from Peru anchovy fishery in general, from industrial anchovy fishery in northern-central of Peru operating with purse-seines or for the industrial fleet of Chile, which are similar fisheries of this assessment, operating under the same conditions.

IMARPE[3] (2023) has reported an increase of interaction of anchovy fishery with birds in 2023, such as Guanay cormorant - *Leucocarbo bougainvilliorum* (*guanay*), Peruvian booby - *Sula variegate* (*piquero Peruviano*), Peruvian pelican - *Pelecanus thagus* (*pelicano*), Inca tern - *Larosterna inca* (*zarcillo*) and sooty shearwater - *Ardenna grisea* (*pardela gris*), which were found dead or dying on the hoopers. All these species are listed as "near threatened" by Union for Conservation of Nature's Red List of Threatened Species - IUCN's Red List (BirdLife International[4,5,2], 2018 and 2019), apart from Peruvian booby, which has a "least concern" status (BirdLife International[6], 2018). However, IMARPE[3] (2023) believed they might be stressed by the H5N1 bird flu, whose first outbreak was registered in November 2022 and by the coastal 2023-2024 El Niño event, which led to a decrease on the availability of anchovy this year, the food source of the birds. As the birds are weak, they try to catch anchovy from the fishing gears and end up enrolled on the nets.

According to the latest data of the Fishing Atlas, in the second 2022 anchovy fishing season, from November 22nd to February 05th 2023, 1,144 birds, 1,103 sea lions and 82 cetaceans were released and no turtles' interactions were reported (Fishing Atlas, 2023) by the 15 fleets associated to SNP.

The private onboard observer program reported a total of total of 70,670 bird and 7,600 mammal interactions in the second 2022 fishery season, with 99.52% of indirect interaction, 0.48% of direct interaction and 0.14% of mortality for birds and 0.17% for mammals (Figure 14) [Report, 2022]. Up to 25 bird species were reported. The species with some deadly interactions were the least concern Peruvian booby, the near threatened Peruvian pelican, the low concern blue-footed booby - *Sula nebouxii* (p*iquero de patas azules*) [BirdLife International, 2021], the low concern Franklin's gull - *Larus pipixcan* (*gaviota de Franklin*) [BirdLife International[3], 2018], the vulnerable pink-footed shearwater - *Ardenna creatopus* (*pardela de patas rosadas*) [BirdLife International[1], 2018], the near threatened guanay cormorant and the seabird most commonly released was the near threatened sooty shearwater. All the reported mammals have a "low concern" status by IUCN: South American Sea Lion - *Otaria byronia (lobo marino sudamericano)* [Cárdenas-Alayza *et al*., 2016], Dusky dolphin

- *Lagenorhynchus obscurus* (*delfín obscuro*) [Alafaro-Shiguieto *et al*., 2019], common dolphins - *Delphinus delphis* (*delfín común*) [Braulik *et al*., 2021] and South American fur seals - *Arctocephalus australis* (*lobo fino austral*) [Cárdenas-Alayza *et al*., 2016].

ESPECIE	Interacción Indirecta (No sufrieron daños)			Interacción Directa (Sufrieron daños)				Post-Captura (Sufrieron daños)				Total Individuos	Frecuencia de Ocurrencia
	Se encontraban presentes durante toda la faena, pero no sufrieron ningún daño.			Antes	Durante		Después	Estado en el que quedaron los individuos después de sufrir daños					
				Mientras se extiende el cerco	Cuando se inicia el cierre del cerco y se procede a llevar la red a bordo		Cuando la red se encuentra a bordo y empieza a envasar la captura hasta que se termina la faena						
	I-N/S	I-P/E	I-A/E	D-A1	D-D1	D-D2	D-Ds1	P-C1	P-C2	P-C3	P-C5		
Albatros de las Galápagos - *Phoebastria irrorata*	1,401		820			1		1				2,222	32.85%
Cormorán guanay/Guanay - *Phalacrocorax bougainvilii*	650		85		3			3				738	13.50%
Fragata magnífca - *Fregata magnificens*	68	49	54									171	5.47%
Gaviota de Sabine- *Xema sabini*	116											116	1.46%
Gaviota de frankiln - *Leucophaeus pipixcan*	16,143		6,893		8			8				23,044	47.81%
Gaviota dominicana - *Larus dominicanus*	287	10	260									557	17.15%
Gaviota indet.	22		10									32	0.36%
Gaviota indet. *Larus* sp.	29											29	2.19%
Gaviota peruana - *Larus belcheri*	1365	14	482									1,861	16.42%
Gaviotín común - *Sterna hirundo*	1		5									6	0.73%
Gaviotín elegante - *Sterna elgans*	1											1	0.36%
Gaviotín peruano - *Sternula lorata*	2162	5	1770									3,937	6.20%
Golondrina de mar acorallada -*Oceanodroma hornbyi*	46											46	1.46%
Golondrinas de mar - *Hydrobates* sp.			14				1			1		15	2.19%
Págalo pomarino - *Stercorarius pomarinus*	169		20									189	5.47%
Pardela común /gris - *Puffinus griseus*	1371		189									1,560	25.55%
Pardela de pata rosada - *Puffinus creatopus*	3		3									6	0.73%
Pardela indet.	13											13	1.46%
Pelicano peruano - *Pelecanus thagus*	1984		942	1	2			1			2	2,929	34.31%
Petrel de mentón blanco - *Procellaria aequinoctialis*	1											1	0.36%
Petrel indet.	3											3	0.73%
Piquero de pata azul - *Sula nebouxii*	5996		3414		172	1	2	74		21	80	9,585	10.95%
Piquero peruano - *Sula variegata*	1659	15	613	3	7		2	10	2			2,299	22.99%
Potoyunco - *Pelecanoides garnotii*	536		2									538	4.74%
Zarcillo - *Larosterna inca*	13844	35	6893									20,772	33.94%
Total de individuos	47,870	128	22,469	4	192	2	5	97	2	22	82	70,670	
Delfín - Delfín indet.	82						6		6			88	2.19%
Delfín común - *Delphinus capensis*	354		43		4				4			401	4.74%
Delfín nariz de botella - *Tursiops truncatus*	14		25									39	0.73%
Delfín oscuro - *Lagenorhynchus obscurus*	70				11			1		10		81	1.46%
Lobo chusco - *Otaria byronia*	853		5962		123	7	20	12	76		62	6965	79.93%
Lobo indeterminado			26									26	1.09%

