Marine Stewardship Council (MSC) Public Comment Draft Report

European South Pacific mid water trawl jack mackerel fishery
On behalf of

Dutch Pelagic BV

Prepared by

Control Union Pesca Ltd

January 2020

Authors:
Dr. L. Borges
Ms. C. Seip-Markensteijn
Mr. A. Karstegl

Control Union Pesca Ltd
56 High Street, Lymington
Hampshire SO41 9AH
United Kingdom
Tel: 01590 613007
Fax: 01590 671573
E-mail: infopesca@controlunion.com
Website: www.cupesca.com

QA and QC PCDR stage

Role	Initials and date
Originator:	Cora Seip
Reviewer:	Hugh Jones (28.01.20)
Approver:	Charlotte Todd (29.01.20)

Contents

Glossary

Acronym	Definition
ACAP	Agreement on the Conservation of Albatrosses and Petrels
AIS	Automatic Identification System
BMEL	Federal Ministry of Food, Agriculture (Germany)
BLE	Bundesanstalt für Landwirtschaft und Ernährung (German control authority)
B_{msy}	Spawning stock biomass that results from fishing at F_{MSY} for a long time.
CCAMLR	Convention on the Conservation of Antarctic Marine Living Resources
CFP	Common Fisheries Policy
CITES	Convention on International Trade in Endangered Species
CJM	Chilean jack mackerel
CMM	Conservation and Management Measure
CMR	Regional Maritime Fisheries Inspectorate in Szczecin
CMS	Convention on Migratory Species
CNCP	Cooperating non-Contracting Parties
CPUE	Catch per Unit Effort
CTC	Compliance and Technical Committee
DG Mare	Directorate-General for Maritime Affairs and Fisheries
DIRECTEMAR	General Directorate of Maritime Territory and Merchant Marine
EBSA	Ecologically or Biologically Significant Marine Areas
EC	European Commission
ECA	European Court of Auditors
EEC	European Economic Community
EEZ	Exclusive Economic Zone
EFCA	European Fisheries Control Agency
ENSO	El Niño Southern Oscillation
EU	European Union
F	Fishing mortality
FCR	Fisheries Certification Requirements and Guidance
FL	fork length
FMC	Fisheries Monitoring Centre
FCP	Fisheries Certification Process
GT	Gross Tonnage
HACCP	Hazard analysis and critical control points
HCR	Harvest Control Rule
HMWG	Habitat Monitoring Working Group
ICES	International Council for the Exploration of the Sea

ICJ	International Court of Justice
IFOP	Instituto de Fomento Pequero in Chile (Fisheries Development Institute)
ITLOS	International Tribunal for the Law of the Sea
IUU	Illegal, Unreported and Unregulated
JJM	Joint Jack Mackerel Model
LDAC	Long Distance Advisory Council
LPUE	Landing Per Unit Effort
LNV	Ministry of Agriculture, Nature and Food Quality (Netherlands: Ministerie van Landbouw, Natuur en Voedselkwaliteit)
LTL	Low-Trophic Level
MCS	Monitoring, Control and Surveillance
MoU	Memorandum of Understanding
MS	Member States
MSC	Marine Stewardship Council
MSY	Maximum Sustainable Yield
nm	nautical mile
NVWA	The Netherlands Food and Consumer Product Safety Authority (Nederlandse Voedsel- en Warenauthoriteit)
P&P	Parlevliet & Van der Plas
PCA	Permanent Court of Arbitration
PDO	Pacific Decadal Oscillation
PFA	Pelagic Freezer-trawler Association
PRI	Point of recruitment impairment
PSMA	Agreement on Port State Measures
RBF	Risk-based Framework
RSW	refrigerated sea water
SC	scientific committee
Sernapesca	National Fisheries and Aquaculture Service
SPRFMO	South Pacific Regional Fisheries Management Organisation
SPSA	Southeast Pacific Subtropical Anticyclone
SSB	Spawning stock biomass
SST	Sea Surface temperature
STECF	Scientific, Technical and Economic Committee for Fisheries
SWG	Science Working Group
TAC	Total Allowable Catch
TP	trophic positions
TS	target strength
UoA	Unit of Assessment

UoC	Unit of Certification
UNCLOS	United Nations Convention on the Law of the Sea
VME	Vulnerable Marine Ecosystem
VMS	Vessel Monitoring System
WG-FAST	Fisheries Acoustics Science and Technology Working Group

1 Executive Summary

This report covers the MSC full assessment of the European South Pacific midwater otter trawl fishery on jack mackerel (*Trachurus murphyi*) fishery on behalf of Dutch Pelagic BV. The assessment team consisted of Cora Seip (Team Leader and Principle 2), Lisa Borges (Principle 1), and Alejandro Kastegl (Principle 3). A site visit was held on the 23th – 25th January 2019 in The Hague, The Netherlands, at the same time as the annual Committee meeting of the South Pacific Regional Fisheries Management Organisation (SPRFMO), to facilitate stakeholder participation.

The assessment was undertaken in accordance with the MSC Fisheries Certification Requirements (FCR) version 2.0 for assessment procedure and scoring. The Risk-Based Framework (RBF) was used to score PI 2.2.1 for chub mackerel (*Scomber japonicus*).

The fishery under assessment operates in the SPRFMO Convention area, on the high seas of the South Pacific, outside the EEZ. The client fishery covers European vessels with quota for Chilean jack mackerel: Vessels of the Parlevliet & Van der Plas group and vessels from Samherji HF.

The vessels land in Talcahuano, and San Vicente (Talcahuano), Chile.

This fishery is managed at two levels; through the SPRFMO Convention, and the EU Common Fisheries Policy (CFP), which is implemented nationally within the EU Member States. Overall, the robust management and regulatory framework with clearly defined roles and responsibilities at international and national level was regarded a key strength in the assessment of this fishery.

The eastern and central South Pacific jack mackerel stock biomass is assessed to be increasing since its lowest historical levels in 2010, and in 2018 (4.8 million tonnes) is above the estimated B_{MSY} for that year (4.5 million tonnes), and near the B_{MSY} estimated in recent years (5.6 million t in 2019 (with approximate 90% confidence bounds of 4.5 – 7.0 million t). No limit reference point is estimated or assumed in the assessment for this stock. Stock biomass is very likely to continue to increase in the upcoming years, likely reaching MSY levels in one generation time or less.

Key data sources on interactions with other species were logbooks and observer reports. There are no Primary species, and only one main Secondary species (chub mackerel). There are several minor Secondary species as part of the bycatch (a full breakdown of species can be found in Table 7), all are caught in small percentages of the total catch.

There are no interactions between the EU South Pacific midwater otter trawl fishery and marine mammals, and very little interaction (as in: contact) with seabirds. Reviewed documentation (observer reports; self-sampling data) shows no record of any bird or marine mammal bycatch, and lack of catch of seabirds and marine mammals in this fishery was confirmed in interviews with stakeholders.

Jack mackerel are a pelagic fish which live in the upper part of the water column. The nets used in the fishery under assessment fish between 20-100 m depth. The nets are designed only for use in the water column, and do not come into contact with the seabed. The jack mackerel fishery is therefore confined to the “epipelagic habitat” – the uppermost 200 m of the water column, often called the “sunlit zone”, where most of the ocean’s primary production takes place. There are no VMEs established in the fishing areas for the European jack mackerel fishery outside the 200 nm zone. Gear loss has never occurred for this fishery (pers. comment client). Overall, habitat impacts from this fishery are minimal.

The key ecosystem with regards to the fishery under assessment is the South-eastern Pacific. The Humboldt Current System is the cold, low-salinity ocean current that flows north along the western coast of South America. It is an eastern boundary current flowing in the direction of the equator, and extends 500–1,000 km (310–620 nm) offshore. The Humboldt Current System is a highly productive ecosystem. Periodically, the upwelling that drives the system's productivity is disrupted by the El Niño-Southern Oscillation (ENSO) event, often with large social and economic impacts.

UoA ecosystem impacts relate mostly to removal of jack mackerel. In 2018, the total catch of *Trachurus murphyi* throughout the range of the stock was set to not more than 576,000 tonnes, with around 526,323 tonnes caught. In 2019, following the recommendations of the SPRFMO scientific committee, catches throughout the range of the stock were set not to exceed 591,000 tonnes. The UoA has been allocated 6.1086 % of the catches and as such, the impact of the UoA itself is limited.

