



MarinTrust Standard V2

Whole fish Fishery Assessment Report Template

MarinTrust Programme

Unit C, Printworks

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Table 1 Application details and summary of the assessment outcome

Application details and summary of the assessment outcome			
Name:			
Address:			
Country: Chile		Zip:	
Tel. No.		Fax. No.	
Email address:		Applicant Code	
Key Contact:		Title:	
Certification Body Details			
Name of Certification Body:		Global Trust Certification	
Assessor Name	CB Peer Reviewer	Assessment Days	Initial/Surveillance/ Re-approval
Virginia Polonio	Vito Romito	3	Surveillance 2
Assessment Period	To June 2021		
Scope Details			
Management Authority (Country/State)		SUBPESCA & SERNAPESCA, Chile EEZ; SPRFMO International Water	
Main Species		Chilean Jack Mackerel, <i>Trachurus murphyi</i>	
Fishery Location		FAO 87Pacific Southeast Chile EEZ regions XV-X	
Gear Type(s)		Purse seine	
Outcome of Assessment			
Overall Outcome		Pass	
Clauses Failed		None	
CB Peer Review Evaluation		Pass	
Fishery Assessment Peer Review Group Evaluation		Approve Appendix 1	
Recommendation		APPROVED	

Table 2. Assessment Determination

Assessment Determination
<p>If any species is categorised as Endangered or Critically Endangered on IUCN’s Red List, or if it appears in the CITES appendices, it cannot be approved for use as Marin Trust raw material. Chilean jack mackerel (<i>Trachurus murphy</i>) do not appear as Endangered or Critically Endangered on IUCN’s Red List, nor does it appear in CITES; Pacific Chub mackerel, <i>Scomber japonicus</i> and Blue fathead Pez medusa <i>Cubiceps caeruleus</i>; are currently listed as species of least concern on the IUCN website; Snoek, <i>Thysites atun</i> is currently not listed on the IUCN website. Therefore, the all the species are eligible for approval for use as Marin Trust whole fish raw material.</p> <p>The Northern Chile fishery (XV-II) is mostly within the Chilean EEZ; while the Central-Southern fishery (III-X) is within the Chilean EEZ and also straddles international waters. The Central-Southern fishery is used mainly for the reduction fishery for Chilean Jack mackerel.</p> <p>The Subsecretaria de Pesca (Undersecretariat of Fisheries, SUBPESCA or SSP); positioned within the Chilean Ministry (MINECOM) provide policy settings and regulatory framework for domestic management of the sector. The Instituto de Fomento Pesquero (Fisheries Development Institute, IFOP) is the research arm; providing scientific advice to SUBPESCA on fisheries and aquaculture issues. International management is coordinated by the South Pacific Regional Fisheries Management Organisation (SPRFMO).</p> <p>In 2013, Chile introduced a new Law which consented to adopt SPRFMO established Total Allowable Catch (TAC) limits and Conservation and Management Measures (CMM) within the Chilean EEZ and establish fixed quotas for industrial and artisanal fleets for 20 years.</p> <p>In Chile all catches are reported in logbooks and in catch and effort landing returns. On-board observer coverage contributes to monitoring, cross checking and verification of catches and landings with vessels logbooks. Industrial vessels operate under mandatory VMS monitoring. SERNAPESCA Inspectors carry out audits of capture fisheries during landings (including accurate weigh outs); implementing surveillance and control of compliance in ports. Video camera recording has been also installed in 2020 to control the discard in the fishery.</p> <p>In the last stock assessment, the estimated biomass of Jack Mackerel in the southeast Pacific increased from 2019 to 2020 and is now estimated to be above the interim BMSY. Therefore, the SC noted that Jack mackerel has been rebuilt to the third tier of the harvest control rule within which catches should be limited to a fishing mortality of FMSY. This would be expected to result in catches in 2021 just below 1,500 kt. However, according to the accepted rebuilding plan (“Adjusted Annex K”, SC8- DOC 26) a maximum change in the catch limit of 15% applies. Hence the SC recommended a 15% increase in 2021 catches throughout the range of Jack mackerel to a level at or below 782 kt.</p> <p>Chilean Jack mackerel, <i>Trachurus murphyi</i> is approved for the production of fishmeal and fish oil under the Marin Trust v 2.0 whole fish standard.</p> <p>Further, the non-target species assessed under category D have passed the PSA and therefore, Pacific Chub mackerel- Caballa, <i>Scomber japonicus</i> Blue fathead- Pez medusa, <i>Cubiceps caeruleus</i>; and Snoek- Sierra, <i>Thysites atun</i> are also approved for the production of fishmeal and fish oil under the Marin Trust v 2.0 whole fish standard.</p>
Fishery Assessment Peer Review Comments
<p>The peer reviewer agrees with the findings of this report and recommends approval of the Chilean Jack mackerel, <i>Trachurus murphyi</i> fishery for the production of fishmeal and fish oil under the Marin Trust v 2.0 whole fish standard.</p>

Notes for On-site Auditor

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Table 3 General Results

General Clause	Outcome (Pass/Fail)
M1 - Management Framework	PASS
M2 - Surveillance, Control and Enforcement	PASS
F1 - Impacts on ETP Species	PASS
F2 - Impacts on Habitats	PASS
F3 - Ecosystem Impacts	PASS

Table 4 Species- Specific Results

List all Category A and B species. List approximate total percentage (%) of landings which are Category C and D species; these do not need to be individually named here

Category	Species	% landings	Outcome (Pass/Fail)	
			A1	Pass
Category A	Chilean Jack mackerel <i>Trachurus murphyi</i> III-X	98%	A2	Pass
			A3	Pass
			A4	Pass
Category D	Pacific Chub mackerel - Caballa (<i>Scomber japonicus</i>);	<2%	Pass	
Category D	Blue fathead - Pez medusa (<i>Cubiceps caeruleus</i>)	<2%	Pass	
Category D	Snoek - Sierra (<i>Thyrsites atun</i>)	<2%	Pass	

Table 5 Species Categorisation Table

Common name	Latin name	Stock	IUCN Redlist Category ¹	% of landings	Management	A
Chilean Jack mackerel Jurel	<i>Trachurus murphyi</i>	Chile XV-X SPRFMO Convention Area		98%	MINECON	D
Pacific Chub mackerel Caballa	<i>Scomber japonicus</i>	Chile XV-X		1%	MINECON	D
Blue fathead Pez medusa	<i>Cubiceps caeruleus</i>	Chile XV-X		<1%	MINECON	D
Snoek Sierra	<i>Thyrsites atun</i>	Chile XV-X		<1%	MINECON	A
Species categorisation rationale						
<p>The species categorisation has been done following the Marin trust criteria to classify the species. As the report is a surveillance report, the assessment team has not got any relevant change in the catch composition and the approach followed in the initial assessment and surveillance 1 has been taken for this report.</p> <p>Further, the assessment team has reviewed the MSC report for this fishery to double check the species assessed in the MSC report (https://fisheries.msc.org/en/fisheries/chilean-jack-mackerel-industrial-purse-seine-fishery/@@view)</p>						

¹ <https://www.iucnredlist.org/>

MANAGEMENT

The two clauses in this section (M1, M2) relate to the general management regime applied to the fishery under assessment. The clauses should be completed by providing sufficient evidence to justify awarding each of the requirements a pass or fail rating. A fishery must meet all the minimum requirements in every clause before it can be recommended for approval.

M1	Management Framework – Minimum Requirements	
M1.1	There is an organisation responsible for managing the fishery.	Yes
M1.2	There is an organisation responsible for collecting data and assessing the fishery.	Yes
M1.3	Fishery management organisations are publicly committed to sustainability.	Yes
M1.4	Fishery management organisations are legally empowered to take management actions.	Yes
M1.5	There is a consultation process through which fishery stakeholders are engaged in decision-making.	Yes
M1.6	The decision-making process is transparent, with processes and results publicly available.	Yes
Clause outcome:		PASS

M1.1 There is an organisation responsible for managing the fishery.

MINECON:

Actions of Chile's Ministry of Economy, Development and Tourism (MINECON) involve promoting the development of the fisheries sector, along with the protection, conservation, and full use of resources and the marine environment. Chile's institutional structure governing the fisheries sector centres around three key organisations, with several other institutions providing additional research and enforcement:

- The Subsecretaria de Pesca (Undersecretariat of Fisheries, SUBPESCA or SSP); positioned within MINECON; is tasked with the objectives of regulating and managing fishing and aquaculture activity, through policies, regulations and administration measures, under a precautionary and ecosystem approach that promotes the conservation and sustainability of hydrobiological resources for the productive development of the sector.
- The Servicio Nacional de Pesca (National Fisheries Service, SERNAPESCA) is also based within MINECON. Responsible for executing fisheries policy through enforcement, and monitoring operators' activities, catches and quotas.
- The Instituto de Fomento Pesquero (Fisheries Development Institute, IFOP) is the research arm of the institutional framework and the primary source of scientific advice to SUBPESCA.

Fisheries Management Committee (FMC):

Management Committees are composed of SUBPESCA and SERNAPESCA members, artisanal and industrial fishermen and the processing industry. The Chilean Jack mackerel Fishery Management Committee (FMC) is one of 16 current FMCs (there are also 20 algae and invertebrates Committees). The report of the last meeting is posted on SUBPESCA website.²

National Fisheries Council:

A National Fisheries Council; created by the Fisheries and aquaculture Law LGPA No. 18.892, ensures the participation of all stakeholders in the fisheries and aquaculture sector. The Chilean jack mackerel stock is managed as a single stock from Arica and Parinacota (AyP) in the North (XV) to Los Lagos in the Central/South (X). Regional Government Areas in Chile corresponding to fishery management units have been defined (Figure 1). There have not been any change since the last surveillance and the assessment area is still the same.

International management of Chilean Jack mackerel is coordinated by the South Pacific Regional Fisheries Management Organisation (SPRFMO)³. Overall, Biological Acceptable Catches (BACs) are agreed for the species, with a part under Conservation and Management Measures (CMMs) applying to international waters outside Chile's EEZ.