Figure 14. Example of interactions with birds during private onboard observer program in 2022 (Report, 2022).

The observer program conducted by IFOP for the Chilean share of the southern Peruvian anchovy stock provided few data of ETP as well in IFOP (2023). For the Chilean industrial fleet operating in the area, 20 species were reported as interacted with the fishery operations between 2017-2022 (Figure 15). In that case, sea lions were the most common species, but with low mortality (0.16%). In Arica and Parinacota, the extreme north of Chile, thus, closer to Peru, Guanay cormorant composed 71% of the birds' coastal catches and 93% of the mortality of this group. Regarding the capture of marine reptiles, this represented 1% of the captures, observed mainly between the regions of Arica and Tarapacá.

Nombre común	Nombre Científico	Captura	Muertos	Mort (%)	CIP	CV_{CIP}	MIP	CV_{MIP}
Lobo Marino Común	*Otaria flavescens*	5708	9	0,16	1,42	351,5	0,002	2112,9
Fardela negra	*Ardenna grisea*	568	390	68,7	0,14	3513,1	0,10	3450,2
Guanay	*Phalacrocorax bouganvilli*	452	420	92,9	0,11	4125,4	0,10	4407,5
Delfín común	*Delphinus delphis*	72	23	31,9	0,02	2255,2	0,006	2571,5
Piqueros	*Sula variegata*	71	59	83,1	0,02	2166,8	0,015	2366,6
Gaviotín monja	*Larosterna inca*	61	0	0	0,02	6241,9	0	-
Delfín oscuro	*Lagenorhynchus obscurus*	56	38	67,9	0,01	2611,8	0,009	2701,2
Pelicano peruano	*Pelecanus thagus*	31	17	54,8	0,008	2154,4	0,004	2268,4
Delfín sin especificar	-	15	0	0	0,004	6345,1	0	-
Pingüino de Humboldt	*Spheniscus humboldti*	12	1	8,3	0,003	2478,4	0,0002	6345,1
Fardela Blanca	*Ardenna creatopus*	8	8	100	0,002	6345,1	0,002	6345,1
Gaviota garuma	*Leucophaeus modestus*	6	6	100	0,001	6345,1	0,001	6345,1
Delfín nariz de botella	*Tursiops truncatus*	4	4	100	0,001	6345,1	0,001	6345,1
Yeco	*Phalacrocorax bouganvilli*	4	4	100	0,001	6345,1	0,001	6345,1
Tortuga verde	*Chelonia mydas*	3	0	0	0,001	3662,4	0	-
Tortuga olivácea	*Lepidochelys olivacea*	3	0	0	0,001	3662,4	0	-
Gaviota de Franklin	*Larus pipixcan*	2	2	100	0,000	6345,1	0,0005	6345,1
Tortuga Laúd	*Dermochelys coriacea*	2	0	0	0,000	4486,1	0	-
Albatro Ceja negra	*Thalassarche melanophris*	1	1	100	0,0002	6345,1	0,0002	6345,1
Tortuga cabezona	*Caretta caretta*	1	0	0	0,0002	6345,1	0	-
Lobo fino austral	*Arctocephalus australis*	1	0	0	0,0002	6345,1	0	-

Mort (%) = Mortalidad = Número de animales muertos/Número de animales capturados
Captura Incidental Promedio (CIP) = Número de animales capturados/Número de lances observados
Coeficiente de Variación Captura Incidental Promedio (CV_{CIP})
Mortalidad Incidental Promedio (MIP) = Número de animales muertos/Número de lances observados
Coeficiente de Variación Tasa Mortalidad Incidental (CV_{MIP})

Figure 15. Capture and incidental mortality by species in the industrial purse seine fleet that operated on the anchovy resource in the northern zone of Chile. Data from the registry of scientific observers on 4,026 commercial fishing hauls during the period 2017-2021. Nombre común= common name. Nombre Científico= scientific name. Captura= catches. Muertos: dead. Mort (%) = Mortality = Number of dead animals/Number of captured animals. CIP = Average Incidental Catch = Number of animals captured/Number of hauls observed. CVCIP = Average Incidental Catch Variation Coefficient. MIP = Average Incidental Mortality = Number of dead animals/Number of hauls observed. CVMIP = Variation Coefficient of Incidental Mortality Rate (IFOP, 2023).

In general terms, PBP, SALVAMARES and Chilean observer programmes report many interactions of anchovy fishery with ETP species, but the mortality rates were low in Peru (SFP, 2021; CeDePesca, 2019, Report, 2022).

Therefore, **the information collected in relation to E1.1.3 indicates that the fishery does not have a significant negative impact on ETP species.**

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E1.3	**E1.3**	**There is an ETP management strategy in place for the fishery.**
	E1.3.1	There are measures applied to the fishery which are designed to manage the impacts of the fishery on ETP species.
	E1.3.2	The measures are considered likely to achieve the objectives of regional, national and international legislation relating to ETP species.
Outcome	*Pass*	

Rationale

There are several measures in place to minimise the impacts on ETPs species, especially due the FIP that has been developed in Peru. Some of these measures are focused on the northern Peru because of the ongoing FIP occurring there, but several of these measures were applied of the whole country, which includes the southern area.