The team's determination is that the fishery meets the criteria for MSC certification. Aggregate scores for each Principle are as shown in the following table:

Final Principle Scores

Principle	Score
Principle 1 – Target Species	87,5
Principle 2 – Ecosystem	85,7
Principle 3 – Management System	92,9

One condition has been proposed; on Principle 1:

Summary of Conditions

Condition number	Condition	Performance Indicator	Related to previously raised condition? (Y/N/NA)
1	The client shall ensure by the fourth surveillance audit there are well defined HCRs in place that ensure that the exploitation rate is reduced as the PRI is approached and they are expected to keep the stock fluctuating around a target level consistent with (or above) MSY.	PI 1.2.2	N/A

2 Authorship and Peer Reviewers

Cora Seip acted as Team Leader with overall responsibility for the assessment, and responsibility for Principle 2.

Cora meets the Fishery Team Leader criteria in Table PC1. She has a Master's degree in Biology from Leiden University, and has passed the online fishery team leader training.

Previously, she worked for the Dutch Fish Product Board from 2007-2013 as Policy Officer, 'Nature and Spatial Planning'. Her work focused mainly on Natura 2000 procedures and shrimp and flatfish fisheries, and included the Marine Framework Directive. She was also shellfish Policy Officer, and worked closely with the Dutch shellfish industry (mainly mussels, but also oysters, Ensis, and cockles).

From 2013-2017 Cora has worked as an expert independent consultant to a broad cross-section of fishing organisations. Notable achievements include working on assessment of Dutch fisheries (both generic and specific) and their impacts, as well as working as an advisor with regards to spatial planning, and nature conservation laws.

Cora speaks Dutch and has completed MSC team leader-, traceability-, and RBF training in the past 3 years. Cora also has over 5 years' experience in research into the management of fisheries impacts on aquatic ecosystems meeting the criteria for 'Fishing impacts on aquatic ecosystems' in table PC3 through her work summarised above.

Dr. Lisa Borges was responsible for Principle 1. Lisa has been a fishery scientist for the last 18 years and now runs her own consultancy firm. Lisa has a BSc in Marine Biology & Fisheries from the University of the Algarve (Portugal), an MSc in Fisheries from the University of Porto (Portugal), and a PhD on discards from demersal fisheries from the National University of Ireland. She has worked for three national fisheries research institutes, which include IPIMAR (Portugal), the Marine Institute (Ireland), and IMARES (The Netherlands). Lisa has experience in both pelagic and demersal stock assessments, and is familiar with MSC assessment procedures, having participated as a principle 1 and 2 expert on a number of different assessments. She has extensive knowledge and experience in assessing the environmental impact of fisheries, with a focus on discards and bycatch in particular. Lisa also has knowledge and experience in fisheries management policies, including harvest control rules; management plans and discard policy development. Lisa developed conservation policies for Atlantic fish stocks when she worked for the European Commission in Belgium. Lisa has completed the required Fishery Team member MSC training modules for the v2.0 Fisheries Certification Requirements. Lisa Borges speaks fluent Spanish.

Lisa has over 5 years' experience applying relevant stock assessment techniques being used by the fishery under assessment, and over 5 years' experience working with the biology and population dynamics of the target or species with similar biology, meeting the criteria 'Fish stock assessment' and 'Fish stock biology / ecology' in table PC3 through her work summarized above.

Alejandro Karstegl was the Principle 3 assessor for this fishery. Alejandro is a marine biologist, with a Master's degree in Public Policy and Management. He studied at the Universidad Católica del Norte in Chile, and at the Unit of Bioeconomics and Modelation of Fisheries of CINVESTAV, Merida, Yucatan, Mexico. For his Master's degree he studied at the Universidad Adolfo Ibañez, in Santiago, Chile. Alejandro has over 15 years' experience designing and developing technical advice for the sustainable management of fisheries, contributing to the design and implementation of policies, and leading scientific working groups. His work has given him a wide experience in research projects and with public management bodies. For the last eight years, he has worked at the Undersecretariat for Fisheries, under the Ministry of Economy, Development and Tourism, of the Government of Chile. His responsibilities have included providing the technical base for the implementation of management

measures for crustacean fisheries; making information available to support proposed measures; and, coordinating the different stakeholder groups, including the academia, NGOs, the private and public sector. Alejandro has completed the required Fishery Team member MSC training modules for the V2.0 Fisheries Certification Requirements. Alejandro also speaks fluent Spanish.

Alejandro has over 5 years' experience as a practicing fishery manager and fishery/ policy analyst, and meets the criteria for 'Fishery management and operations' in Table PC3. He also meets the criteria for 'Current knowledge of the country, language and local fishery context' through his work experience as summarized above.

None of the team members has a conflict of interest in relation to the fishery under assessment.

The peer reviewers for this re-assessment were selected from a shortlist as compiled MSC Peer Review College. Two peer reviewers were selected from the following list:

- Andrew Hough
- Jonathan Broch Jacobsen
- Jose Peiro Crespo
- Sophie Des Clers

Dr Andrew Hough is a marine environmental consultant, with a PhD in marine ecology from the University of Wales, Bangor (1987-90). He has been involved in marine, coastal and freshwater environmental management since 1991, including management of fishery impacts on ecosystems and marine conservation biology, principally in European inshore waters. He was manager of Moody Marine operations within Moody International Certification from 1999 to 2011 with particular responsibility for the implementation of MSC Certification procedures and development of MSC methodologies. He has acted as lead assessor on a large proportion of MSC pre-assessments and main assessments during this time, and subsequently as team member and/or lead auditor for various assessments. This has involved stock assessment analysis, evaluation of ecosystem effects and management effectiveness of groundfish, pelagic and shellfish fisheries in various administrations around the world. He now works as a freelance environmental/fishery management consultant and auditor, with consultancy projects including certification-related policy advice to the Association of Sustainable Fisheries.

Jonathan Broch Jacobsen holds an MSc in anthropology, specialised in the anthropology of fisheries management. He has previously worked at DTU Aqua (the Danish National Institute of Marine Biology), and for nine years as Sustainability Manager for the Danish Fishermen's PO. In this role he took 18 fisheries through the MSC assessment process, several of them including fisheries from other Northern European countries in collaboration with Danish Fishermen. In parallel Mr. Jacobsen acted as standing observer to the MSC Technical Advisory Board for six years, took part in the 2012-14 Fisheries Standard Review, and finally co-chaired the MSC Stakeholder Council and sat on the Board of Trustees in 2016-2017. Although a former client representative, he is now independent of all fisheries interests.

Jose Peiro Crespo is a fisheries biologist with postgraduate studies in Development Cooperation and Sustainable Management. He has overall responsibility for the planning, design, execution, monitoring and evaluation of all the projects at Naunet Fisheries Consultants, a marine consultancy firm based in Norwich (UK). Naunet works for NGOs, the fishing industry and other consultancies conducting fisheries assessments, promoting the sustainable use of marine resources and developing initiatives

to improve living conditions in coastal communities in Europe and Africa through advice on marine environmental issues, fisheries and marketing of marine products. His principal areas of expertise are artisanal and commercial fisheries and rural aquaculture. He has more than ten years of experience working in fishery and aquaculture related projects in Spain, Portugal, Senegal, Morocco, Peru and Mozambique. During this time, he has been involved in a wide range of projects such as the value chain analysis of small-scale fish-farmer communities in the Amazonian basin (Peru), the characterization of artisanal fisheries in the North of Portugal and the analysis of sustainable sources of octopus in the Indian Ocean. He has also recently managed a project to evaluate successful cases of co-management in coastal fisheries in North Western Africa (including Morocco, Mauritania, Senegal and The Gambia) funded by WWF. He has conducted 50+ fisheries assessments for NGOs such as WWF and the Monterey Bay Aquarium acting as an expert in cephalopod fisheries (octopus, squids). He has also extensive knowledge about the Marine Stewardship Council (MSC) certification process and Fisheries Improvement Projects (FIPs) as he has been participating as a fisheries expert in MSC certifications and reviewing FIPs since 2013 (in Spain, Portugal, Iceland, Scotland, Peru, Chile). He has just finished a review of more than thirty MSC certified fisheries to examine the effectiveness of the MSC certification scheme in assessing and tackling impacts on populations of by-catch species.