² <https://www.subpesca.cl/portal/616/w3-propertyvalue-51143.html#collapse03>

³ <https://www.sprfmo.int/about/>

M1.2 There is an organisation responsible for collecting data and assessing the fishery.

Instituto de Fomento Pesquero (IFOP):

IFOP is the organization responsible for sampling stocks and carrying out annual acoustic surveys⁴. IFOP is a non-profit organisation created in 1964 under a joint agreement between the Chilean government, the FAO, and the UN Development Program (UNDP). IFOP's public role is to support sustainable development of Chile's fishing sector.

Instituto de Investigación Pesquera (INPESCA):

INPESCA is a privately funded organisation which undertakes scientific studies in many areas, including fisheries research. INPESCA is a private institution that since its creation in 1989, has carried out its activities as an intermediary body between the regional fishing industry and state and university institutions that are dedicated to research in fishery resources⁵. INPESCA currently has a team of 60 staff which includes researchers, technicians and administrators.

Scientific and Technical Committees:

The Chilean Jack mackerel Scientific and Technical Committee (Comité Científico Técnico de Pesquerías de Pequeños Pelágicos Jurel, CCT-PP) currently has 12 members (and one vacancy). The committee is made up of 5 institutional members (IFOP and SUBPESCA), 2 non-voting members and 6 members nominated through public contest (including three current vacancies)⁶. The CCT-PP analyse updates on stock status and catch projections provided by IFOP Scientists and make official recommendations on harvest controls to the Competent Authorities in SUBPESCA. These recommendations are termed Biologically Acceptable Catches (BAC, CBA in Spanish). BACs are set up annually following scientist recommendations and data from historical series and biannual surveys. BACs are divided into three categories: research, industrial and artisanal. The number of commercial landings permitted are subject to change depending on survey results.

South Pacific Regional Fisheries Management Organisation (SPRFMO):

International management of Chilean Jack mackerel is coordinated by the South Pacific Regional Fisheries Management Organisation (SPRFMO). Overall BACs are agreed for the species, with a part under Conservation and Management Measures (CMMs) applying to international waters outside Chile's EEZ within SPRFMO's Convention Area.

SONAPESCA

Sociedad Nacional de Pesca (SONAPESCA) (<http://www.sonapesca.cl>) represent the client group which are named on the current MSC Fisheries Certificate for the Chilean Jack mackerel fishery (Unit of Certification III-X). Representatives of SONAPESCA take part in FMC Meetings.

M1.3 Fishery management organisations are publicly committed to sustainability.

As laid down in the LGPA (see M1.4) one of the main objectives of the Act is to guarantee sustainability of Chile's marine resources. Long term management plans, which reference the Act, ensure rules are in place to achieve this objective. MINECON's mission statement, available on their website, is to generate feasible and sustainable development, with stable progressive equality in the allocation of economic interests.

M1.4 Fishery management organisations are legally empowered to take management actions.

Legal instruments:

Adopted in 2013, the primary legal instrument for fisheries management in Chile has been la Ley General de Pesca y Acuicultura (LGPA) No. 20.6577. The LGPA is a modification of previous fisheries legislation, and includes:

- Commitments convened to manage the sustainable use and conservation of marine resources.
- Commitments convened to make key decisions on conservation measures based on scientific information above all other considerations. Recommendations of CCT-PP's have been made mandatory for all stakeholders.

The LGPA also includes commitments to develop management plans for any fishery with restricted access, and to review and update these plans every five years. The last Jack mackerel management plan was published in December 2018. Article 5 of

⁴ <https://www.ifop.cl/en/quienes-somos/plan-estrategico/>

⁵ <https://www.geofisica.udec.cl/mundo-laboral/instituto-de-investigacion-pesquera-inpesca/>

⁶ <http://www.subpesca.cl/portal/616/w3-propertyvalue-51143.html#collapse00>

⁷ <https://www.leychile.cl/Navegar?idNorma=1048776>

⁸ http://anfitrion.cl/GobiernoTransparente/pesca/res_ne.html

the LGPA states that SUBPESCA should determine Biological Reference Points (BRPs) for all targeted stocks. Biologically Acceptable Catches (BACs) and resource recovery plans are implemented under Article 9.

SUBPESCA resolution No 291/20159 states that all stocks should be exploited around MSY, and that MSY is the objective to be considered when quotas are established. The LGPA does not legislate for catch restrictions when stocks are below limit biomass. Fisheries are not closed below this limit for social and economic reasons, and in order to monitor the recovery of the resource according to recovery plans. Recovery plans imply reductions in fishing mortality at levels below or equal to FMSY according to the expected time of recovery established by Management Committees.

M1.5 There is a consultation process through which fishery stakeholders are engaged in decision-making.

Management Plans set lines of action to address biological, economic, social and ecological matters. There is consultation and evaluation of a series of harvest control rules and definitions of robust rules to allow viable mixed fisheries. Minutes of these and other CCT-PP meetings are published on relevant websites. The decision-making process of the jack mackerel fishery for the adoption of management measures and strategies to achieve the specific objectives of the fishery, are expressly defined both in the Chilean fishing law, as well as, in the standards established by the SPRFMO Convention.

M1.6 The decision-making process is transparent, with processes and results publicly available.

Stock-recruitment and spawning periods are closely monitored by IFOP, per region. Results of acoustic surveys are published in monthly bulletins (Informes) which also contain details of closed seasons by area and general information on stock status. Regulations on quota swaps between different fleet sectors and quota distribution through fishing regions are also made available online¹⁰. The system is transparent; all information is available in official websites.

References

- <https://www.ifop.cl/en/quienes-somos/plan-estrategico/>
- <https://www.geofisica.udec.cl/mundo-laboral/instituto-de-investigacion-pesquera-inpesca/>
- <http://www.subpesca.cl/portal/616/w3-propertyvalue-51143.html#collapse00>
- <https://www.leychile.cl/Navegar?idNorma=1048776>
- http://anfitrion.cl/GobiernoTransparente/pesca/res_ne.html

Links

MARINTRUST Standard clause	1.3.1.1, 1.3.1.2
FAO CCRF	7.2, 7.3.1, 7.4.4, 12.3
GSSI	D.1.01, D.4.01, D2.01, D1.07, D1.04,

⁹ <http://www.subpesca.cl/portal/615/w3-article-86859.html>

¹⁰ http://anfitrion.cl/GobiernoTransparente/pesca/res_ne.html

M2 Surveillance, Control and Enforcement - Minimum Requirements		
M2.1	There is an organisation responsible for monitoring compliance with fishery laws and regulations.	Yes
M2.2	There is a framework of sanctions which are applied when laws and regulations are discovered to have been broken.	Yes
M2.3	There is no substantial evidence of widespread non-compliance in the fishery, and no substantial evidence of IUU fishing.	Yes
M2.4	Compliance with laws and regulations is actively monitored, through a regime which may include at-sea and portside inspections, observer programmes, and VMS.	Yes
Clause outcome:		PASS
<p>M2.1 There is an organisation responsible for monitoring compliance with fishery laws and regulations. Compliance both within and outside Chile’s EEZ is monitored by a number of different entities:</p> <ul style="list-style-type: none"> • SERNAPESCA: <ol style="list-style-type: none"> I. Carry out audits of capture fisheries; implement surveillance and control of compliance with all legal provisions relating to fisheries. II. Health and environmental monitoring of aquaculture. Develop strategies and procedures for prevention, surveillance and control of high-risk diseases. III. Information and sectoral statistics. Managing fisheries and aquaculture records. • Chilean Navy: Within Chile’s Exclusive Economic Zone (EEZ) the Navy monitor an area covering approximately 4,542,990 km² helping to ensure the prevention of depredation of natural resources by protecting the ecosystem from unauthorized activities. • Observer Programme: Within the Convention Area until SPRFMO adopts an Observer Programme, in accordance with Article 28 of the Convention, all Members and CNCP’s (Co-operating Non-Contracting Parties) participating in the fishery are required to ensure a minimum of 10% scientific observer coverage of trips for vessels flying their flag and ensure that such observers collect and report data to the Competent Authority. • Video camera recording: The use of video cameras has been implemented since January 2020. The recording of the images is inspected by SERNAPESCA and every haul has to be recorded. There have been several regulations implemented in the last year to define the procedures for the use of these devices. Resolution No. 3,227 of 2019: according to the type of fishing, the disks used in these device need to have the capacity to store the images for 1 month of fishing trips. SERNAPESCA collects the hardwares when the storage capacity is 75% or once a month. Jack mackerel purse seine vessels must have 3 image recording cameras in operation, in order to cover all possible ways of discarding. <p>Further, SPRFMO Conservation and Management Measures (CMM) compliance is documented yearly. The last report was published in 2021 (CMM 01-2021). This report notes some objectives to rebuild the stock above the interim BMSY such as ensuring that a candidate management procedure provides a spawning biomass greater than Bmsy with 50% probability in 2030 and is above Blim (point to avoid, taken to be the value in 2010) with 95% probability over the period 2025-2040.</p> <p>M2.2 There is a framework of sanctions which are applied when laws and regulations are discovered to have been broken. Infractions, Penalties and Procedures are set out under “Title IX” in the LGPA (2013). Article 108 sets out measures that can be applied. They include administrative and judicial sanctions, examples include:</p> <ul style="list-style-type: none"> • Fines; • Suspension or removal of the Captains licence • Removal of quota; • Seizure of gear and means of transporting gear; • Confiscation of catch and fines in multiples above the value of the confiscated fish; 		

- Additional penalties, e.g. doubling of fines, extended periods of sanctioning, if an offence is committed within 2 years of an initial offence;
- Closure of fishing and processing facilities.

Regarding the infractions detected in the jack mackerel Fishery and according to what was reported by the National Fisheries Service, there were 11 infractions reported to the court during 2020. All of them due to non-compliance with accreditation of the legal origin of jack mackerel.