FishChoice (2019) has summarized measures regarding ETP species:

"The national protection and management of ETP species involves marine protected areas around islands and guaneras areas, as well as prohibition on hunting sea lions, and a prohibition on the possession, trade, transport or export of ETP species. Various government departments monitor the population status of ETP species.

In Peru, multiple different government departments have responsibility for different aspects of ETP management. MINAGRI, the Ministry for Agriculture prohibits the catch and transport of ETP species, SERNANP is the department responsible for protected areas, and SERFOR manages forests and fauna outside of protected areas. Hunting sea lions is prohibited, birds associated with the production of guano are protected. There is a system of MPAs prohibiting fishing around guaneras islands and points.

IMARPE promotes the adoption of Dolphin Safe practices and certification of fisheries. Some of the companies in the FIP use pingers on their nets to deter dolphins. It is not clear whether all the companies do this. It is not a policy of the fishery management or the FIP. However, if one company seems the value in pingers, it can be assumed it reduces dolphin interactions. Independently owned vessels that are not part of the companies within this FIP, do not use pingers on their nets. SERFOR and the Peruvian government has recently published a National Plan for the Conservation of Marine Turtles, approved in December 2019.

IMARPE has a department called the Office of Research on Top Predators. One of their objectives is to develop indicators of changes in the marine environment. They conduct activities such as the estimation of population abundance, the study of the ecology of food and the study of reproductive parameters of guaneras birds (Peruvian pelican, Peruvian booby, Guanay cormorant, etc), the evaluation of the population abundance of sea lions on the Peruvian coast and monitoring of sea turtles. They conduct research cruises to study the distribution and abundance of birds and cetaceans.

There are overarching national measures designed to protect ETP species. The IHC fishery is not allowed to fish within 5 nm of the coast. This area is allowed to be fished by the DHC fishery. This

measure protects many of the islands that are habitat to ETP species, from the disturbance of industrial fishing.

Three major Marine Protected Areas (MPAs), the National Reserve System of Guano Islands, Isles and Capes; the Paracas National Reserve; and the San Fernando National Reserve, covering a total area of 6,305km^2, have been also established in the country to protect coastal habitats and breeding zones for several species of seabirds and marine mammals. A permanent spatial closure of 3 nm along the Peruvian coastline for all fleet was established has been also established and temporal restrictions are in place for the fishery to protect juveniles and breeding seasons for seabirds.

The FIP has implemented a private on-board observer program with the following aims:

- Characterize and estimate the bycatch of the fishery.
- Identify and quantify the species of birds and marine mammals that interact with the fishery.
- Collect information to identify the habitats on which it would be impacting the fishery.
- Provide advice on board to the crew members who are part of the Program "SALVAMARES".

The FIP has also implemented a program called “SALVAMARES”, which is a system of training crew on-board to act similar to observers and collect data on ETP interactions. They are also trained in release techniques. The SALVAMARES cover 10% of the fleet. The information can be validated by the observer program which also covers this fleet, and comparisons of the data have been carried out, in order to improve the data collection.

There is a kit which has been developed and recommended for use, which includes devices to aid the release of turtles, dolphins and sharks. For there to be a commitment to implement the kit, it must be approved by the SNP scientific committee first. If the kit is issued to vessels, there should also be a summary of the release training and release kit work that has been occurring, to understand whether this has been applied to all FIP vessels yet.

The spatial overlap of the fishery with bird and mammal nesting areas is low because, with the exception of one island, all other islands are within the 5m inshore zone and therefore the IHC vessels are not allowed to fish there. There is a medium level of temporal overlap between the fishing seasons and the reproductive seasons of the critical TP species (pelicans and fur seals).”

Therefore, **there is an ETP management strategy in place for the fishery.**

References

FishChoice. 2019. Three-Year Audit Template. https://fisheryprogress.org/sites/default/files/indicators-documents/Peruvian_Anchovy_IHC_FIP_Review_2019_GB2338_5.pdf#overlay-context=node/3546/actions-progress

E2 Impact on the habitat

E2.1	**E2.1**	**Information on interactions between the fishery and marine habitats is collected.**
	E2.1.1	Habitats which may be directly affected by the fishery have been identified, including any habitats which may be particularly vulnerable.
	E2.1.2	Information on the scale, location and intensity of fishing activity relative to habitats is collected.
	E2.1.3	Collection and analysis of habitat information is adequate to provide a reliable indication of the impact the fishery has on marine habitats.
Outcome	*Pass*	

Rationale

Information where fishery is taking in place is collected through VMS, which is mandatory for the fishery as required by PRODUCE Decrees Nº10/2010, Nº5/2012 and Nº01/2013. Taking into account that the area close to the coast is an important zone for the reproduction and breeding of multiple coastal species, National Congress approved some amendments to the LGP Law Nº 25.977, with important implications for fisheries management and conservation within the five nautical miles along its coasts. Since the early 1990s, this has been an area where the fishing activities of industrial fleets have been restricted. The consequences of fishing activities on habitats are linked to physical disruptions that occur when bottom gear comes into contact with the seafloor (ICES 2006). According to the provided definition, fishing gear utilized in pelagic fishing, like purse seines, do not have a direct impact on the seabed. Thus, information collected through VMS is considered enough for an indication of the impact of the fishery on marine habitats.