Dr Sophie des Clers is an independent scientific expert in fisheries management systems. She has over 30 years' experience in the formulation, monitoring, and evaluation of fisheries and aquaculture projects to build management capacity in the public and the private sector. She is trained in databases, applied statistics, population dynamics, microeconomics, law and public policy. Her past research and consultancy projects have taken her to fishing ports around the UK, EU, Norway, Africa and the North Sea, Mediterranean, Atlantic, Pacific and Indian oceans. As a Principle 3 auditor, she has taken part in the MSC assessment and pre-assessment audits of more than 20 different fisheries including for cod, haddock, saithe, sole, herring, blue whiting, sardine, tuna, billfish, lobster and whelks. Having completed the MSC FCR v2.0 training, Sophie is a fully qualified Team Leader.

3 Description of the Fishery

3.1 Unit(s) of Assessment (UoA) and Scope of Certification Sought

3.1.1 UoA and Proposed Unit of Certification (UoC)

Pesca confirms that the fishery under assessment is within the scope of the MSC Fisheries Standard (7.4 of the MSC Certification Requirements v2.0):

- The target species is not an amphibian, reptile, bird or mammal;
- The fishery does not use poisons or explosives;
- The fishery is not conducted under a controversial unilateral exemption to an international agreement;
- The client or client group does not include an entity that has been successfully prosecuted for a forced labour violation in the last 2 years;
- The fishery has in place a mechanism for resolving disputes, and disputes do not overwhelm the fishery;
- The fishery is not an enhanced fishery as per the MSC FCR 7.4.3; and
- The fishery is not an introduced species-based fishery as per the MSC FCR 7.4.4.

Unit of Assessment (UoA)

Stock	Chilean jack mackerel (*Trachurus murphyi*)
Geographical range	South Pacific high seas, in the South Pacific Regional Fisheries Management Organisation (SPRFMO) Convention Area.
Method of capture	Midwater otter trawl
Management systems	The South Pacific Regional Fisheries Management Organisation (SPRFMO), and the EU Common Fisheries Policy.
Client group	European vessels with quota for Chilean jack mackerel: Vessels of the Parlevliet & Van der Plas group and vessels from Samherji HF
Other eligible fishers	None

Table 1. European vessels with quota for Chilean jack mackerel

Vessel	Flag state	IMO nr	Tonnage	Gear	Length
Maartje Theadora	Germany	9182801	9082	Midwater otter trawl	140.80
Margiris	Lithuania	8301187	9499	Midwater otter trawl	142.79
Annelies Ilena	Poland	9204556	14055	Midwater otter trawl	144.6

3.1.2 Final UoC(s)

(PCR ONLY)

3.1.3 Total Allowable Catch (TAC) and Catch Data

The TAC and catch data for jack mackerel (*Trachurus murphyi*) are shown in Table 2.

Table 2. TAC and Catch Data

TAC	2018	517 582 t
UoA share of TAC	2018	35 186 t
UoC share of total TAC	2018	35 186 t
Total green weight catch by UoC	2017	29 652 t
	2016	12 828 t

3.2 Overview of the fishery

3.2.1 The Client fishery

The EU pelagic fleet in the south-eastern Pacific consists of pelagic trawlers that fish for jack mackerel (*Trachurus murphyi*) outside the economic zones of Chile and Peru, in the South Pacific Regional Fisheries Management Organisation (SPRFMO) convention area (see Figure 1. Illustrative map of the SPRFMO area (source: SPRFMO.int).

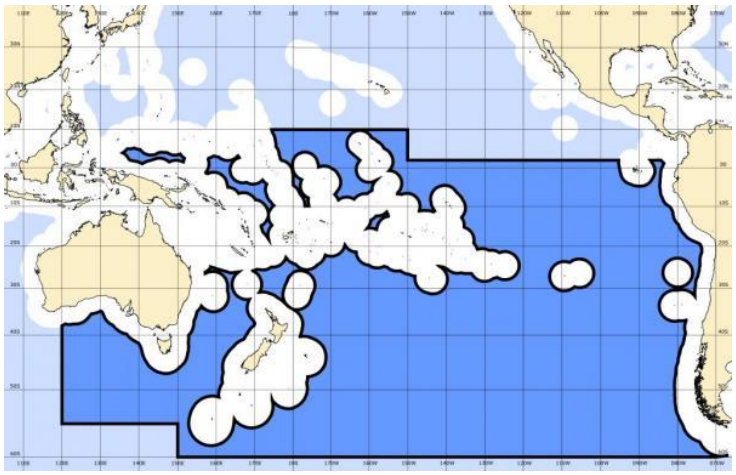

Figure 1. Illustrative map of the SPRFMO area (source: SPRFMO.int)

The stock of jack mackerel can be found in international waters mainly in April – November. During the rest of the year, the fish generally stay closer to shore inside the 200 nautical mile (nm) EEZ, and they are not accessible to the EU fleet. Consequently, the vessels then return to Europe or West Africa, or go to west coast of Canada for a transhipment operation of Pacific whiting. Each year, a fishing plan drafted by client group to make efficient use of the vessels and the quota within the year.

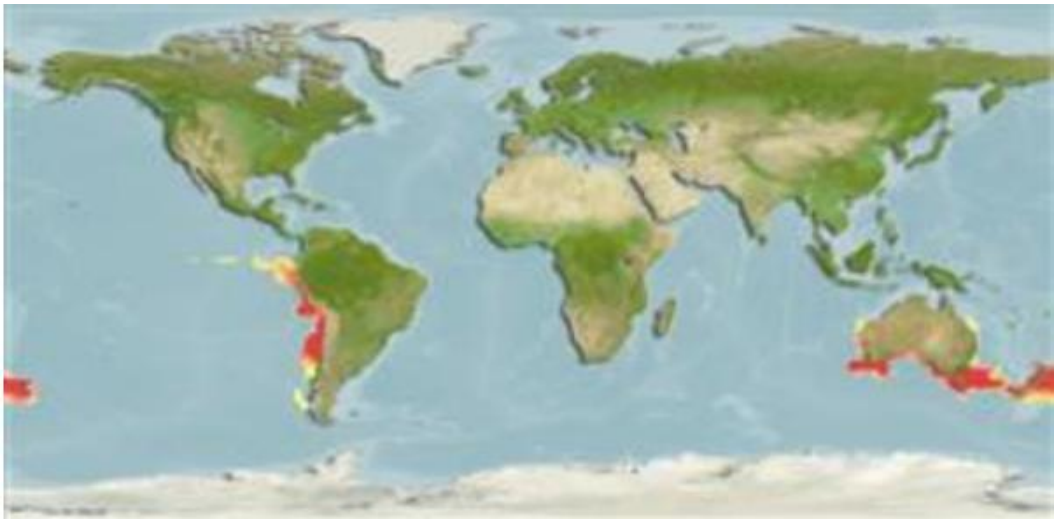

Figure 2. Computer generated distribution maps for jack mackerel (*Trachurus murphyi*), with modelled year 2100 native range map based on IPCC A2 emissions scenario. www.aquamaps.org, version of Aug. 2016. Web. Accessed 27 Jan 2020. Distribution range colours indicate degree of suitability of habitat which can be interpreted as probabilities of occurrence.

The first EU pelagic trawler arrived in the Pacific in 2005 and worked for 3 months in the second half of the year. The next year, the same vessel returned and worked for the whole season (March – October). Following the positive results of this season, the number of vessels increased to six in the following three years (2007 – 2009). All these vessels belonged to the Pelagic Freezer-trawler Association (PFA), a consortium of European pelagic ship owners based in the Netherlands. In addition to the PFA vessels, some Polish vessels worked in the area in 2009 - 2011.

Starting from 2010, the number of PFA vessels was reduced as a result of declining catches. Over the period 2008-2011, there was a continuous decline of the catch per unit of effort (CPUE), leading to a complete stop of the fishery in 2012. In 2013 the fishery was resumed by one vessel, and in 2014 - 2015 two vessels returned to the Pacific. Starting from 2012, catches have been restricted by national quota set by SPRFMO (Corten, A., 2015). A fishing plan is made by the client group to make efficiently use of the vessels and the quota within the year. There are no restrictions on the number of vessels that can fish in the convention area. The fishery is mainly managed through the quota. There is also a gross tonnage (GT) limitation which indirectly limits the fishing effort/number of vessels allowed to fish in this area. The SPRFMO secretariat keeps track of the vessels that are authorised to fish in the convention area (CMM 05-2019).