M2.3 There is no substantial evidence of widespread non-compliance in the fishery, and no substantial evidence of IUU fishing.

Landings are recorded in the logbook when fishing in Chile EEZ and landings reports are controlled and monitored by SERNAPESCA. Further, Combating IUU fishing is an important objective of the SPRFMO as is reflected in numerous articles of its Convention, in particular Articles 8, 23, 24, 25, 27 and 31. According to Article 27, the Commission is tasked with addressing IUU fishing activities and adopting appropriate measures to prevent, deter and eliminate IUU fishing, such as the development of an IUU vessel list, so that owners and operators of vessels engaging in such activities are deprived of the benefits accruing from those activities. In the COMM 8 – Report ANNEX 5 2020 SPRFMO IUU Vessel List the only vessel listed was Bellator and it was caught fishing in the SPRFMO Convention Area without authorisation (air photographs from New Zealand) and prolonged unauthorised presence in the SPRFMO Area (evidence from Chile)¹¹. In the COMM 9 The CTC Chairperson confirmed that the Provisional IUU Vessel List contains no vessels. The CTC Chairperson Wright noted that CTC did not recommend any changes to the current IUU Vessel list, with one vessel (BELLATOR) remaining listed. The Commission considered further information provided by Angola with respect to the BELLATOR and agreed to remove it from the Current SPRFMO IUU Vessel List. Therefore, the Commission adopted its 2021 Final IUU List (Annex 6b) containing no vessels.

M2.4 Compliance with laws and regulations is actively monitored, through a regime which may include at-sea and portside inspections, observer programmes, and VMS.

In Chile all catches are reported in logbooks and in catch and effort landing returns. On-board observer coverage (minimum 10% of trips for trawlers and purse seiners flying their flag) contributes to monitoring, cross checking and verification of catches and landings with vessels logbooks. Industrial vessels operate under mandatory VMS monitoring. SERNAPESCA Inspectors carry out audits of capture fisheries during landings (including accurate weigh outs); implementing surveillance and control of compliance in ports. Within their EEZ the Chilean Navy monitor an area covering approximately 4,542,990. Km². Further, from January 2020 the video cameras devices were implemented, and their use is mandatory for all the industrial vessels.

Resolution No. 3,227 of 2019 states that according to the type of fishing, the disks used in these device need to have the capacity to store the images for 1 month of fishing trips. SERNAPESCA collects the hardwares when the storage capacity is 75% or once a month. Jack mackerel purse seine vessels must have 3 image recording cameras in operation, in order to cover all possible ways of discarding.

References

- SPRFMO (2021). 9 th SPRFMO Commission Meeting Report. 17 p. Wellington, New Zealand 2021.
- SPRFMO (2020). 8th Scientific Committee meeting report. 76 p. Wellington, New Zealand 2020
- Chile annual report SPRFMO -scientific committee Jack mackerel (*Trachurus murphyi*) September, 2020

Links

MARINTRUST Standard clause	1.3.1.3
FAO CCRF	7.7.2
GSSI	D1.09

¹¹ [Annex-5-SPRFMO-2020-IUU-Vessel-List.pdf](#)

CATEGORY A SPECIES

The four clauses in this section apply to Category A species. Clauses A1 - A4 should be completed for **each** Category A species. If there are no Category A species in the fishery under assessment, this section can be deleted. A Category A species must meet the minimum requirements of all four clauses before it can be recommended for approval. The clauses should be completed by providing sufficient evidence to justify awarding each of the requirements a pass or fail rating. The species must achieve a pass rating against all requirements to be awarded a pass overall. **If the species fails any of these clauses it should be re-assessed as a Category B species.**

Species Name		Jack Mackerel, <i>Trachurus murphyi</i>	
A1	Data Collection - Minimum Requirements		
	A1.1	Landings data are collected such that the fishery-wide removals of this species are known.	Yes
	A1.2	Sufficient additional information is collected to enable an indication of stock status to be estimated.	Yes
Clause outcome:			PASS

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

Landings data are collected such that the fishery-wide removals of this species are known. During the first half of 2020, 523,139 metric tons of Jack mackerel were caught in the Chilean EEZ. This value exceeds the national TAC and is explained by transfers from other fishing nations

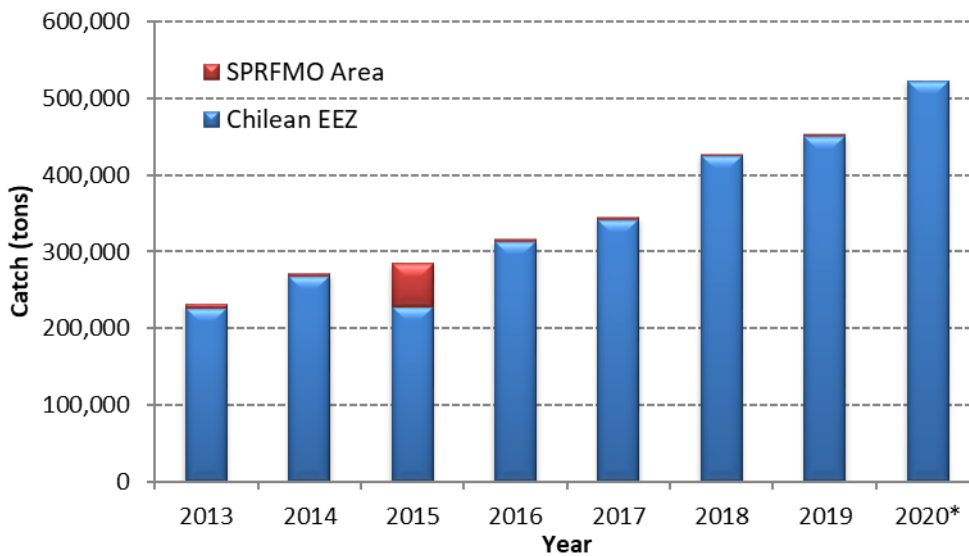


Figure 1. Total annual jack mackerel catch within the Chilean EEZ and the SPRFMO area with purse seine nets for the period 2013 – June 2020. Source: SPRFMO SC8-Doc26

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

Biological information is obtained on a regular basis from samples collected along the Chilean coast for Jack mackerel and its associated species. Sampling is conducted on a daily basis, mainly at landing sites and processing plants, and is also complemented with information gathered by scientific observers on board fishing vessels. Information collected includes fork length measurements, otolith collection, total weight, gutted weight, gonad weight, and sex and maturity stages. The amount of size and biological samples obtained for jack mackerel during 2019 was 45,295 and 13,943 specimens, respectively. For the industrial fleet, samples included at-sea sampling as well as port sampling, covering the whole range of activity reported for this fishery in Chile. The main landing ports were Caldera and Coquimbo in the northern area Talcahuano, Valdivia and San Antonio in the center-south area of the fishery

There are two different acoustic surveys in the area;

- Hydroacoustic assessment of jack mackerel between Arica-Parinacota and Valparaíso Regions, 2020. This research survey took place from March 17th through April 27th 2020, and included an exploration area located between the northern boundary of the country, Arica (18°22'SL) and Valparaíso (33° 00' SL) in perpendicular transects to the coast,

reaching up to 100nm off the coast. As a result, the estimated jack mackerel biomass in the prospection area was 1,728,532 tons; which represents an increase of 16.3% compared to the survey of 2019.

- Hydroacoustic assessment of jack mackerel between Valparaíso and Los Lagos Regions, 2020. This research survey took place from June 27th through July 19th 2020, and included an exploration area located between the northern boundary of Valparaíso (32° 44' SL) and Corral (40° 00' SL), in perpendicular transects to the coast, reaching up to 330nm off the coast. As a result, the estimated jack mackerel biomass in the prospection area was 1,548,640 tons; which represents an increase compared to the last survey carried out in 2017.

References

8th MEETING OF THE SCIENTIFIC COMMITTEE New Zealand, 3 to 8 October 2020. SC8-Doc26. Chile Annual Report 2020 Jack mackerel. <https://www.sprfmo.int/meetings/scientific-committee/8th-sc-2020/>

Links

MARINTRUST Standard clause	1.3.2.1.1, 1.3.2.1.2, 1.3.2.1.4, 1.3.1.2
FAO CCRF	7.3.1, 12.3
GSSI	D.4.01, D.5.01, D.6.02, D.3.14

A2 Stock Assessment - Minimum Requirements		
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.	Yes
A2.2	The assessment provides an estimate of the status of the biological stock relative to a reference point or proxy.	Yes
A2.3	The assessment provides an indication of the volume of fishery removals which is appropriate for the current stock status.	Yes
A2.4	The assessment is subject to internal or external peer review.	Yes
A2.5	The assessment is made publicly available.	Yes
Clause outcome:		PASS

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.

On the 8th SC- SPFRMO meeting a statistical catch at age model was used to determine and update the Jack mackerel stock status. The model of joint evaluation of horse mackerel used in the SC SPFRMO for the evaluation of the stock of Jack mackerel in the southeast Pacific, corresponds to a statistical catch at age model that allows, to use the catch at age or size for various fleets and explicitly incorporate regime changes in the productivity of the population. The model consists of 4 components: (i) population dynamics, (ii) exploitation rates, (iii) observational models for data, and (iv) parameter estimation procedure. Fishery removals are considered in the stock assessment as it shown in the table below. (Table 1).

Table 1. Total annual Jack mackerel catch within the Chilean EEZ and the SPRFMO area with purse seine nets for the period 2013 – June 2020 (*) preliminary. Source: SC8-Doc26

Year	Chilean Jack Mackerel (t)		
	Chilean EEZ	SPRFMO Area	Total
2013	225,443	5,917	231,360
2014	267,615	3,983	271,598
2015	228,409	56,805	285,214
2016	313,403	3,159	316,562
2017	341,572	3,173	344,745
2018	425,426	975	426,401
2019	451,287	2,283	453,570
2020*	523,139	0	523,139

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

The BPR referred to MSY is calculated in the JJM evaluation model (used by the SC-SPFRMO) under a dynamic approach, that is, integrating the variations of the operating patterns, the average weights for the estimation of a maximum yield in equilibrium and the assumption that the stock recruit ratio is determined by a level of slope "steepness" $h=0.65$. Under this approach and in accordance with the provisions of the CCT-J Report N°01/2015, embodied in Res. Ex. No. 291 of 2015, the BRP estimate must be updated each year. The estimated BRPs for the year 2020, consistent with the methods implemented by the JJM model are as follows:

Table 2. Reference points defined for Jack Mackerel.