In conclusion, **information on interactions between the fishery and marine habitats is collected.**

References

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E2.2	**E2.2**	**The fishery has no significant impact on marine habitats.**
	E2.2.1	The information collected in relation to E2.1.3 indicates that the fishery does not have a significant negative impact on marine habitats.
Outcome	*Pass*	

Rationale

The consequences of fishing activities on habitats are linked to physical disruptions that occur when bottom gear comes into contact with the seafloor (ICES 2006). According to the provided definition, fishing gear utilized in pelagic fishing, like purse seines, do not have a direct impact on the seabed. Therefore, it is believed that these gear types do not exert any influence on the habitat (ICES 2006) (Grieve *et al*., 2014).

Data provided by the SALVAMARES for the northern anchovy purse seine fishery reported allow number of interactions with the seabed in shallow water inlets (5% by number of total inlets fished) [SALVAMARES 2019].

In conclusion, **the fishery has no significant impact on marine habitats.**

References

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E2.3	**E2.3 There is a habitat management strategy in place for the fishery.** *In reaching a determination for E2.3, the assessor should consider if the following is in place:*	
	E2.3.1	There are measures applied to the fishery which are designed to manage the impact of the fishery on marine habitats.
	E2.3.2	The measures are considered likely to prevent the fishery from having a significant negative impact on marine habitats.
Outcome	*Pass*	

Rationale

National Congress approved some amendments to the LGP Law Nº 25.977, with important implications for fisheries management and conservation within the five nautical miles along its coasts, which is an important zone for the reproduction and breeding of multiple coastal species. Since the early 1990s, this has been an area where the fishing activities of industrial fleets have been restricted. The amendments to the law recognize the first five nautical miles adjacent to the Peruvian coast as a protection zone and establish the following measures (OCEANA, 2023):

- Prohibit large-scale fishing within the 5 nautical miles area, without exceptions;
- Prohibit mechanized purse-seiners of any size in the first 3 nautical miles;
- Require the fishing authority to approve a list of the fishing gear that will be allowed in the area, which must exclude any gear that is harmful to the habitat.

The Supreme Decree 012-2001-PE specifically forbids the utilization of the "*antifango"*, an unlawful apparatus positioned at the base of fishing nets. This device, when used in shallower waters, disrupts the seabed, causing detrimental effects on the habitat (MBA, 2023).

Peru's marine protected areas encompass an extent of 639,282 hectares, constituting 3.9% of the nation's marine expanse. These designated areas encompass the “Paracas National Reserve”, the “Guano Islands and Capes National Reserve” and the “San Fernando National Reserve”. As of now, no Vulnerable Marine Ecosystems (VMEs) have been charted within Peruvian waters.

From October 2018 the Government made available VMS data from the fleets to the Global Fishing Watch (GFW) application. Vessels from both industrial fleets are included. Mandatory VMS are in place, as required by PRODUCE Decrees Nº10/2010, Nº5/2012 and Nº01/2013. The electronic/radio log is required as well for the fishery (PRODUCE 2016).

Any violation of entry into Marine Protected Areas and Vulnerable Marine Ecosystems for fishing operations are prosecuted. Results of these prosecutions are published on the PRODUCE website.

Important to point out that interaction with benthic habitats is limited, as the purse seine fishery is typically an epipelagic fishery occurring in the water column, so there is no evidence of significant negative impact with physical habitats.

In conclusion, **there is a habitat management strategy in place for the fishery**.

References

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E3 Impact on the ecosystem

E3.1	**E3.1**	**Information on the potential impacts of the fishery on marine ecosystems is collected.**
	E3.1.1	The main elements of the marine ecosystems in the area(s) where the fishery takes place have been identified.
	E3.1.2	The role of the species caught in the fishery within the marine ecosystem is understood, either through research on this specific fishery or inferred from other fisheries.
	E3.1.3	Collection and analysis of ecosystem information is adequate to provide a reliable indication of the impact the fishery has on marine ecosystems.
Outcome	*Pass*	

Rationale

It is well known that anchovy is highly dependent on environmental events, such as the El Niño-Southern Oscillation (ENSO) events which affect upwelling, fish abundance and distribution of the species, often leading to stock crashes and cascading social and economic impacts. Synchronic regime shifts in abundance between anchovy, sardines and other low trophic level (LTL) species from north to south in the Humboldt current large marine ecosystem - HCLME have been described (Cubillos *et al*. 2007).

IMARPE has attempted to quantify the needs of the HLCME ecosystem and the species which rely on anchovy (IMARPE, 2020). Due to the low trophic level of the species, anchovy is a key resource for some marine species in the HCLME, such as ETP species which rely on it. IMARPE has highlighted the difficulties of predicting environmental variability due to El Niño and other events and note that focus should be on preservation of the resilience of key species in the ecosystem, such as anchovy. Data on environmental factors (water temperature, phytoplankton and zooplankton, etc) is collected by IMARPE during the hydrographic surveys and are taking into consideration during the assessment of the anchovy stocks. IMARPE also monitors all levels of the ecosystem, from algae up to marine macro-fauna, top predators, marine mammals and birds (FishChoice, 2019).

The relationships between various species populations, the anchovy population, and the availability of food during specific reproductive periods was investigated in the report "Impact Study of Anchovy Fishery on By-Catch and Protected Species" (referred to as "*Fichas del Impacto*") done by CeDePesca (2017).