3.2.2 History of the fishery and its management

The *Trachurus murphyi* fishery began in the early 1950s and was predominantly carried out by Chilean vessels in the Chilean EEZ, which made up the majority of the catch (up to 75%). *T. murphyi* has been targeted with purse seines and pelagic trawls throughout the history of the fishery. The USSR fleet targeted this species in the high seas between 1978 and 1991, catching approximately 13 million tonnes (Government of Chile, 2007). The fishery reached the highest annual catch in 1995, with 4 955 186 tonnes caught. During the mid-2000s, Chile began fishing the high seas as well as its own EEZ, with up to 34% of its annual catch taken from the high seas. A stock that was thought to be inexhaustible came close to collapsing in the mid- to late 2000s as a result of intense fishing pressure in the 1990s. Regional management came into force around this time, in the form of the South Pacific Regional Fisheries Management Organisation (SPRFMO). In 2013 a recovery plan was set in action, and nowadays the jack mackerel spawning stock biomass is believed to be above MSY level (SPRFMO,

2017). Distant water fishing nations have maintained their presence in the South Pacific; China, the EU, Korea, and Russia all fished SPRFMO waters in 2018 (SPRFMO, 2019b).

3.2.3 Gear and operation of the fishery

The gear used in this fishery is the midwater otter trawl.

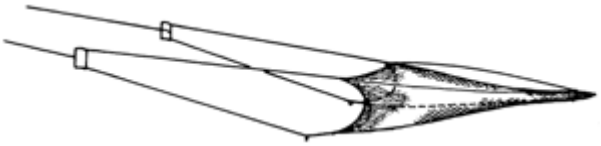

Figure 3. Midwater otter trawl (source: FAO.org)

A midwater otter trawl is a cone-shaped net which is towed in mid-water. The horizontal opening is maintained by otter boards. Floats and/or sailkites on the headline and weights on the groundline provide for the vertical opening. Large modern midwater trawls are rigged in such a way that the weights in front of and along the groundline provide for the vertical opening of the trawl. Midwater trawling is a targeted fishing activity (FAO.org). The vessels use sonars and echo sounders to check for schools of fish. Catch sensors in the net give information about the amount of caught fish. There are sensors every quarter of the codend. There is no discards chute. All vessels under certification use the same gear, with a mesh size of around 45-65 mm, though there are no technical regulations dictating mesh size for this fishery. The fishery takes place relatively close to the surface, between 20-100 m depth.

The jack mackerel fishery in Chilean and offshore waters is generally mono-specific. In the offshore fishery, the catch consists for 90 – 98% of jack mackerel, with minor bycatch of chub mackerel (*Scomber japonicus*) and Pacific bream (*Brama australis*) (SPRFMO, 2017).

3.2.4 Fishing areas and seasons

Although fishing is allowed year-round, the fishery generally takes place from April-November. The stock of jack mackerel occurs in international waters mainly during this period. During the rest of the year the fish stay closer to the coast, inside the 200-mile EEZ, and they are not accessible to the EU fleet. Peak season ranges from May to September.

The fishing area depends on several factors. Initially, the vessels will look at areas that have been successful in the past (the EU fishery for jack mackerel in the South Pacific goes back to 2005). They also look where other fleets are active, as generally the Chinese fleet starts fishing for jack mackerel first, followed by the EU vessel(s) and the Russian fleet. The vessels also make use of remote sensing from the marine institute in Chile, which keeps track of water temperatures, to get an indication of interesting areas (during some periods of the year jack mackerel seem to occur in waters of around 12°C, see also section 3.4.3). If needed, they will perform a 'blind search', as not all these techniques guarantee that the fish will be where it is expected (pers. comment client at site visit).

3.3 Principle One: Target Species Background

3.3.1 Life history

Jack mackerel (*Trachurus murphyi*) occurs in schools in oceanic waters in the South Pacific, mainly off Peru and Chile, and in the Southwest Pacific off New Zealand and Tasmania. Jack mackerel is also found in the Southwestern Atlantic off southern Argentina. They usually inhabit depths between 10

to 70 meters (Fishbase, 2019). Jack mackerel stay in international waters mainly between April – November, while during the rest of the year the fish move inside the 200-mile EEZ. These movements are associated to an offshore spawning migration in Spring and to an inshore feeding migration in autumn and winter (Serra, 1991 in Bertrand et al., 2004). According to Bertrand et al. (2004), jack mackerel also aggregates more during the night than during the day, related to their nocturnal foraging behaviour.

In addition, important environmental events in the South Pacific such as El Niño can affect jack mackerel spatial distribution. During such events, the depth of the 15^{o}C isotherm can change significantly affecting their spatial distribution and their distribution in different regions. The extent that such changes affect the overall population productivity is however unclear (SPRFMO, 2018a).

They can grow to a maximum length of 70 cm and reach 16 years of age (Fishbase, 2019). They forage mainly on macro-zooplankton and micronekton (mainly mesopelagic fish) (Konchina, 1981 in Bertrand et al., 2004). Maturity at length was consistently observed with L50 at about 23 cm fork length (FL) (SPRFMO, 2017).

Jack mackerel in the south pacific is considered to be composed of several stocks, although the exact number of stocks is yet to be determined. A number of competing stock structure hypotheses have suggested up to five and more separate stocks:

a. a Peruvian stock (northern stock) which is a straddling stock with respect to the high seas;
b. a Chilean stock (southern stock) which is also a straddling stock with respect to the high seas;
c. a central Pacific stock which exists solely in the high seas;
d. a southwest Pacific stock which exist solely in the high seas;
e. and, a New Zealand-Australian stock which straddles the high seas and both the New Zealand and Australian EEZs

In the eastern and central South Pacific, the SPRFMO has identified the following four alternative stock structure working hypotheses:

1. Jack mackerel caught off the coasts of Peru and Chile each constitute separate stocks which straddle the high seas;
2. Jack mackerel caught off the coasts of Peru and Chile constitute a single shared stock which straddles the high seas;
3. Jack mackerel caught off the Chilean area constitute a single straddling stock extending from the coast out to about 120°W;
4. Jack mackerel caught off the Chilean area constitute separate straddling and high seas stocks.

3.3.2 Stock assessment

Jack mackerel stock(s) is assessed by the SPRFMO Science Working Group (SWG). In its sub-group dedicated to jack mackerel, SWG assesses the stock based on two different stock composition working assumptions: two stocks, the southern (Chilean) stock and the northern (Peruvian), that straddle the high seas; and one stock (Chile & Peru) that straddle the high seas.

The SWG uses a statistical catch-at-age model that uses a forward projection approach and maximum likelihood estimation to solve for model parameters - the Joint Jack Mackerel Model (JJM). The model is flexible and permits the use of catch information either at age or size for any fleet, and explicitly incorporates regime shifts in population productivity. The model can be considered to consist of several components: (i) the dynamics of the stock; (ii) the fishery dynamics; (iii) observation models for the data; and (iv) the procedure used for parameter estimation (including uncertainties). This model was adopted as the assessment method in 2010 after several technical meetings (SPRFMO,

2018a). The catches of all countries fishing this stock since 1970 are combined in four distinct fleets: northern Chile, central-south Chile, far north (Peru) and offshore trawl (China, EU, Vanuatu and Korea). Biological data is then combined and calculated for these four different fleets (Figure 4).

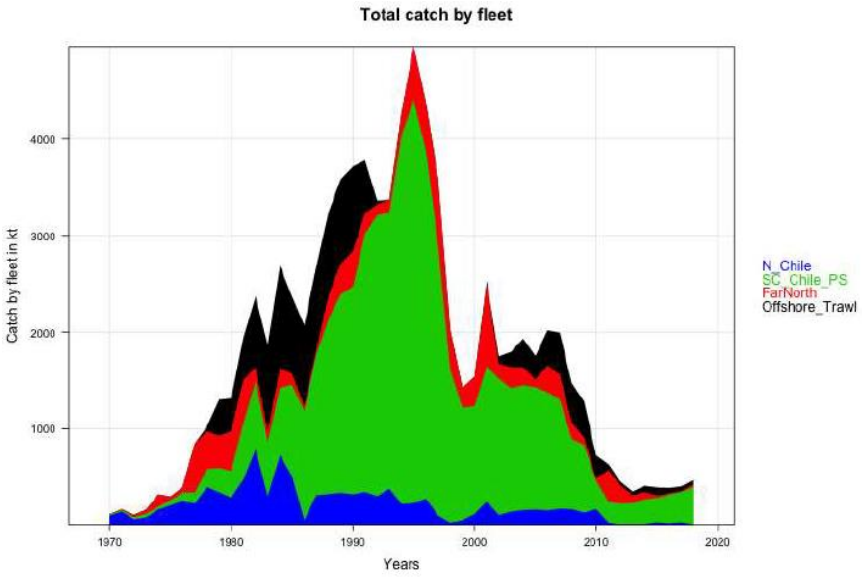

Figure 4. Catch of jack mackerel by fleet. Green is the SC Chilean fleet, black is the offshore trawl fleet, red is the far-north fleet, and blue in the northern Chilean fleet (SPRFMO, 2018a).