FMSY	BMSY 1000 t.	Blim 1000 t
0,13	4.583	1.146

It should be noted that the SC-SPFRMO to establish the status considers the BRP equal to the FMSY using as proxy of the SSBMSY the value of 5.5 million tons. It becomes important to note that for status purposes, the BRP equal SSBMSY does not change in this case the status definition.

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

Total catch quota In December each year, the Undersecretariat for Fisheries and Aquaculture establishes the catch quotas for each resource in full exploitation regimes to be implemented next year. The Jack mackerel quota established by the Undersecretariat for Fisheries and Aquaculture in December 2019 was 439,034 tons (Exempt Decree N° 275/2019) and completely extracted in the first half of 2020. Therefore, each year a TAC is defined to ensure that the Jack mackerel removals comply with the latest scientific advice (Figure 1 and Table 1)

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

In Chile stock assessments and the management approach used in the fishery undergo detailed peer reviews through Fisheries Management Committee meetings. These reviews can be considered both internal and external as members of committees' present may also be outside the assessment process. Both IFOP and SUBPESCA have also commissioned external peer reviews, for example, a series of workshops were convened with experts from Peru. The Chilean authorities have also invited international experts to evaluate their setting of biological reference points within the MSY framework. Further, the Convention entered into force in August 2012 and the first meeting of the Commission was held in January 2013. In January 2018, at its sixth annual meeting, the SPRFMO Commission adopted Decision 06-2018, which establishes a process to establish a Panel Review. The criteria for the review, a timeline for the process, and the terms of reference that will guide the Panel's evaluation are defined in the process.

The Panel was to be comprised of four independent international experts, two of whom were from SPRFMO members and two international experts outside of SPRFMO.

The panel was formed by the expert members of SPRFMO; Dr. Penelope Ridings, from New Zealand (Chair of the panel) and Professor Stuart Kaye, from Australia and the external Experts, Ms. Alexa Cole, from the United States and Ms. Lyn Goldsworthy, from Australia.

The final report of the review panel, "Report of The South Pacific Regional Fisheries Management Organization Performance Review Panel" from December 2018 and its conclusions and recommendations, were presented to the seventh meeting of the Commission in January 2019.

A2.5 The assessment is made publicly available.

Reports of stock assessments and advice on BAC's can be found on IFOP, SUBPESCA, and SPRFMO websites. ACTAS published on SUBPESCA's website give summaries of the stock assessment process and confirm final decisions on BAC's. Stock-recruitment and spawning periods are closely monitored by IFOP and published in monthly bulletins (INFORMES) which also contain details of closed seasons by area and general information on current stock status. All the information is available.

References

SPRFMO (2021). 9 th SPRFMO Commission Meeting Report. 17 p. Wellington, New Zealand 2021.

8th MEETING OF THE SCIENTIFIC COMMITTEE New Zealand, 3 to 8 October 2020 SC8-Doc26 Chile Annual Report 2020 Jack mackerel Chile.

Links

MARINTRUST Standard clause	1.3.2.1.2, 1.3.2.1.4, 1.3.1.2
FAO CCRF	12.3
GSSI	D.5.01, D.6.02, D.3.14

A3	Harvest Strategy - Minimum Requirements		
	A3.1	There is a mechanism in place by which total fishing mortality of this species is restricted.	Yes
	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.	Yes
	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).	Yes
		Clause outcome:	PASS

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

The Biological Allowable Catch (BAC) is set up every year following scientist recommendations and data from historical series of data and biannual surveys. BAC's are divided into three categories: research, industrial and artisanal. The number of commercial landings permitted are subject to change depending on survey results. Normally BAC's are set up for two fishing seasons, effort may be controlled depending on the period of the year.

By Chilean Law (LGPA Law No. 20.657) recommendations are provided as a range with the lower limit as 20% of actual recommendations. Annual temporal closures protect spawning stock and juveniles. These closures are mobile and depend on monitoring of biological indicators. A minimum landing size of 26 cm fork length is in force. The percentage of juveniles in number from each landing or transport that are less than 26 cm fork length is 35%. New entrants to the fishery are prohibited. A plan to reduce discarding and accidental by-catch in the fishery is underway.

For adequate management of Jack mackerel over its range the SPRFMO has requested in 2020 the update of the management procedure for Jack mackerel used to control total fishing mortality. This work has begun (via contract within the EU) and comprises a new Management Strategy Evaluation (MSE)¹².

A first step in developing this evaluation is to reconsider the Commission's overarching management objectives. Presently, the harvest control rule is designed to be precautionary with a primary objective to rebuild the stock to above the interim Bmsy (5.5 million t) level. Since this objective is presently estimated to have been achieved, the SPRFMO advised the analysts could start with an overarching specification that:

¹² <https://www.sprfmo.int/assets/0-2020-Annual-Meeting/Reports/Annex-8b-JM-MSE-Management-Objectives.pdf>

Ensures that a candidate management procedure provides a spawning biomass greater than B_{msy} with 50% probability in 2030 and is above B_{lim} (point to avoid, taken to be the value in 2010) with 95% probability over the period 2025-2040.

Alternative management procedures shall be tuned (via testing within the simulation routines) so that these overarching objectives are met

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.

In December each year, the Chilean Undersecretariat for Fisheries and Aquaculture establishes the catch quotas for each resource in full exploitation regimes to be implemented next year. The jack mackerel quota established by the Undersecretariat for Fisheries and Aquaculture in December 2019, for the 2020 season, was 439.034 tonnes. From 2017 to 2019 the catches have not exceeded the TAC.

Year	TAC	Reported Catches
2017	286.534	277.991
2018	395.782	390.367
2019	405.032	403.600

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).

In the last stock assessment, the status of the stock has shown that the fishing mortality is below F_{MSY} and the SSB is above SSB_{MSY} . In Chile B_{lim} or a Proxy is used to inform management decisions rather than prohibit fishery removals. The Fisheries Act (LGPA) does not establish catch restrictions when stocks are below limit biomass (for social and economic reasons and to facilitate further research). Instead a resource recovery plan must be implemented. Management committees are required to elaborate and implement such recovery plans (Article 9 LGPA); implying reductions in fishing mortality at levels below or equal to FRMS.

Other management strategies include the obligatory use of vessel monitoring systems (VMS), temporal closures (SUBPESCA and IFOP recommendations) and the recent mandatory use of on-board cameras to identify and quantify discards.

IFOP produce outputs which indicate the level of risk associated with potential fishery management actions. IFOP consider a range of sources of uncertainty, e.g. variability in CPUE data, environmental factors, stock aggregation for habitat or reproduction and acoustic biomass estimation parameters. Life history parameters are also considered (growth, mortality and maturity) as is the process error inherent in the evaluation model and the short history of the fishery. Evidence has been provided that the precautionary approach is being taken in allocating BAC's and in controlling catches to be within scientific advice.

References

- SPRFMO (2021). 9 th SPRFMO Commission Meeting Report. 17 p. Wellington, New Zealand 2021.
- 8th MEETING OF THE SCIENTIFIC COMMITTEE New Zealand, 3 to 8 October 2020 SC8-Doc26 Chile Annual Report 2020 Jack mackerel Chile.

Standard clause 1.3.2.1.3

Links

Links	
MARINTRUST Standard clause	1.3.2.1.3, 1.3.2.1.4
FAO CCRF	7.2.1, 7.22 (e), 7.5.3
GSSI	D3.04, D6.01

A4	Stock Status - Minimum Requirements	
	A4.1	<p>The stock is at or above the target reference point, OR IF NOT:</p> <p>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:</p> <p>The stock is estimated to be below the limit reference point or proxy, but fishery removals are prohibited.</p>
Clause outcome:		PASS
<p>A4.1 The stock is at or above the target reference point:</p> <p>The estimated biomass of Jack Mackerel in the southeast Pacific increased from 2019 to 2020 and is now estimated to be above the interim BMSY. Therefore, the SC noted that Jack mackerel has been rebuilt to the third tier of the harvest control rule within which catches should be limited to a fishing mortality of FMSY. This would be expected to result in catches in 2021 just below 1,500 kt. However, according to the accepted rebuilding plan (“Adjusted Annex K”, SC8- DOC 26) a maximum change in the catch limit of 15% applies. Hence the SC recommended a 15% increase in 2021 catches throughout the range of Jack mackerel to a level at or below 782 kt.</p> <p>To summarize, the table below shows the current situation of the stock related to references points (Figure 2).</p>		