In conclusion, **information on the potential impacts of the fishery on marine ecosystems is collected.**

References

CeDePesca. 2017. Fichas de impacto de la pesquería de anchoveta sobre especies de by-catch y protegidas. https://cedepesca.net/wp-content/uploads/2018/04/CeDePesca_Fichas-de-impacto-de-la-pesquer%C3%ADa-de-anchoveta-2017-11-29.pdf

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IMARPE. 2020. Ecosystem impacts of fishing the low trophic level Peruvian anchovy in the Northern Humboldt Current Ecosystem. https://cedepesca.net/wp-content/uploads/2021/01/Tam-Ecosystem-impacts-2020.pdf

E3.2	**E3.2 There is no substantial evidence that the fishery has a significant negative impact on the marine ecosystem.**
	E3.2.1 The information collected in relation to E3.1.3 indicates that the fishery does not have a significant negative impact on marine ecosystems.
Outcome	*Pass*

Rationale

The "*Impact Study of Anchovy Fishery on By-Catch and Protected Species*" concluded that these species' dietary necessities have been adequately met in recent years, indicating that the anchovy fishery is not exerting an adverse influence on species recovery (CeDePesca, 2017).

The HLCME ecosystem study of IMARPE (2020) has shown that the predators with more than 50 % of anchovy in their diets were Peruvian boobies, Guanay cormorants, pelicans, Eastern Pacific bonito, other large pelagic, sea lions, catfishes and fur seals. Predators with more than 2 tons per km2 per year of anchovy consumption were Eastern Pacific bonito, medium demersal, horse mackerels, other large pelagic and pacific mackerels. The conclusions of this study were that depletion experiments varying levels of fishing mortality of adult Peruvian anchovy Northern-Central stock, using both ecosystem models (without and with environmental forcing), indicated that at the status quo fishing mortality (F = 0.784) and level of anchovy depletion (around 19 % B0), does not impact the abundance levels of more than 15 % of the other species and trophic groups by more than 40%, and also does not reduce the abundance level of any other species or trophic group by more than 70 %.

Moreover, the fishery has no impact on the habitat and a relatively low impact on ETP species.

Therefore, **there is no substantial evidence that the fishery has a significant negative impact on the marine ecosystem.**

References

CeDePesca. 2017. Fichas de impacto de la pesquería de anchoveta sobre especies de by-catch y protegidas. https://cedepesca.net/wp-content/uploads/2018/04/CeDePesca_Fichas-de-impacto-de-la-pesquer%C3%ADa-de-anchoveta-2017-11-29.pdf

IMARPE. 2020. Ecosystem impacts of fishing the low trophic level Peruvian anchovy in the Northern

Humboldt Current Ecosystem. https://cedepesca.net/wp-content/uploads/2021/01/Tam-Ecosystem-impacts-2020.pdf

E3.3	**E3.3**	**There is an ecosystem management strategy in place for the fishery.**
	E3.3.1	There are measures applied to the fishery which are designed to manage the impacts of the fishery on marine ecosystems.
	E3.3.2	The measures are considered likely to prevent the fishery from having a significant negative impact on marine ecosystems.
Outcome	*Pass*	

Rationale

Various safeguards have been implemented to preserve distinct tiers of the ecosystem.
Certain islands, designated for bird or marine mammal habitats, are off-limits for fishing, safeguarding their ecological integrity. This protective measure also contributes to minimizing seabed interactions. Notably, marine protected zones encircling islands play a pivotal role in shielding breeding and resting habitats for marine mammals and avian species against disruptions caused by fishing vessels. Moreover, the protected region network encompasses guaneras areas, acknowledging the ecological significance of guano bird habitats. These species are pivotal indicators of the ecosystem's robustness, and the monitoring of their populations remains an ongoing endeavour.

IMARPE's Office of Research on Superior Predators focuses on developing environment-related indicators (FishChoice, 2019). This involves estimating population abundance, analyzing food ecology, studying reproductive parameters of guaneras birds, evaluating sea lion populations along the coast, and monitoring sea turtles. Research cruises assess bird and cetacean distribution and abundance.

Anchovy populations are highly monitored and regulated as well. Within the fishery-specific management system, robust protocols are established to determine the LMTCP, assuring that the stock remains within sustainable biological thresholds. The LMTCP is renewed annually and follows a two-stage release approach, subject to review prior to the second fishing season. For the subsequent fishing season, the LMTCP is determined using IMARPE's stock assessment outcomes. This is done according to a formula outlined in a decision table by IMARPE. The decision table computes the risk of the remaining spawning biomass falling below the biological limit reference point. This assessment considers data from acoustic surveys during closed seasons and landing data, ensuring the LMTCP adapts to the stock's current state.

The ongoing monitoring of juvenile and bycatch percentages occurs in real-time. To address bycatch, regulations stipulate that the catch's bycatch portion must not exceed 5%. Under PRODUCE's jurisdiction, the authority to close the IHC fishery during seasons with high juvenile proportions exists. The specific percentage of juveniles warranting a fishery closure is assessed seasonally. Monitoring the juvenile percentage relies on real-time catch reporting and observer input, while electronic logbooks submitted to PRODUCE record this data for each haul. Although landing over 10% juveniles is forbidden, exceptions are possible if reported immediately for area-specific temporary closures. Such information is included in electronic logbooks submitted to PRODUCE. Temporary closures can be enforced within hours or a few days based on the reported percentage exceeding 10% (FishChoice, 2019).

Thus, **there is an ecosystem management strategy in place for the fishery.**

References FishChoice. 2019. Three-Year Audit Template. https://fisheryprogress.org/sites/default/files/indicators-documents/Peruvian_Anchovy_IHC_FIP_Review_2019_GB2338_5.pdf#overlay-context=node/3546/actions-progress

Annex 1: External Peer Review report

Assessment and determination summary

Fishery name	**Anchovy (*Engraulis ringens*) in FAO 87, from 16° south to southern border**
MarinTrust report code	**WF13**
Type 1 species (common name, Latin name)	*Anchovy (Engraulis ringens)*
Fishery location	**FAO 87, from 16° south to southern border**
Gear type(s)	*Purse seine (industrial fleet)*
Management authority (country/state)	*Ministry of Production (PRODUCE)*
Certification Body recommendation	*Approved*
FAPRG reviewer recommendation	Agree with CB determination

Summary of peer review outcomes

Summary
Provide any information about the fishery that the reviewers feel is significant to their decision. This summary is used by the Certification Body in the Fishery Assessment Report.