A jack mackerel benchmark assessment workshop was conducted in May 2018 (SCW6), focusing on reviewing new data sources, evaluating model assumptions and sensitivities as well as alternative assessment methodologies. The results and conclusions were then further discussed at the scientific committee (SC) meeting in September 2018 (SC6). The discussions in both meetings focused on the following topics:

- Review and update of data sets
- The weighting of different data sets (which are of different quality) and scientific approaches to assigning weights
- How to deal with ageing error and its potential impacts on the assessment
- Assumptions on fisheries and survey selectivity over the years
- Assumptions on growth and natural mortality
- The extent and mechanisms affecting how selectivity may vary over time
- The need for guidelines for CPUE data collection and standardisation methods

The benchmark workshop results lead to two main changes in the assessment:

- specific selection-at-age curve for the Chilean northern acoustic survey
- reduced age at first reproduction by one year

The benchmark workshop concluded on a preferred assessment configuration (model 1.13), namely with a selectivity change in Chile N acoustic in 2012 and 2016, replacement of offshore CPUE with new version CV=0.2, dropping Russian nominal index and rescaling sample size using Francis T1.8 method. The final agreed model by the scientific committee in September 2018, Model 1.5, is the same model agreed at SCW6, but assumes a lower steepness (h=0.65) for the stock recruitment model and a shorter time period for estimating stock-recruitment, i.e. based on the most recent recruitment time-series (2000-2015), and therefore uses a more precautionary approach for assessing stock status and providing advice (SPRFMO, 2018a).

Finally, two types of population structure were evaluated, as well as changes in Catch per Unit Effort (CPUE) indices, weighting of specific input datasets and different growth assumptions through a sensitivity analysis. A retrospective analysis shows consistent results in the biomass and fishing mortality in the most recent years (Figure 5).

Table 3. Data sources used in the stock assessment (Information from SPRFMO, 2018a).

Data	Source and description	
Catch	International total commercial landings are available since 1970 from all major fisheries: mainly Chile, EU, China, Peru, Ecuador, Korea, Russian Federation and Vanuatu, combined in fours fleets: northern Chile, central-south Chile, far north (Peru) and offshore trawl (China, EU, Vanuatu and Korea). Length frequencies (1975–2016) are available from Chile and all other major fleets, but age composition is available only from Chile. Five commercial CPUE series are available: - The Chilean south central (since 1983). - The Peruvian (2002-2014). - The Chinese (2001-2015). - The EU (2003-2016). - Russia (1987-1991, 2008-2009, 2011).	
Discards	Discards are considered negligible.	
Environmental data	Environmental variables (wind direction and speed, SST, etc.) are recorded by China.	
Maturity at age	Single stock: maturity-at-age 1 is assumed 0.07, age 2 is 0.31, 3 is 0.72, age 4 is 0.93, 5 is 0.98, age 6 is 0.99, and older ages are fully mature and constant over time. Far north stock: maturity-at-age 1 is assumed 0, age 2 is 0.37, 3 is 0.98, and older ages are fully mature and constant over time.	
Natural mortality	Single stock: fixed at 0.23. Far north stock: fixed at 0.33.	
Surveys	5 annual acoustic and egg & larvae surveys are used in the assessment. The surveys cover the stock distribution area, except the Peru surveys extending only 100 miles from coast.	
	Survey 1: North-Chile (1984-1988, 1991, 2006-2016)	Acoustic biomass and number and weight at age
	Survey 2: Central South-Chile (1997–2009)	Acoustic biomass and number and weight at age
	Survey 3: Central South-Chile (1999-2001,2003–2008)	Egg survey (Daily Egg Production Method)
	Survey 4: Peru (1986-2009, 2011-2013)	Acoustic biomass index
	Survey 5: Peru (1985-2008, 2010-2016)	Acoustic biomass and number & weight at age corrected using an environmental index.

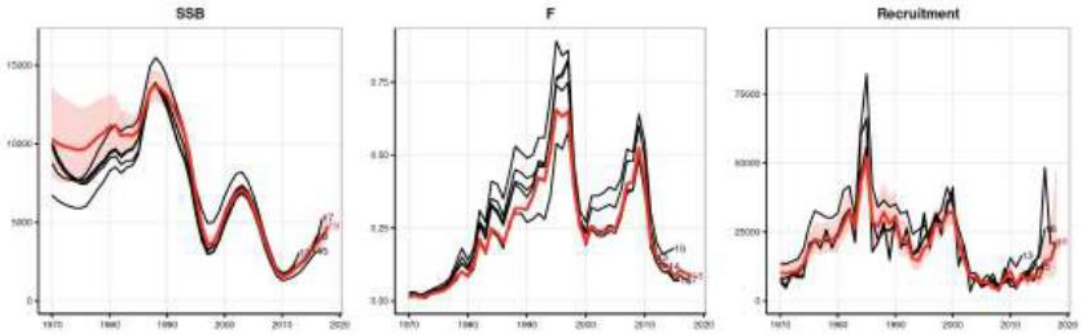

Figure 5. Historical retrospective of spawning stock biomass, fishing mortality, and recruitment (single-stock hypothesis), as estimated and used for advice from past (and present) SPFRMO scientific committees (SPRFMO, 2018a).

There remains however a number of key uncertainties associated with both the assessment and projections both in estimation and expectations of future environmental conditions. These were addressed by exploring different assumptions in model runs and comparing the results. Key uncertainties in the assessment include (SPRFMO, 2018a):

- Stock structure: considered through applying both single and two stock models.
- Natural mortality, M: highly uncertain, assumed constant for all ages and through time in the accepted models.
- Input data quality: a number of model runs excluded various data components and others changed the weighting of different data components.
- Growth: work continues on this important issue, a better understanding along with exchanges of samples and methods between members is still needed.

3.3.3 Stock trends

The results of the assessment performed by the SWG shows that the biomass of jack mackerel in the eastern and central South Pacific is increasing, from its lowest historical level in 2010, although it has not yet reached B_{MSY} (SSB_{2018} = 4 777 000 tonnes). Recruitment is also increasing since 2011, reaching the long-term average mean. Fishing mortality has decreased since its second historical peak in 2009, and is below F_{MSY} since 2012 (F_{2018} = 0.09; Figure 6 and Figure 7).

New information available to the assessment in September 2018, namely an update in the Chinese CPUE, a change in assumption on fleet selectivity, and reduced previous estimates of recruitment (2016-year class) resulted in the projected stock increase being somewhat moderated. Fishing mortality rates in the past three years decreased and this, along with a modest improvement in recruitment, contributed to an estimated increase in biomass (SPRFMO, 2018a).