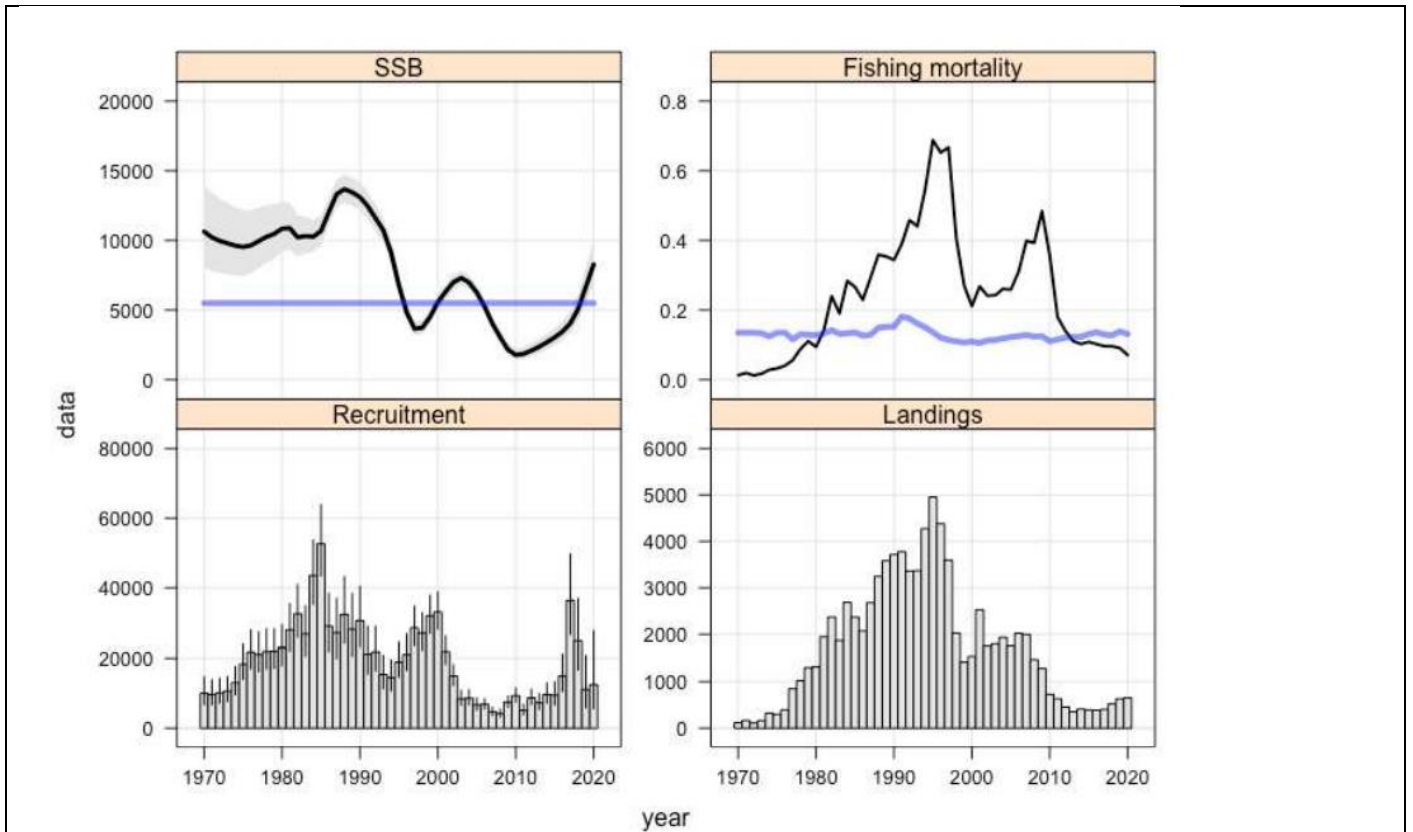


Figure 2. Model estimations for spawning biomass (kt; top left), recruitment at age of 1 year (million; bottom left), total fishing mortality (top right) and total catch (kt; bottom right). The blue lines represent the provisional SSB RMS PBR (top left, 5.5 million ton) and estimates FRMS dynamics (top right). Source: IFOP 2021

References

Convenio de Desempeño 2020 Estatus y posibilidades de explotación biológicamente sustentable de jurel nacional entre la Región de Arica y Parinacota a la Región de los Lagos, año 2021 Jurel, 2021 SUBSECRETARÍA DE ECONOMÍA Y EMT/Noviembre 2020.

Links

MARINTRUST Standard clause	1.3.2.1.4
FAO CCRF	7.2.1, 7.2.2 (e)
GSSI	D6 01

CATEGORY D SPECIES

Category D species are those which make up less than 5% of landings and are not subject to a species-specific management regime. In the case of mixed trawl fisheries, Category D species may make up the majority of landings. The comparative lack of scientific information on the status of the population of the species means that a risk-assessment style approach must be taken.

D1	Species Name	Pacific Chub mackerel (<i>Scomber japonicus</i>)	
	Productivity Attribute	Value	Score
	Average age at maturity (years)	2	2
	Average maximum age (years)	7.9	1
	Fecundity (eggs/spawning)	135,962 eggs	1
	Average maximum size (cm)	64	2
	Average size at maturity (cm)	22	1
	Reproductive strategy	Open water egg scatterer	1
	Mean trophic level	3.4	3
	Average Productivity Score		1.33
	Susceptibility Attribute	Value	Score
	Overlap of adult species range with fishery	Not scored	Not scored
	Distribution	Global distribution	1
	Habitat	Pelagic	1
	Depth range	50-200 m	2
	Selectivity	1 or 2 times mesh sizes	2
	Post-capture mortality	Mostly dead	3
	Average Susceptibility Score		1.8
	PSA Risk Rating (From Table D3)		PASS
	Compliance rating		PASS

References

North Pacific Fisheries Commission. 2021. NPFC Yearbook 2020. 139 pp. (Available at www.npfc.int)



Figure 1. Computer generated distribution maps for *Scomber japonicus* (Chub mackerel), with modelled year 2050 native range map based on IPCC RCP8.5 emissions scenario.

Scarponi, P., G. Coro, and P. Pagano. A collection of Aquamaps native layers in NetCDF format. Data in brief 17 (2018): 292-296.

<https://www.fishbase.se/Summary/SpeciesSummary.php?ID=117&AT=pacific+chub+mackerel>

Standard clauses 1.3.2.2

D1	Species Name:	Blue fathead (<i>Cubiceps caeruleus</i>)
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Productivity Attribute	Value	Score
Average age at maturity (years)*	1.1	1
Average maximum age (years)*	4.4	2
Fecundity (eggs/spawning)	<1000	3
Average maximum size (cm)	28.5	1
Average size at maturity (cm)*	18.1	1
Reproductive strategy	Egg scatterers	1
Mean trophic level	3.6	3
Average Productivity Score		1.71
Susceptibility Attribute	Value	Score
Overlap of adult species range with fishery Global distribution	<25%	1
Distribution		Not scored
Habitat		Not scored
Depth range Targeted by Pelagic Gear	20-250	1
Selectivity	Up to 4m	3
Post-capture mortality	Short tows	2
Average Susceptibility Score		1.75
PSA Risk Rating (From Table D3)		PASS

References

Fishbase Blue fathead: <https://www.fishbase.se/Summary/SpeciesSummary.php?ID=8397&AT=Blue+fathead>

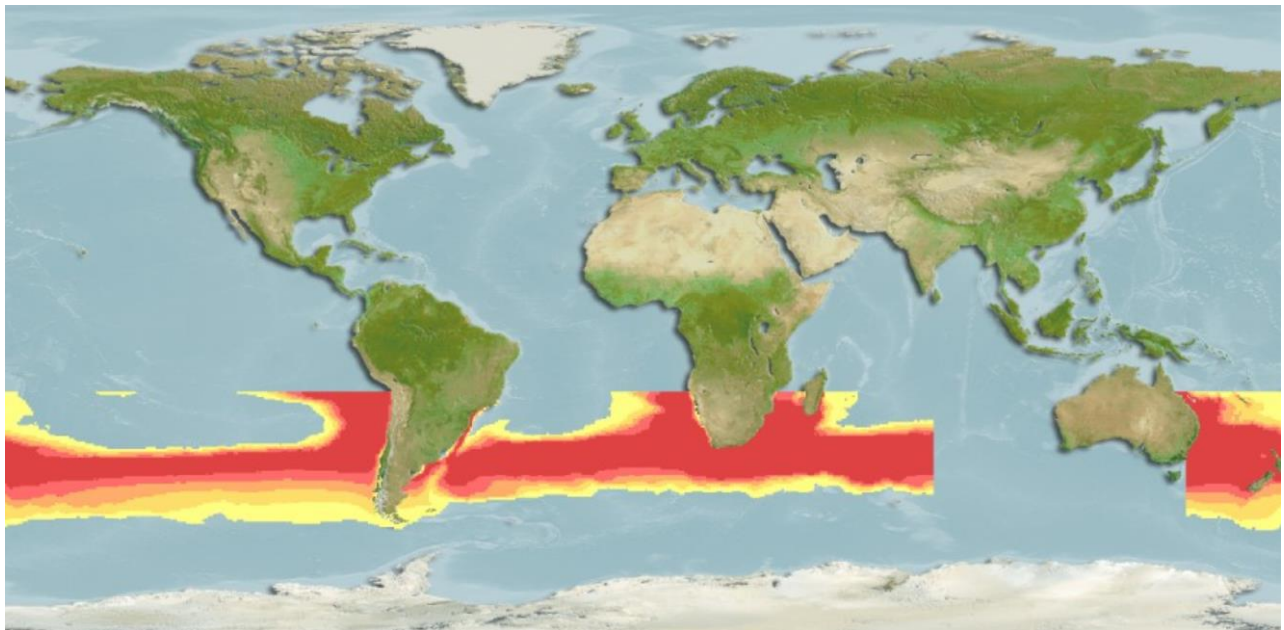


Figure 3. Computer generated distribution maps for *Cubiceps caeruleus* (Blue fathead), with modelled year 2050 native range map based on IPCC RCP8.5 emissions scenario. Retrieved from <https://www.aquamaps.org>.

Scarponi, P., G. Coro, and P. Pagano. A collection of Aquamaps native layers in NetCDF format. Data in brief 17 (2018): 292-296.

D1	Species Name:	Snoek (<i>Thyrsites atun</i>)		
	Productivity Attribute	Value	Score	
	Average age at maturity (years)*	2.8	2	
	Average maximum age (years)*	13.9	2	
	Fecundity (eggs/spawning)	<1000	3	
	Average maximum size (cm)	200	3	
	Average size at maturity (cm)*	99	2	
	Reproductive strategy*	Egg scatterers	1	
	Mean trophic level	3.6	3	
	Average Productivity Score		2.29	
	Susceptibility Attribute	Value	Score	
	Overlap of adult species range with fishery	<25%	1	
	Distribution	Not used	-	
	Habitat	Not used	-	
	Depth range >70	100-500	1	
	Selectivity	Up to 4m	3	
	Post-capture mortality Form schools near the bottom or midwater	Alive after hauled	2	
	Average Susceptibility Score		1.75	
	PSA Risk Rating (From Table D3)		PASS	
	References:			
	Fishbase Snoek https://www.fishbase.se/summary/SpeciesSummary.php?ID=489&AT=snoek			
Standard clauses 1.3.2.2				

Table D2 - Productivity / Susceptibility attributes and scores.