In despite of the General Fisheries Law (LGP Law Nº 25977) promulgated on December 21, 1992, this fishery is not managed under LGP, it is managed under Legal Decree 1084 (or DL 1084, which created the system of quotas by fishing vessels. I think it is important to make clear that.

In the Table 4: assessment determination is stated that:

- “Specific information about bycatch in the southern Peruvian anchovy fishery is scarce”. That is not right, the third party companies in charge of the control take data on by catch in landing points. Also the private Salvamares Program (cited several times in the assessment) takes detailed data about that.
- “Most of data available for Peruvian anchovy fishery is from northern Peru”. That is not right, the same systems and kind of data is collected in both management zones.
- “Hydroacoustic surveys are conducted and environmental and biological data are collected by IMARPE before each fishing season”. At least during the last decade just one survey in the south was performed before the first fishing season every year. However, upon the recent agreements between Imarpe (peru) and Ifop (Chile), this year ther wll be executed two coordinated and simultaneous surveys to assess the spawning and the biomasa of anchovy in the south of Peru and northern Chile (SPNCH). The goal is to perform these at least once a year before the second fishing season in Peru. The first survey will be executed during agust-september, and the latter between novembre-december.
- “The catch of anchovy in the area is regulated through an annual Maximum Limit of Total Allowable Catch - LMTCP (Límite Máximo de Captura Total Permisible) set by PRODUCE based on the recommendations given by IMARPE”. Specifically,

what IMARPE does is submit a report on the situation of anchovy, including a "decision table" with options for the exploitation rate (E) with a maximum possible quota of 35% of the adult population; this is made following an official protocol. Imarpe does not provide a specific recommendation to set the maximum allowable catch.

- "The biomass of the anchovy stock is currently below MSY, but for the first season of 2024, landings reached only 3.60% of LMTCP". Obviously, this report was drafted when the fishing season was just starting. Anyway, to date (August 27th, 2024) landings were 36 K tons, so just 14% of the provided quota. This is explained by the low fishing effort, the system for closing areas where juvenile fish is observed over 10% per catch makes no attractive to perform long trips from the north aboard industry vessels. In turn, this is because there is no fleet permanently based in the south of Peru.
- "Carrot/red squat lobster, assessed under category D, passed the Productivity-Susceptibility Analysis (PSA". This is unnecessary, there is a continuous scientific monitoring on the state of this population in despite it is not target of a fishery, it is an underexploited and abundant specie.
- "Several management measures are in place to protect the species (temporally spawning and recruitment closures), Minimum Landing Size (MLS)". The minimum size is applied to fishing sets, not to landings.
- "catch's bycatch restrained to 5%". This is 5% volume of the obtained catch, not in number as in the case of anchovy.
- "Despite the lack of absolute clarity on catch data, the assessor made a decision on species classification that is well supported and justified through a detailed rationale". This is wrong, all the data is available on request to the Ministry of Production. There is a law of transparency in Peru, even without explaining why for the data is requested it is an obligation of the Ministry, Imarpe etc to provide the data.

In Table 7: Species categorisation table, is stated that:

- "Specific information about bycatch in the southern Peruvian anchovy fishery is scarce". This does not seem right as explained in my previous comment. Besides, there is an electronic logbook aboard every industry vessel, also detailed data is collected about by catch at landing points.
- "The Peruvian anchovy fishery reports from the Marine Institute of Peru – IMARPE sometimes only cite the name of species found during the expeditions and do not provide their amount, neither their percentage on total landings. It is hard to compile landings data as Peru publishes daily reports of the landings and rarely publish a report with compiled quantitative data of the accompanying fauna". It is true that the data made publicly available is about target species (anchovy in this case), but data on all species caught is also collected, and can be requested under the provisions of the transparency law.
- "No quantitative data was provided for these species in this region in IMARPE (2023) report". This is unfair since all data is available on request. Also, SNP produces workshops on anchovy where all data is made publicly available.

Finally, in despite all these observations, I agree all the scorings made by the assessor.

In M1.3 it is stated that:

- "Although discards are not officially documented". The truth is that after the promulgation of the DS-024-2016, which created the system for dynamic closing of areas where juvenile fish are observed over 10% in number (not in volume), there has been observed too few events of discarded fish. The DS-024 created the stimulus to not to discard in return of not being imposed a fine or further sanctions.

In M1.4 it is stated that:

- "The LGP Law Nº. 25.977, which is the most important law in the fishing sector, is based on sustainability as stated on its first article". Not for anchovy, in the case of anchovy the legal instrument to be cited is the DL-1084 (before described, it was promulgated in 2008, 16 years ago).
- "Since September 2019, there has been a technical consultation meeting every two weeks, which involves SNP, relevant government departments and the national industry society. Anyone in the group can put something on the agenda for discussion". Also SNP (National Fisheries Society) uses to perform, in cooperation with Produce, Imarpe, Ihma and others, 2 annual workshops on the diagnosis of the state of the population.
- "The methodology for the evaluation of the status of the southern stock was reviewed in 2015 by IMARPE. Therefore, some institutions seem to collaborate in the preparation of those reports". There are also voluntarily convoked scientific auditory to Imarpe's results , as it happened during 2000, 2008, 2018 and 2024. FAO made an auditory requested by PRODUCE, which has satisfactory results, as all the others, though improvements have been introduced both in methods and equipment.