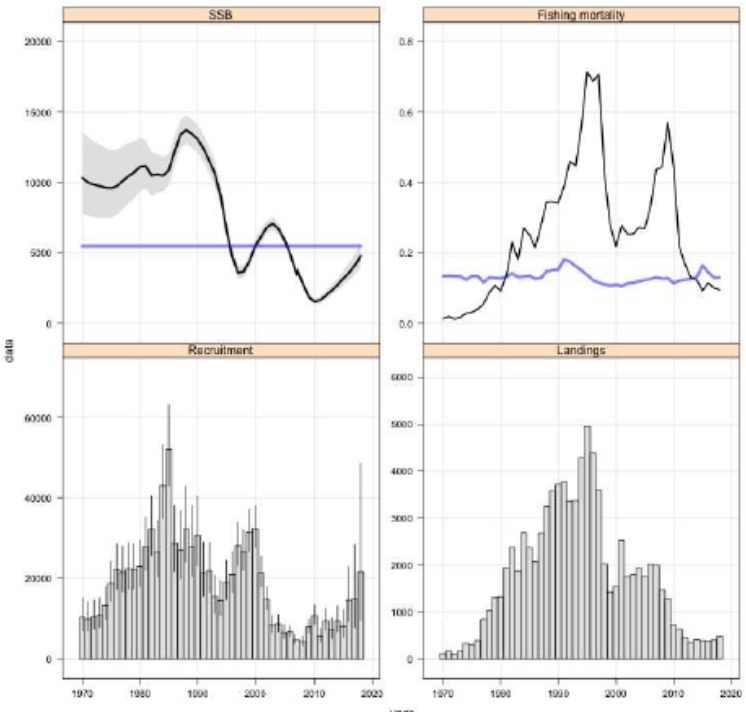

Figure 6. Model 1.5—single-stock hypothesis—summary estimates over time showing spawning biomass (kt; top left), recruitment at age 1 (millions; lower left) total fishing mortality (top right) and total catch (kt; bottom right). Blue lines represent the provisional B_{MSY} (upper left) and dynamic estimates of F_{MSY} (upper right) (SPRFMO, 2018a).

Regarding the two-stock model approach, the Northern unit shows stable and relatively low biomass over the past decade, while the southern unit shows an increasing trend. Fishing mortality is estimated to be below F_{MSY} levels and biomass just below interim B_{MSY} levels. Recruitment in the most recent is at or just below long term mean recruitment since the 1970s (SPRFMO, 2018a).

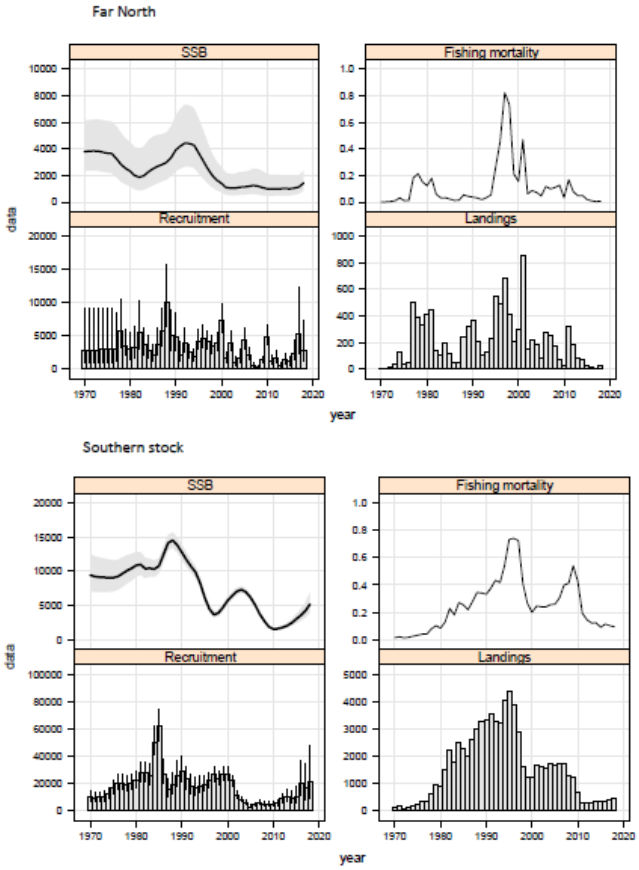

Figure 7. Model 1.5—two-stock hypothesis—summary estimates over time showing spawning biomass (kt; top left), recruitment at age 1 (millions; lower left) total fishing mortality (top right) and total catch (kt; bottom right) for the "Far North" stock (top set) and for the "Southern" stock (bottom set) (SPRFMO, 2018a).

Changes in regime may affect future recruitment levels, which in turn will affect estimates of biomass through projections. Biomass was projected forward based on the estimated recruits to evaluate the impact of fishing under four scenarios with different recruitment (and hence productivity) assumptions. Uncertainties about environmental regimes have thus been addressed through these range of scenarios. For the jack mackerel stock, fishing appears to be a major cause of the population trend, with the current level at below 37% of what is estimated to have occurred had there been no fishing (SPRFMO, 2018a).

Projections using the entire time series of recruitment (1970-2015) under the assumption of constant fishing mortality equal to 2018 levels (Model 1.4) indicate that the biomass is expected to increase over the next 10 years. Projections using recruitment levels from 2000-2015 (a period of lower productivity compared to that prior to 2000; Model 1.5) indicate that the biomass is expected to increase over the next 5 years but then stabilize at a point below the provisional B_{MSY} of 5.5 million tonnes (Figure 8; SPRFMO, 2018a).

Considering a lower stock productivity, i.e. lower recruitment, spawning biomass is still expected to increase from the 2018 estimate of 4.8 million t to 5.6 million t in 2019 (with approximate 90% confidence bounds of 4.5 – 7.0 million t). Biomass in 2018 is therefore estimated at 87% of provisional B_{MSY} value. The indications of stock improvement (higher abundance observed in the acoustic survey in the northern part of Chile, better catch rates apparent in some fisheries, and increase in average age in the Chilean fisheries) drive the increase (SPRFMO, 2018a).

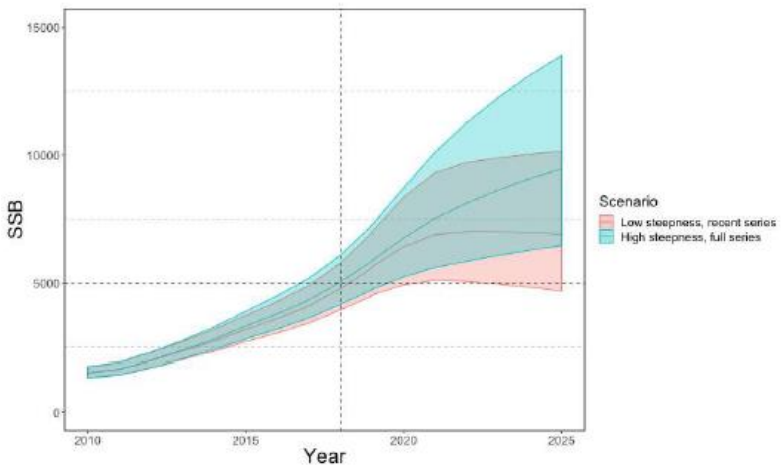

Figure 8 - Projections of jack mackerel population for *status quo* fishing (2018 value) under different recruitment assumptions. The provisional B_{MSY} is 5.5 million t (SPRFMO, 2018a).

Regarding the Harvest Control Rule (HCR) agreed in the jack mackerel rebuilding plan and considering the current stock status (B_{2018} = 4.8 million t), the second tier of the plan could be applied (SSB_t > 80% of B_{MSY} and SSB_t < B_{MSY}), thereby increasing the potential catch by a maximum of 15%. This would result in a 2019 catch level for jack mackerel within the entire jack mackerel range to be at or below 662 kt. However, this advice is based on an HCR with a constant 5.5 million t B_{MSY} provisional level.

If one considers recent high B_{MSY} values estimated in the model (likely due to changes in selectivity of all fisheries combined, Figure 8), **current SSB would represent only around 70% of B_{MSY}.** This would then lead to an advice, under the rebuilding plan, of *status quo* fishing mortality resulting in catch levels at or below 591 kt (rephrased from SPRFMO, 2018a). The SC noted this precautionary approach was advisable since a) retrospective analysis shows a tendency for the assessment to overestimate stock size and b) new information suggests that growth of jack mackerel has historically been underestimated. These two factors warranted additional precaution until further research on their impacts on the assessment can be done (SPRFMO, 2018a).

3.3.4 Reference points

MSY reference points for jack mackerel in the eastern and central South Pacific are estimated within the JJM model, and are a function of time-varying selectivity and average weight. Therefore, there is a distinct annual value of F_{MSY} and B_{MSY} (SPRFMO, 2017, 2018a). However, the provisional MSY reference points used in the HCR of the jack mackerel rebuilding plan were initially estimated in the first meeting of the scientific committee in 2013 (SPRFMO, 2013), which was then referred to in the 2014 proposed jack mackerel rebuilding plan (SPRFMO, 2014b) and were provisionally used in the HCR until 2019.

Table 4. Reference points estimated by the SWG for jack mackerel in the eastern and central South Pacific based on one stock hypothesis.