Productivity attributes	Low productivity/ High risk	Medium productivity/ Medium risk	High productivity/ Low risk
	Score 3	Score 2	Score 1
Average age at maturity (years)	>4	2 to 4	<2
Average maximum age (years)	>30	10 to 30	<10
Fecundity (eggs/spawning)	<1 000	1 000 to 10 000	>10 000
Average maximum size (cm)	>150	60 to 150	<60
Average size at maturity (cm)	>150	30 to 150	<30
Reproductive strategy	Live bearer, mouth brooder or significant parental investment	Demersal spawner "berried"	Broadcast spawner
Mean trophic level	>3.25	2.5–3.25	<2.5

Susceptibility attributes		High susceptibility/ High risk	Medium susceptibility/ Medium risk	Low susceptibility/ Low risk
		Score 3	Score 2	Score 1
Availability	1) Overlap of adult species range with fishery	>50% of stock occurs in the area fished	Between 25% and 50% of the stock occurs in the area fished	<25% of stock occurs in the area fished
	2) Distribution	Only in the country/ fishery	Limited range in the region	Throughout region/ global distribution
Encounterability	1) Habitat	Habitat preference of species make it highly likely to encounter trawl gear (e.g. demersal, muddy/sandy bottom)	Habitat preference of species make it moderately likely to encounter trawl gear (e.g. rocky bottom/reefs)	Depth or distribution of species make it unlikely to encounter trawl gear (e.g. epi-pelagic or meso-pelagic)
	2) Depth range	High overlap with trawl fishing gear (20 to 60 m depth)	Medium overlap with trawl fishing gear (10 to 20 m depth)	Low overlap with trawl fishing gear (0 to 10 m, >70 m depth)
Selectivity		Species >2 times mesh size or up to 4 m length	Species 1 to 2 times mesh size or 4 to 5 m length	Species <mesh size or >5 m length
Post capture mortality		Most dead or retained Trawl tow >3 hours	Alive after net hauled Trawl tow 0.5 to 3 hours	Released alive Trawl tow <0.5 hours

Note: Availability 2 is only used when there is no information for Availability 1; the most conservative score between Encounterability 1 and 2 is used.

D3		Average Susceptibility Score		
		1 - 1.75	1.76 - 2.24	2.25 - 3
Average Productivity Score	1 - 1.75	PASS	PASS	PASS
	1.76 - 2.24	PASS	PASS	TABLE D4
	2.25 - 3	PASS	TABLE D4	TABLE D4

D4	Species Name		
Impacts On Species Categorised as Vulnerable by D1-D3 - Minimum Requirements			
D4.1	The potential impacts of the fishery on this species are considered during the management process, and reasonable measures are taken to minimise these impacts.		
D4.2	There is no substantial evidence that the fishery has a significant negative impact on the species.		
Outcome:			
Evidence			
D4.1: The potential impacts of the fishery on this species are considered during the management process, and reasonable measures are taken to minimise these impacts.			
D4.2 There is no substantial evidence that the fishery has a significant negative impact on the species.			
References			
Links			
MARINTRUST Standard clause		1.3.2.2, 4.1.4	
FAO CCRF		7.5.1	
GSSI		D.5.01	

FURTHER IMPACTS

The three clauses in this section relate to impacts the fishery may have in other areas. A fishery must meet the minimum requirements of all three clauses before it can be recommended for approval.

F1 Impacts on ETP Species - Minimum Requirements		
F1.1	Interactions with ETP species are recorded.	Yes
F1.2	There is no substantial evidence that the fishery has a significant negative effect on ETP species.	Yes
F1.3	If the fishery is known to interact with ETP species, measures are in place to minimise mortality.	Yes
Clause outcome:		PASS
<p>F1.1 Interactions with ETP species are recorded.</p> <p>The fishery is known to interact with several ETP species: sea turtles, marine mammals, seabirds and sharks, most of which are released just after being caught. Among these, are the Humboldt Penguin <i>Spheniscus humboldti</i> (“Vulnerable”- IUCN¹³), Peruvian Diving Petrel <i>Pelecanoides garnotii</i> (“Near Threatened”- IUCN¹⁴) and Smooth Hammerhead <i>Sphyrna zygaena</i> (“Vulnerable”- IUCN¹⁵).</p> <p>Since April 2019, the fishery has been subject to a compulsory Reduction Plan aimed to eliminate discards and to reduce the interaction and catch of seabirds, marine mammals and sea turtles. The discard Law’s requirements (Law N° 20.625, 2012¹⁶) and compliance with reduction plan’s measures will be monitored by electronic monitoring systems (EMS) onboard all vessels of the industrial fleet. Further, the use of video camera devices is already mandatory in the fishery since January 2020. The recorded images are used to monitor the possible discard and the interactions with ETPs. The table below shows the interactions reported by the fleet in the Reduction Plan of the discards in the year 2019.</p> <p>Table 3. Capture and incidental mortality by species in the jack mackerel industrial fleet operating between Valparaíso and Los Lagos Regions and International waters of the SPRFMO. Source: data collected by observers onboard from 1916 fishing sets observed between January 2015 and December 2019. Vega et al., 2020 (Preliminary data, final report is under evaluation).</p>		

¹³ <https://www.iucnredlist.org/species/22697817/132605004>

¹⁴ <https://www.iucnredlist.org/species/39388/2921825>

¹⁵ <https://www.iucnredlist.org/species/39388/2921825>

¹⁶ <https://www.leychile.cl/Navegar?idNorma=1044210>

Common name	Scientific name	N° individuals interacting with fishing gear	N° Killed	Mort (%)	CIP	CV _{CIP}	MIP	CV _{MIP}
Southern sea lion	<i>Otaria flavescens</i>	1.813	14	0,8	0,9	496	0,007	1.395
Dominican gull	<i>Larus dominicanus</i>	244	1	0,4	0,1	1.274	0,0005	4.377
Black-browed albatross	<i>Thalassarche melanophris</i>	215	1	0,5	0,1	1.085	0,0005	4.377
Peruvian pelican	<i>Pelecanus thagus</i>	109	3	2,8	0,06	1.707	0,002	4.377
Unidentified albatross	<i>Thalassarche sp.</i>	61	0	0	0,03	1.831	0	-
Black shearwater	<i>Ardenna grisea</i>	47	2	4,3	0,02	2.262	0,001	3.094
Gray-headed albatross	<i>Thalassarche chrysostoma</i>	36	0	0	0,02	1.881	0	-
Sea swallow	<i>Oceanites oceanicus</i>	18	1	5,6	0,009	1.943	0,0005	4.377
Pink-footed shearwater	<i>Ardenna creatopus</i>	15	15	100	0,008	2.201	0,008	2.201
Humboldt penguin	<i>Spheniscus humboldti</i>	13	1	7,7	0,007	4.054	0,0005	4.377
Cape petrel	<i>Daption capense</i>	8	0	0	0,004	3.190	0	-
Large black shearwater	<i>Procellaria aequinoctialis</i>	8	1	12,5	0,004	3.869	0,0005	4.377
Antarctic giant petrel	<i>Macronectes giganteus</i>	8	0	0	0,004	3.190	0	-
Unidentified swallow	Hydrobatidae	1	1	100	0,0005	4.377	0,0005	4.377
Unidentified penguin	<i>Spheniscus sp.</i>	1	1	100	0,0005	4.377	0,0005	4.377
Wandering albatross	<i>Diomedea exulans</i>	1	0	0	0,0005	4.377	0	-

F1.2 There is no substantial evidence that the fishery has a significant negative effect on ETP species.

As shown above, through available data, in spite of the existence of incidental catch in the jack mackerel fishery, the mortalities are low since most specimens are released alive, except for Pink-footed shearwater where mortalities observed were 100% but with a total of 15 specimens in the period of time reported. The only species of marine mammal affected was the southern sea lion, although mortalities are low, not exceeding 3% of the specimens caught.

From 2019, the fishery is subject to a compulsory Reduction Plan aimed to eliminate discards and to reduce the interaction and catch of seabirds, marine mammals and sea turtles. Further, in 2020 INPESCA in collaboration with Birdlife and Albatross task force elaborated a Manual of good practice and the response of the fleet has been very positive. Additional information on affected species is presented below.

South American Sea Lion (*Otaria flavescens* / *O. byronia*):

The Chilean population is reported to be increasing in northern areas, with population trends uncertain for central and southern Chile; the overall Chilean population is however reported to be increasing steadily. The Chilean population is estimated to be approximately 197,000 animals (Venegas et al. 2001, Bartheld et al. 2008, Sepúlveda et al. 2011, Oliva et al. 2012, Contreras et al. 2014) (IUCN 2016¹⁷).

Pink-footed shearwater (*Ardenna creatopus*):

This species is not listed in CITES appendices. IUCN report its status as “vulnerable” (IUCN 2018¹⁸). It is listed in the Agreement on the Conservation of Albatrosses and Petrels (ACAP 2018). Pink footed shearwaters have a very small breeding range, limited to Robinson Crusoe and Santa Clara in the Juan Fernandez Islands, and on Isla Mocha off the coast of Arauco (Chile). Trends are unknown, although long-term breeding season monitoring on Robinson Crusoe and Santa Clara islands (2002-present) and Mocha (2010-2016) suggest stable populations. In addition, a comparison of burrow count data from 2003 and 2016 for all colonies in Juan Fernández indicates that burrow numbers have remained stable during that time (P. Hodum unpubl. data). Further research is needed to determine if introduced predators and herbivores on Robinson Crusoe Island, rats *Rattus* spp., dogs and feral cats (*Felis catus*) and harvesting of chicks on Isla Mocha, as well as fisheries bycatch are having any impact. There may c. 29,573 breeding pairs (Muñoz and P. Hodum unpubl. data), which would imply around 150,000 individuals (IUCN 2018).