In M2.3 it is stated that:

- "Off the coast of Peru, under-reporting of landed catches and discards of juvenile anchovies have been reported. In contrast to the north-central anchovy stock, however, there are paucity of data on the severity of this issue for southern stocks. Some stocks of Peruvian anchovy have reported discards in industrial fisheries recent years due to the presence of excessive numbers of juveniles (Grillo et al., 2019; Diaz 2017; Wosnitza-Mendo et al, 2010)". This was true before 2016. The DS-024-2016 created the stimulus to discard or unreporting catches since every landing is audited by third party entities.
- "Since 2016, fishing vessels have been required to disclose their fishing locations and the percentage of juveniles in their catches. IMARPE evaluates such data to identify critical fishing zones with a high frequency of juvenile catches". This is not correct, that task is made not for Imarpe but the General Direction of

Monitoring and Sanction of PRODUCE. However, sometimes Imarpe can recommend to close certain reasons, but it is not its regular task.

In clause A1,2 it is stated that:

- "Since 1982, the IMARPE has monitored anchovy populations using acoustic techniques through twice-yearly hydroacoustic cruises along the geographical range of the anchovy population". In the south, Imarpe performs just one survey per year, though under the GEF-UNDP Humboldt 2 Project, there are ongoing coordination's to perform at least an acoustics simultaneous survey all along the SPNCH.

In clause A2.3 it is stated that:

- "For the first season of 2024, a LMTCP of 251,000 was established, but landings reached only 9,098 tons (3.60% of LMTCP)", To date (August 27th) landings were 36 K (14% of the quota).

In clause A2.4 it is stated that:

- "IMARPE methods to assess the anchovy stock were peer reviewed by an international panel of experts in 2009 and again by FAO experts in 2014". Imarpe use to voluntarily request international scientific auditory, as it happened in 1992, 1994-95, 1997-98, 2000, 2010, 2018 and 2024.

In clause A3.1 it is stated that:

- "In order to monitor the resources and compliance of fishing fleets, four programs are in place: the logbooks program (PBP) with onboard observers since 1996, to cover the fleet behaviour, species and size composition of catches, discards, and interactions with other species and the habitat; gathering information at the landing ports; the satellite vessel tracking system (SISESAT); and scientific surveys (FishChoice, 2019". There is a fifth program, and it is private: the Salvamares Program, which collect data from several sources, including ETP species interaction, this is, using fishing vessels as observers of the ecosystem.

In clause C1.1 it is stated that:

- "The landings of Chilean jack mackerel in 2023 were 187,000 t, 106,000 of which is attributed to the industrial purse seine fleet". It is pertinent to talk about landings in Chile, it looks as out of context.

General comments on the draft report provided to the peer reviewer

The external peer-reviser has written some of her/his comments on this section, which is allocated for the CAB response; thus, the assessor reorganized this part of the report, adding the peer-reviser comments to the section above.

It was mentioned in the assessment that The Peruvian fishing sector is governed by the General Fisheries Law (LGP Law Nº 25,977), which is also applied to the Peruvian anchovy fishery, although the Legal Decree issued in 2008 (DL-1084) is more specific for the fishery in assessment. Although is an important regulation for the anchovy management, Legal Decree 1084 does not determine the roles of the fishery management organizations neither the sanctions framework. Therefore, General Fisheries Law (LGP Law Nº 25,977) and its amends, was the main regulation covering the clauses of M1 and M2 sections. Nevertheless, as the Legal Decree is critical for the management of the fishery, I cited it in the "assessment determination" section and in M.1.1 in the final version of the report.

Table 4

- The state "Specific information about bycatch in the southern Peruvian anchovy fishery is scarce" was modified for "Public and specific information about bycatch in the southern Peruvian anchovy fishery is scarce and the client did not provide the requested data." as it was not possible to find this information online. I have asked for data to the client and it was not provided. The request of data to the government was unsuccessful as the portal required contact details from Peru from the applicant.
- The state "Most of data available for Peruvian anchovy fishery is from northern Peru" was modified to "Most of ETP public data found for Peruvian anchovy fishery is from northern Peru"
- The state "Hydroacoustic surveys are conducted and environmental and biological data are collected by IMARPE before each fishing season" was modified for "At least during the last decade, hydroacoustic surveys have been conducted and environmental and biological data have been collected by IMARPE before the first fishing season every year."
- The state "The catch of anchovy in the area is regulated through an annual Maximum Limit of Total Allowable Catch - LMTCP (*Límite Máximo de Captura Total Permisible*) set by PRODUCE based on the recommendations given by IMARPE" was modified for "The catch of anchovy in the area is regulated through an annual LMTCP set by PRODUCE based on the decision table provided by IMARPE with options of exploitation rates."

Table 7

- As explained before, I have asked for data to the client and it was not provided. The request of data to the government was unsuccessful as the portal required contact details from Peru from the applicant. No data of workshop of southern anchovy catches were found on SNP website. For the following years, greater effort will be made to obtain this data.

M.1.3

- I added on M1.3 information about the Supreme Decree 024/2016 that you have mentioned: "When population numbers are low, and the environment is unstable, further surveys are conducted. Although discards are not officially documented, they are indirectly factored into stock estimates via acoustic surveys and population length frequency statistics. Moreover, the Supreme Decree 024/2016 create the dynamic system of closing of areas where juvenile fish was caught over 10% of the catch considering the number of fish, a system that contributes for a reduction of discards for this species."