Parameter	Role	Description	Value	Source
Biomass		$B_{MSY2018}$	4 514 000 tonnes	Estimated in the model a function of time-varying selectivity and average weight (SPRFMO, 2018a).

Parameter	Role	Description	Value	Source
		Recent B_{MSY} model estimates	Around 6 900 000 tonnes	Used to provide 2019 catch advice (SPRFMO, 2018a).
	provisional MSY HCR target	B_{MSY}	5 500 000 tonnes	Provisional MSY reference point of the Harvest Control Rule of the SPRFMO Jack Mackerel rebuilding plan (SPRFMO, 2013, 2014b).
	provisional HCR limit	80% $B_{MSY2018}$	4 400 000 tonnes	Harvest Control Rule of the SPRFMO Jack Mackerel rebuilding plan (SPRFMO, 2014b).
	B_{loss}	B_{2010}	1 538 000 tonnes	Lowest historical biomass estimated by the 2018 stock assessment (SPRFMO, 2018a).
Fishing mortality	MSY	$F_{MSY2018}$	0.13	Estimated in the model a function of time-varying selectivity and average weight (SPRFMO, 2018a).
	provisional MSY HCR target	F_{MSY}	0.25	Provisional MSY reference point of the Harvest Control Rule of the SPRFMO Jack Mackerel rebuilding plan (SPRFMO, 2013, 2014b).

A retrospective analysis shows a pattern of overestimating both MSY reference points, B_{MSY}, and F_{MSY} by the stock assessment model, although the ratio of the associated annual biomass and fishing mortality shows similar ranges, particularly in recent years (Figure 9).

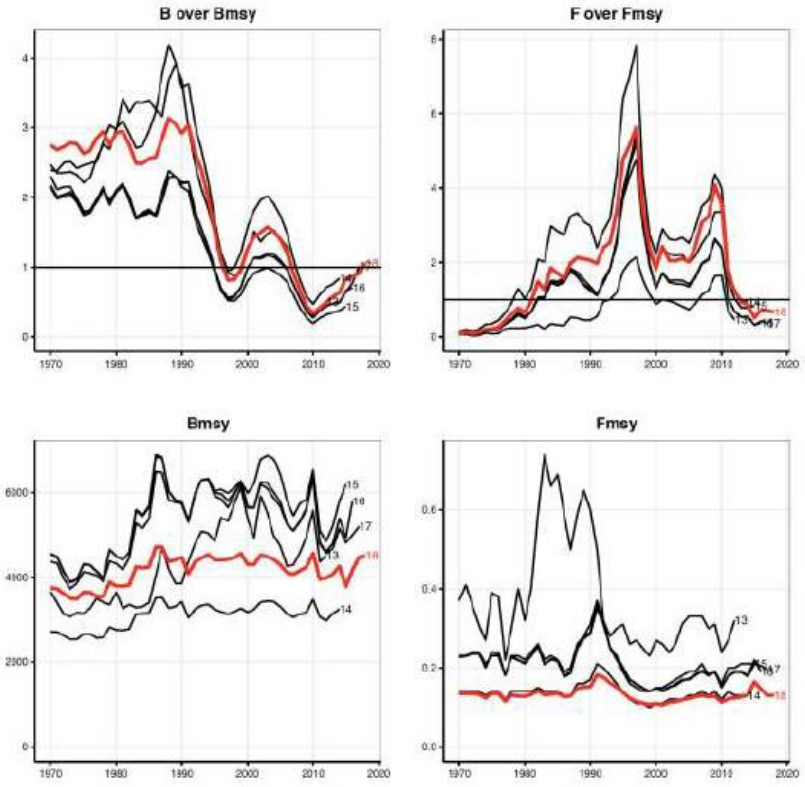

Figure 9. Historical retrospective of management reference points (single-stock hypothesis), as estimated and used for advice from past (and present) SPRFMO scientific committees (SPRFMO, 2018a).

3.3.5 Management

The south pacific jack mackerel is managed internationally under the South Pacific RFMO since 2010. For the international waters, the first voluntary agreement on limitation of the number of vessels was introduced in 2010 (SPRFMO, 2017). Gross Tonnage limits were set to the total tonnage of flagged vessels that were engaged in such fishing activities in the convention area in 2007 or 2008 or 2009 (SPRFMO, 2018b, 2019). Starting from 2011, catch limits for jack mackerel were also established for all countries fishing in the south-eastern Pacific (SPRFMO, 2017).

In 2014, the SPRFMO agreed on a rebuilding plan for the jack mackerel stock, with the short-term objective of ensuring continued growth of the jack mackerel spawning stock biomass (SSB) at least until 80% of B_{MSY} or suitable proxy (SPRFMO, 2014a, Table 5). In the most recent meeting of the SPRFMO SC (2018a), the SC recommends a revision of the Harvest Control Rule and to re-evaluate the current management strategy and develop an alternative that is robust to assessment uncertainties.

Table 5. Harvest Control Rule of the SPRFMO Jack Mackerel rebuilding plan. SSB_t is the estimated spawning stock biomass in the next year, $C_{replacement}$ is the catch in a future year which would keep SSB the same (SPRFMO, 2014b). B_{MSY} is assumed to be 5.5 million tonnes and F_{MSY} 0.23 (SPRFMO, 2013).

Stock status	TAC calculation method
SSB_t < 80% of B_{MSY} (or proxy)	1) Compute yield (C_{trial}) at estimated F_{2013} or F_{MSY} (whichever is smaller) If C_{trial} < $C_{replacement}$ set catch at or below C_{trial} (the stock will increase) Else if C_{trial} > $C_{replacement}$ set catch at or below $C_{replacement}$ (the stock remains stable)
SSB_t > 80% of B_{MSY} (or proxy) and SSB_t < B_{MSY} (or proxy)	2) Compute yield (C_{trial}) at estimated F_{MSY} (or proxy) If C_{trial} < $C_{replacement}$ set catch at or below C_{trial} (the stock will increase) Else if C_{trial} > $C_{replacement}$ use method 1)
SSB_t > B_{MSY} (or proxy)	3) Set catch at or below value based on F_{MSY}

Jack mackerel was previously managed by coastal states beginning in the mid-1990s. National catch quotas for jack mackerel were introduced by Peru in 1995 and by Chile in 1999. Peru introduced a ban on the use of jack mackerel for fish meal in 2002 (SPRFMO, 2017). In Peru, since 2007, the management of the Jack mackerel fisheries includes a fishing access regime that regulates the fleet size and the allocation of fishing licenses, which can only be granted to vessels fishing only for direct human consumption. Other measures currently in force include those establish a minimum mesh size, the ban to catch or land specimens under 31 cm total length limit, the opening and closing of the fishing seasons, and catch limits or annual quotas (Zuzunaga, 2013).

In Chile, jack mackerel fishery is also managed through a national TAC since mid-2000s allocated between the artisanal and the industrial fleet. Since 2013, Chile TAC matches the SPRFMO TAC for Chile share (64,56% at this moment). In the case of the industrial fleet, the TAC is allocated under a scheme of “maximum catch limits per shipowner” according to the shipowner’s historical catch records, and a correction factor established in fisheries law for the hold capacity of the fishing vessels. Management includes spatial controls and a minimum size of 26 cm (SPRFMO, 2014c).

In 2018, the total catch of *Trachurus murphyi* throughout the range of the stock was set to not more than 576,000 tonnes. In 2019, following the recommendations of the SPRFMO scientific committee, which followed the HCR of the jack mackerel rebuilding plan but not the provisional reference points used until then, catches throughout the range of the stock were set not to exceed 591,000 tonnes (SPRFMO, 2019).

3.3.6 Key Low-Trophic Level Species

Jack mackerel is not identified by default in the MSC criteria as a low trophic level (LTL) species. In this case, MSC criteria defines low trophic level species based on its life history and biology: 1) the species feeds predominantly on plankton; 2) has a trophic level of about 3 (but potentially ranging from 2 to 4); 3) is characterised by small body size, early maturity, high fecundity and short life span (default values: <30cm long as adults, mean age at maturity <= 2, >10,000 eggs/spawning, maximum age <10 years respectively); and 4) forms dense schools.