F1.3 If the fishery is known to interact with ETP species, measures are in place to minimise mortality.

As noted above, ETP species interactions appear to be relatively limited. In addition to that we note that the Juan Fernández Islands were designated as a national park in 1935 (protected from 1967) and a UNESCO Biosphere Reserve in 1977. The Chilean government began a habitat restoration programme in 1997 that concluded in 2003. The islands have been nominated for World Heritage listing. The distribution of colonies of Pink-footed shearwater on Robinson Crusoe and Santa Clara was determined in 2002-2006 and resurveyed in 2016 while Mocha was surveyed in 2009 and again in 2016. The colony on Mocha is within a national reserve, which has had a management plan since 1998 and two reserve guards.

Since 2011 park guards have worked with the federal police to enforce the prohibition on chick harvesting. At-sea observer programmes have been used to monitor bycatch around Mocha, in small-scale Peruvian fisheries and on some commercial fisheries in Chile. Community-based education and conservation programmes have been underway since 2002 on Robinson Crusoe Island and since 2010 on Isla Mocha (IUCN 2016).

Developments by the authorities in collaboration with stakeholders designed to improve knowledge of potential impacts of the fishery on ETP species include:

- A software platform developed for the registry of incidental fishing in the operation of industrial fleets (XV-X).
- On-board vessel protocols for the release and treatment of ETP fauna have been distributed
- Installation of video camera devices
- Move on protocols where ETPs species are identified
- For the Chilean Jack mackerel fishery ecological risk assessments (ERAs) will determine the impact of the fishery on bycatch species. These are to be conducted by SPRFMO in the Convention area and will include an observer programme.
- A manual of good practices to avoid discarding and incidental capture of ETP species has been provided to all stakeholders active in the fishery.

¹⁷ <https://www.iucnredlist.org/species/41665/61948292#population>

¹⁸ <https://www.iucnredlist.org/species/22698195/132633266>

- A manual of good practices and treatment of ETP species is also under development in the artisanal fisheries (sea lions).
- Workshops have been undertaken to present manuals and best practice training to stakeholders in the fishery.

References

IFOP 2019. INFORME TÉCNICO (R. PESQ.) N° 106/2019. Plan de Reducción del Descarte y de la Captura de Pesca Incidental para la pesquería industrial de jurel (*Trachurus murphyi*) y su fauna acompañante entre las Regiones de Arica y Parinacota y Los Lagos y en aguas internacionales (SPRFMO).

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Links	
MARINTRUST Standard clause	1.3.3.1
FAO CCRF	7.2.2 (d)
GSSI	D4.04, D.3.08

F2 Impacts on Habitats - Minimum Requirements			
F2	F2.1	Potential habitat interactions are considered in the management decision-making process.	Yes
	F2.2	There is no substantial evidence that the fishery has a significant negative impact on physical habitats.	Yes
	F2.3	If the fishery is known to interact with physical habitats, there are measures in place to minimise and mitigate negative impacts.	Yes
Clause outcome:			PASS

F2.1 Potential habitat interactions are considered in the management decision-making process.

No direct habitat damage is known to occur in the mid-water trawl and purse seine fisheries. Such damage is unlikely due to the gear types used. Industrial purse seines can reach up to 60 × 500 fathoms (approx. 110 m x 915 m). The SC 8 has worked on Vulnerable Marine Ecosystems however, there is no interactions with the fishery and this habitats, In the next year, the SPRFMO SCW9-Report has showed the work plan for the habitat group and potential impacts on habitats and ecosystems are planned and discussed annually.

The proposed workplan (WP) for the HMWG (Habitat Monitoring Working Group) has been drafted after a discussion on the scope and HMWG ToR and contains the following components to be developed during the period 2020-2024:

1. The Jack Mackerel Habitat concept;
2. Retrospective analysis;

3. Training, sharing and capacity building;
4. Development and application of tools;
5. Utilisation of different platforms;
6. Organisation of a symposium on habitat monitoring

F2.2 There is no substantial evidence that the fishery has a significant negative impact on physical habitats.

There are no indications of any interactions between the fishery and benthic habitats. Purse seine gear is not designed for interaction with the seabed, and the industrial fleet operate offshore in waters typically more than 400 m deep. Gear loss is reported to be very rare in the fishery.

In the case of the vulnerable marine ecosystems indicators (VME), there is no record of interactions with the Jack mackerel purse seine fishery in the EEZ and in the high seas.

F2.3 If the fishery is known to interact with physical habitats, there are measures in place to minimise and mitigate negative impacts.

As mentioned above, there is no information regarding interaction with benthic habitats as the purse seine fishery is typically an epipelagic fishery occurring in the water column, so there is no evidence of negative impact with physical habitats.

However, the overall management regime for protecting marine habitats and ecosystems within the Chilean EEZ and in the SPRFMO Convention area has some specific measures and strategies relating to marine habitats. There are more than 50 Marine Protected Areas (MPA) within the Chilean EEZ (Atlas of Marine Protection 2018), there are also include 5 Marine Reserves and 7 Marine Parks defined close to the fishing grounds where the fishery takes place. Although there are measures to protect the vulnerable areas as closures to fishing activities.

Since 2010, Chile has designated more than 400,000 square miles (over 1,000,000 km²) of its EEZ as marine parks where all extractive activities are prohibited (National Geographic News 2017). This is equivalent to more than 25% of the Chilean EEZ.

The Servicio Nacional de Pesca y Acuicultura (National Fisheries and Aquaculture Service, SERNAPESCA) is responsible for the management of Marine Parks and Reserves.

Further, the HMWG also works to improve the understanding of the habitats and ecosystems preferred by the Jack mackerel in the study area.

Therefore, even though, measures are in place to protect habitats, the purse seine gear is not considered a gear with the potential to have significant negative impacts on physical habitats.

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Links

MARINTRUST Standard clause	1.3.3.2
FAO CCRF	6.8
GSSI	D.2.07, D.6.07, D3.09

F3	Ecosystem Impacts - Minimum Requirements	
	F3.1	The broader ecosystem within which the fishery occurs is considered during the management decision-making process.
	F3.2	There is no substantial evidence that the fishery has a significant negative impact on the marine ecosystem.
	F3.3	If one or more of the species identified during species categorisation plays a key role in the marine ecosystem, additional precaution is included in recommendations relating to the total permissible fishery removals.
Clause outcome:		PASS

F3.1 The broader ecosystem within which the fishery occurs is considered during the management decision-making process.
 As a consequence of the large size of Chilean Jack mackerel and its important role as both predator and prey, this species is likely an important node in Pacific Ocean predator-prey networks. However, Chilean Jack mackerel is not considered, according to the MSC criteria, as a key low trophic level (LTL) stock (Report for MSC April 2019).

Article 2, “Objective”, of the SPRFMO Convention, is relevant to ecosystem consideration in the decision making process, and states: “... through the application of the precautionary approach and an ecosystem approach to fisheries management, ensuring the long-term conservation and sustainable use of fishery resources and, in so doing, safeguarding marine ecosystems in which these resources occur.”

Further, research projects are carried out by Peru and Chile as a part of the SPRFMO objectives for the fishery. In the last report it was reviewed by the WG the results of a research project that using a GAM approach changes of Jack mackerel distribution and related (abiotic) parameters were found during the period in which IMARPE conducted acoustics surveys, and negative correlations were described among the abundance of mentioned species. Using acoustic data from commercial fishing also found interactions between Jack mackerel and its prey, mainly euphausiids. These results might support the hypothesis according to which the main drivers of Jack mackerel distribution along the South American coast are the prey distribution and the location of the Oxygen Minimum Zone. The use of acoustic techniques to collect simultaneous in situ data from fishing vessels about a variety of species, preys and predators, to support the necessary ecosystem approach adapted to the fishery of Jack mackerel are encouraged to the management organizations.

Finally, the fact that the fishery is above MSY provides some confidence that exploitation is relatively controlled to the point where predator species could be assumed to have sufficient food source for their needs.

F3.2 There is no substantial evidence that the fishery has a significant negative impact on the marine ecosystem.
 Based on information that the stock is above MSY reference points the assessment team could conclude that there is no substantial evidence that the fishery has a significant negative impact on the marine ecosystem, both in terms of bycatch, ETP species or habitat interaction, or in terms of foodweb dynamics.

F3.3 If one or more of the species identified during species categorisation plays a key role in the marine ecosystem, additional precaution is included in recommendations relating to the total permissible fishery removals.
 The fact that the jack mackerel fishery is above MSY provides some confidence that this stock exploitation is relatively controlled to the point where predator species could be assumed to have sufficient food source for their needs. Between 2011 and 2016, IFOP and IMARPE (Peru) in collaboration with NGOs, implemented the GEF-UNDP Project "Towards an Ecosystem Approach to Management of the Large Marine Ecosystem of the Humboldt Current"¹⁹. As a result, a Strategic

¹⁹ <https://www.thegef.org/project/towards-ecosystem-management-humboldt-current-large-marine-ecosystem>

Action Program (SAP) was prepared; during 2017 the design of the plan was developed. The SAP has been delayed in publication, it was expected to be launched in 2020 but due to the world situation of pandemic, it is not public yet.

The Jack mackerel management plan has described the role of the species in the ecosystem. This species is a feeder capable of using a wide range of species of preys (Konchina 1979) and may be acting as a channel of energy flow of the Primary producers' predators.

Jack mackerel juvenile have been found in the stomach of albacore tuna (*Thunnus alalunga*) taken in the central Pacific (36°S to 42°S and 148°W to 165°W). It has also been found in the stomach contents of swordfish the Chilean coast (M. Donoso, IFOP, Chile, comm. Pers.). Generally, it is expected that jack mackerel can be the prey for tuna, swordfish and sharks. As a consequence of the large size of the Jack mackerel and its important role as a predator and prey, it is likely that this species is an important node in the predator and prey networks of the Pacific Ocean. Depletion of jack mackerel would likely cause unpredictable changes, substantial and durable in the abundance of their predators and prey, however, in the last stock assessment the stock was above biomass reference points and the fishing mortality was below limits. This situation reflects that the role of Jack Mackerel in the ecosystem is considered when removals are recommended for the fishing season.