M.1.4/M.1.5

- Although the peer-reviewer mentioned M.1.4, most of the states he/she referred belonged to M.1.5 section. The additional information provided by the peer-reviewer was included in the M.1.5 clause. The following text was added to the M.1.4 clause: "The Supreme Decree No. 021-2008-PRODUCE approved the Regulations of Legislative Decree No. 1084, the Law on maximum catch limits per vessel, which contains the complementary rules to it and establishes the procedures for applying the fishing management regime applicable to the extraction intended for indirect human consumption of the anchovy and white anchovy resources (*Engraulis ringens* and *Anchoa nasus*) and on article 4º is stated that: "Maximum Catch Limits per Vessel (LMCE) aims to improve the conditions for the modernization and efficiency of fishing activity; to promote its sustainable development as a source of food, employment and income; and, to ensure responsible use of hydrobiological resources, in harmony with the preservation of the environment and the conservation of biodiversity."

M2.3

- I deleted the mentioned state about what used to happen before 2016.
- I clarified the role of PRODUCE in the process of fishing closure, by adding the follow sentence in bold to the original phrase of the report: "IMARPE evaluates such data to identify critical fishing zones with a high frequency of juvenile catches, in order to recommend temporary closures of these zones to PRODUCE, **which is responsible for establishing the closure**".

A.1.2

- The frequency of the hydroacoustic cruise was updated according to the data provided.

A.2.3

- Information of landings used for establishing of LMTCP for the second fishing season was maintained.

A.2.4

- Information of the international scientific auditories was added. It would be great having the source of this information as well.

A.3.1

- Salvamares program was added to this clause.

C.1.1

- I just referred to Chile here as the common name of the species. Chile landings are out of the scope of the assessment.

Peer reviewers should review the fishery assessment report with the primary objective of answering the key questions listed in the table below. When the situation is more complicated, reviewers may answer "See Notes" instead.

1. Has the fishery assessment been fully completed, using the recognised MarinTrust fishery assessment methodology and associated guidance?	Yes
2. Does the Species Categorisation section of the report reflect the best current understanding of the catch composition of the fishery?	Yes
3. Are the scores in the following sections accurate (i.e. do the scores reflect the evidence provided)?	Yes
Section M - Management	Yes
Category A Species	Yes
Category B Species	n/a
Category C Species	Yes
Category D Species	Yes
Section E – Ecosystem Impacts	Yes

Detailed Peer Review Justification

Peer reviewers should provide support for their answers in the boxes provided, by referring to specific scoring issues and any relevant documentation as appropriate.
Detailed justifications are only required where answers given are one of the 'No' options. In other (Yes) cases, either confirm 'scoring agreed' or identify any places where weak rationales could be strengthened (without any implications for the scores).
Boxes may be extended if more space is required.

1. Is the scoring of the fishery consistent with the MarinTrust requirements, and clearly based on the evidence presented in the assessment report?	Yes
Certification Body response	
No comments.	

2. Has the fishery assessment been fully completed, using the recognised MarinTrust fishery assessment methodology and associated guidance?	Yes
Certification Body response	
No comments	

3. Does the species categorisation section of the report reflect the best current understanding of the catch composition of the fishery?	Yes
Certification Body response	
No comments	

3a. Are the “Category A Species” scores clearly justified?	Yes
Certification Body response	
No comments	

3b. Are the “Category B Species” scores clearly justified?	n/a
Certification Body response	
N/A	

3c. Are the “Category C Species” scores clearly justified?	Yes
Certification Body response	
No comments	

3d. Are the “Category D Species” scores clearly justified?	Yes
Certification Body response	
No comments	

Are the scores in "Section E – Ecosystem Impacts" clearly justified?	Yes

In clause E1.2 it is stated that:

- "The private onboard observer program reported a total of total of 70,670 bird and 7,600 mammal interactions in the second 2022 fishery season, with 99.52% of indirect interaction, 0.48% of direct interaction and 0.14% of mortality for birds and 0.17% for mammals etc". Salvamares is an excellent example of what the industry can achieve by stimulating and training fishermen in the collection of quality data that can even be used in the assessment of ETP species.

In clause E1.3 it is stated that:

- "IMARPE has a department called the Office of Research on Superior Predators". Top predators instead "superior predators".

In clause E2.3 it is stated that:

- "These designated areas encompass the "Paracas National Reserve", the "Guano Islands and Capes National Reserve" and the "San Fernando National Reserve". Regarding the National Reserve of Paracas (RNP) there is a controversy: according to environmental laws in Peru, a national reserve can be created but permitting economic activities which existed before the creation of the reserve. This is the case on industry fishing, but SERNANP (the national authority of reserves) is demanding to cease the industrial fishing in despite of it being occurring out of the first five nautical miles exclusion zone, and inside the "area of direct use". At the moment the legal dispute is being discussed in the Constitutional Tribunal.

In clause E3.1 it is stated that:

- "IMARPE has attempted to quantify the needs of the HLCME ecosystem and the species which rely on anchovy (IMARPE, 2020)". Very specifically IMARPE demonstrated with depletion experiments varying levels of fishing mortality of adult Peruvian anchovy Northern-Central stock, using two ecosystem models (without and with environmental forcing), indicated that at the status quo fishing mortality (F = 0.784) and level of anchovy depletion (around 19 % B0), does not impact the abundance levels of more than 15 % of the other species and trophic groups by more than 40%, and also does not reduce the abundance level of any other species or trophic group by more than 70 %. This achievement makes the fishery a candidate to also obtain the MSC certification.

Certification Body response

E.1.3
The name of the office was corrected.
E.2.3
Interesting to keep on eye on the result of the dispute.
No changes in the text were required for the other cited clauses.

Optional: General peer reviewer comments on the draft report
Certification Body response
No comments.