(R1, R31-35)

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- R2** SUBPESCA March 2020. Estado de situación de las principales pesquerías chilenas, año 2020. https://www.subpesca.cl/portal/618/articles-110503_recurso_1.pdf
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- R5** SERNAPESCA www.sernapesca.cl
- R6** SPRMFO Convention Area Map: <https://www.sprfmo.int/about/illustrative-map-of-sprfmo-area-2/>
- R7** IFOP <https://www.ifop.cl/en/>
- R8** LGPA Law on Fisheries and Aquaculture No 20.657: http://www.subpesca.cl/normativa/605/articles-764_documento.pdf
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- R13** SPRFMO 2021 Final Compliance Report:
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- R17** Plan de Manejo para la Pesquería de Jurel XV-X Regiones.99pp (Publicado en Página Web 21-12-2017): Management Plan for Chilean Jack mackerel:
http://www.subpesca.cl/portal/616/articles-99235_documento.pdf
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- R19** SPRFMO SC& Chile Annual Report Jack mackerel 2019:
<https://www.sprfmo.int/assets/2019-SC7/Meeting-Docs/SC7-Doc29-Chile-Annual-report-2019-Jack-mackerel.pdf>
- R20** SPRFMO SC8-Report Annex 8. Jack Mackerel Technical Annex Rev1(stock assessment report):
<https://www.sprfmo.int/assets/2019-SC7/Reports/SC7-Report-Annex-8-JM-Tech-Annex-Rev1.pdf>
- R21** SPRFMO 9TH MEETING OF THE SPRFMO COMMISSION Held remotely, 25 January - 3 February 2021
 COMM 9 – Doc 06 2021 Scientific Committee Multi-Annual Plan
- R22** SPRFMO CMM 01-2021 Conservation and Management Measure for *Trachurus murphyi* (supersedes CMM 01-2020):
[CMM-01-2021-Trachurus-Murphyi-12Mar2021.pdf](https://www.sprfmo.int/assets/2019-SC7/Reports/SC7-Report-Annex-8-JM-Tech-Annex-Rev1.pdf)
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- R32** Global Environmental Facility - Towards Ecosystem Management of the Humboldt Current Large Marine Ecosystem:
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- R33** M. Gutiérrez , A. Bertrand , M. Ballón, P. Espinoza, A. Alegre, F. Gerlotto. (2008). Chilean Jack Mackerel Workshop. SPRFMO Jack Mackerel Workshop 2008. CHJMWS paper 16

Links

MARINTRUST Standard clause	1.3.3.3
FAO CCRF	7.2.2 (d)
GSSI	D.2.09, D3.10, D.6.09

SOCIAL CRITERION

In addition to the scored criteria listed above, applicants must commit to ensuring that vessels operating in the fishery adhere to internationally recognised guidance on human rights. They must also commit to ensuring there is no use of enforced or unpaid labour in the fleet(s) operating upon the resource.

Appendix A - Determining Resilience Ratings

The assessment of Category B species described in this assessment report template utilises a resilience rating system suggested by the American Fisheries Society. This approach was chosen because it is also used by FishBase, and so the resilience ratings for many thousands of species are freely available online. As described by FishBase, the following is the process used to arrive at the resilience ratings:

“The American Fisheries Society (AFS) has suggested values for several biological parameters that allow classification of a fish population or species into categories of high, medium, low and very low resilience or productivity (Musick 1999). If no reliable estimate of r_m (see below) is available, the assignment is to the lowest category for which any of the available parameters fits. For each of these categories, AFS has suggested thresholds for decline over the longer of 10 years or three generations. If an observed decline measured in biomass or numbers of mature individuals exceeds the indicated threshold value, the population or species is considered vulnerable to extinction unless explicitly shown otherwise. If one sex strongly limits the reproductive capacity of the species or population, then only the decline in the limiting sex should be considered. We decided to restrict the automatic assignment of resilience categories in the Key Facts page to values of K , t_m and t_{max} and those records of fecundity estimates that referred to minimum number of eggs or pups per female per year, assuming that these were equivalent to average fecundity at first maturity (Musick 1999). Note that many small fishes may spawn several times per year (we exclude these for the time being) and large live bearers such as the coelacanth may have gestation periods of more than one year (we corrected fecundity estimates for those cases reported in the literature). Also, we excluded resilience estimates based on r_m (see below) as we are not yet confident with the reliability of the current method for estimating r_m . If users have independent r_m or fecundity estimates, they can refer to Table 1 for using this information.”

Parameter	High	Medium	Low	Very low
Threshold	0.99	0.95	0.85	0.70
r_{max} (1/year)	> 0.5	0.16 - 0.50	0.05 - 0.15	< 0.05
K (1/year)	> 0.3	0.16 - 0.30	0.05 - 0.15	< 0.05
Fecundity (1/year)	> 10,000	100 - 1000	10 - 100	< 10
t_m (years)	< 1	2 - 4	5 - 10	> 10
t_{max} (years)	1 - 3	4 - 10	11 - 30	> 30

[Taken from the FishBase manual, “Estimation of Life-History Key Facts”, <http://www.fishbase.us/manual/English/key%20facts.htm#resilience>]

Glossary

Non-target: Species for which the gear is not specifically set, although they may have immediate commercial value and be a desirable component of the catch. OECD (1996), Synthesis report for the study on the economic aspects of the management of marine living resources. AGR/FI(96)12

Target: In the context of fishery certification, the target catch is the catch of stock under consideration by the unit of certification – i.e. the fish that are being assessed for certification and ecolabelling. (GSSI)

Appendix 1

MarinTrust Fishery Assessment Peer Review Template

This section comprises a summary of the fishery being assessed against version 2 of the MarinTrust Standard.

Fishery under assessment	Chilean Jack Mackerel, <i>Trachurus murphyi</i>
Management authority (Country/State)	SUBPESCA & SERNAPECA, Chile EEZ; SPRFMO International Water
Main species	<i>Trachurus murphyi</i>
Fishery location	FAO 87Pacific Southeast Chile EEZ regions XV-X
Gear type(s)	Purse seine
Overall recommendation. (Approve/ Fail)	Approve

Summary: in this section, provide any additional information about the fishery that the reviewers feel is significant to their decision.

General Comments on the Draft Report provided to the peer reviewer



Summary of Peer Review Outcomes

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

	YES	NO	See Notes
A – Fishery Assessment			
1. Has the fishery assessment been fully completed, using the recognised MarinTrust fishery assessment methodology and associated guidance?	X		
2. Does the Species Categorisation section of the report reflect the best current understanding of the catch composition of the fishery?	X		
3. Are the scores in the following sections accurate (i.e. do the scores reflect the evidence provided)?			
Section M - Management	X		
Category A Species	X		
Category B Species	n.a.		
Category C Species	n.a.		
Category D Species	X		
Section F – Further Impacts	X		

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 standard, and clearly based on the evidence presented in the assessment report?
Yes
Certification body response
Response not required

2. Has the fishery assessment been fully completed, using the recognised MARINTRUST fishery assessment methodology and associated guidance?
Yes
Certification body response
Response not required

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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

Response not required

3M. Are the scores in "Section M – Management" clearly justified?	
---	--

M1.1 There is an organisation responsible for managing the fishery.	Yes
There is an organisation responsible for collecting data and assessing the fishery.	Yes
Fishery management organisations are publicly committed to sustainability.	Yes
Fishery management organisations are legally empowered to take management actions.	Yes
There is a consultation process through which fishery stakeholders are engaged in decision-making.	Yes
The decision-making process is transparent, with processes and results publicly available.	Yes

--

Certification body response

Response not required

3A. Are the "Category A Species" scores clearly justified?
--

Yes

Certification body response

Response not required

3B. Are the "Category B Species" scores clearly justified?
--

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n.a.
Certification body response

3C. Are the “Category C Species” scores clearly justified?
n.a.
Certification body response

3D. Are the “Category D Species” scores clearly justified?
Yes
Certification body response
Response not required

3F. Are the scores in “Section F – Further Impacts” clearly justified?
Yes
Certification body response
Response not required
Certification body response

Optional: General comments on the Peer Review Draft Report
--

In the section A2 of the report horse mackerel is cited as for being assessed by SPRFMO. However, all along the document the same fish is cited with its common name (Chilean jack mackerel- CJM-). The only species being assessed fish so far by SPRFMO is CJM.

In the UNDP-GEF (2015) Transboundary Diagnostic Analysis (TDA) of the Humboldt Large Marine Ecosystem (LME) (Peru-Chile) there are listed the three main problems faced in this LME, one of them being the relatively high rate of by catch of ETP species in both countries. However, Chile has demonstrated important achievements in recent years (VMS, logbook, video cameras, observers), there are few fisheries in the world that can demonstrate their numbers of interactions with top predators, being Chilean jack mackerel one of them.

Furthermore, Chilean fisheries gained transparency by being possible to monitor their displacements them by accessing to Global Fishing Watch System.

Although Pacific chub mackerel is a D specie in the CJM fishery, it is an assessed species in Peru, as well CJM, then results of assessments and performances are updated and reported annually to the SPRFMO SC's Habitat Monitoring Working Group (HMWG). However, the specific case of CJM and all management recommendations are issued instead by the Jack Mackerel Working Group.

In clause F3.3 it is mentioned the UNDP-GEF Chile Peru Strategic Action Program (SAP). It is commencing the present year (2021), the document of project is available at GEF web page, though the specific case of CJM won't be approached by the project (2021-26).

Certification body response

The assessor thanks the peer reviewer for the comments. Section A2 of the report has been amended to include the correct name of the species which is Jack mackerel.