Based on the information above on the species biological attributes, jack mackerel forms dense schools and has a trophic level around 3 (3.3, www.fishbase.org). However, jack mackerel inhabits one of the most productive marine ecosystems, where other pelagic species have a fundamental role in transferring energy from lower to higher trophic levels. In the South Pacific upwelling system anchovy is one of the dominant LTL species, together with *i.a.* lantern fish (*Vinciguerria sp*.) and squat lobsters (*Munida sp*.) and as such transfer a very large proportion of the total primary production to higher trophic levels (see Figure 10). Jack mackerel, by feeding on a large range of prey including zooplankton, transfers energy from primary producers to top predators. Moreover, jack mackerel can switch from zooplankton to pelagic fish depending on prey abundance (Cury et al., 2000) while a recent study have shown that jack mackerel has a predicted high trophic position of 4.2, being a top predator (Espinoza et al., 2017).

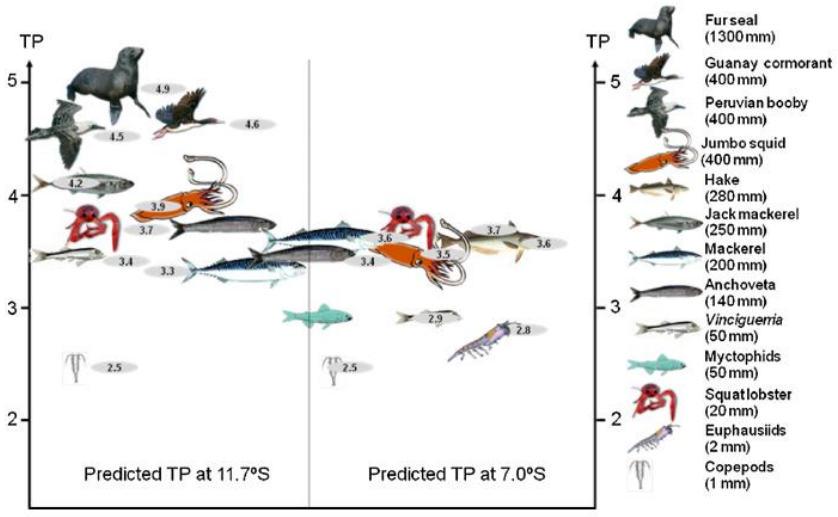

Figure 10. Predicted trophic positions (TP) at 11.7°S (Vinciguerria, mackerel, squat lobster, anchoveta, jumbo squid, jack mackerel, Peruvian booby, guanay cormorant, fur seal) and 7.0°S (euphausiids, myctophids, Vinciguerria, anchoveta, jumbo squid, mackerel, hake and squat lobster) (Espinoza et al., 2017).

Furthermore, it does not have a small body size, short life span or matures early according to MSC criteria. In addition, jack mackerel is an opportunistic feeder foraging on a large range of prey, from copepods to mesopelagic fish. Therefore, two (or even three, depending on the source) of the four criteria that according to the MSC criteria need to be met to be designated as a LTL species are not, and as such the stock is not assessed as a key LTL stock.

3.3.7 Primary and Secondary species

The catch composition is designated into components according to the criteria described above.

3.3.7.1 Analysis of Catch composition

The SPRFMO Conservation and Management Measure (CMM) on Standards for the Collection, Reporting, Verification and Exchange of Data (CMM 02-2018) states that Members and Cooperating non-Contracting Parties (Members and CNCPs) compile data on fishing activities and the impacts of fishing and provide these in a timely manner to the Secretariat of SPRFMO. CMM 02-2018 also calls for the Implementation of observer programmes (SPRFMO, 2018b): "Members and CNCPs are to develop, implement and improve observer programmes to attain the following objectives:

- To collect vessel information, effort and catch data for all fisheries and fished species in the Convention Area, including target, by-catch and associated and dependent species;
- To collect biological or other data and information relevant to the management of fishery resources in the Convention Area, as specified in these standards, or as identified from time to time by the Scientific Committee or through processes identified by the Commission;
- To collect relevant scientific information related to the implementation of the provisions of the Conservation and Management Measures (CMMs) adopted by the Commission;
- To collect representative data, including length-frequency and biological samples, across the Convention Area, distribution of fishing effort, seasons, fishing fleets and fleet types."

CMM 02-2018 prescribes what information and data needs to be collected, in what format, and by when it needs to be provided to the SPRFMO secretariat. All SPRFMO Members and Cooperating non-Contracting Parties (CNCPs) should provide annual observer implementation reports, which should include sections covering: observer training, programme design and coverage, type of data collected, and any problems encountered during the year. Members and CNCPs are to ensure that fishery data are verified through an appropriate system (SPRFMO, 2018b).

The annual reports shall be adequate enough to allow the Compliance and Technical Committee, the Scientific Committee or the Commission to evaluate the implementation and effectiveness of observer programmes implemented under this standard (SPRFMO, 2018b).

To meet the requirements, an 'Observer Manual for PFA vessels in the Pacific' has been devised (Corten, A., 2015a). This manual describes working methods and sampling procedures for scientific observers on board PFA trawlers in the southeastern Pacific. Adaptations to the observer program can be made according to new requirements, as laid out in the CMMs.

The observer program on board EU trawlers in 2017 and 2018 was designed to meet the requirements of the paragraph 22 of the SPRFMO CMM 01-2017 and CMM 01-2018 (Conservation and Management Measure for *Trachurus murphyi*), i.e. to ensure a minimum of 10% scientific observer coverage of trips for trawlers flying the EU flag and to ensure that such observers collect and report data as described in the SPRFMO CMM 02-2017 and CMM 02-20182 (Data Standards) respectively (Wójcik et al., 2018).

In 2017 the observer programme covered over 24% of fishing days. In 2018, at the time of writing the annual report (July 2018; Wójcik et al., 2018) two out of three trips were covered by observers (Wójcik et al., 2018). Over the years 2015-2017 analysis showed that around 35% of the catch was covered by scientific observers. Over these years, eight trips were covered by both self-sampling and scientific observers (SPRFMO, 2018c).

Through the SPRFMO website, the observer reports were available, containing recent (2009-2018) catch composition data. The reports cover the activities of the observer program of the European Union (EU) in the SPRFMO Convention area. The information was provided already analysed within an overall observer report, in percentages of the overall catch weight (Figure 11).

year	total EU catch in tons	species composition in percentages			
		Trachurus murphyi	*Scomber japonicus*	*Brama australis*	other species
2009	91 336	95.3	4.3	0.4	0.0
2010	34 083	97.2	1.9	0.6	0.3
2011	1 810	98.3	0.2	1.3	0.2
2012	0				
2013	10 390	97.2	2.2	0.6	0.0
2014	21 431	95.7	3.5	0.3	0.5
2015	27 955	98.1	1.1	0.6	0.2
2016	12 828	91,9	6,3	0,3	1,5
2017	29 652	93,3	6,2	0,3	0,3
2018*	7 434	94,2	0,7	2,3	2,8

* January-June 2018

Figure 11. Total catch (tons) and species composition (%) of the EU fleet in 2009 – 2018. Based on landing data provided by ship owners. Data for 2018 are provisional and based on estimated catch data (Source: Wójcik I., et al., 2018)

In addition to the observer data, the fishery takes part in a self-sampling programme.

Table 6. Catch composition by year in FAO area 87 (Table 3.2.1 in Pastoors et al, 2019)

species	englishname	scientificname	2015	2016	2017	2018	all
cjm	jack mackerel	Trachurus murphyi	26,886	9,432	27,652	9,620	73,589
mas	chub mackerel	Scomber japonicus	806	674	1,837	117	3,434
bru	rays bream	Brama australis	146	24	83	290	543
uba	blue fathead	Cubiceps caeruleus	51	146	80	208	485
slt	slender tuna	Allothunnus fallai	32	0	0	0	33
poa	pomfret	Brama brama	0	6	0	0	6
ytc	yellowtail amberjack	Seriola lalandi	0	2	0	0	2
gis	jumbo flying squid	Dosidicus gigas	0	0	0	0	0
(all)	(all)	(all)	27,921	10,284	29,652	10,235	78,092

For the South Pacific (FAO area 87) all trips have been sampled for each of the PFA vessels participating in the fishery (Pastoors et al, 2019).

Of the total catch of 7434 tonnes, 5.8% was bycatch of non-target species (or 431 tonnes). All species are landed and used for human consumption. The catch composition (based on Figure 11 and Table 6) is divided into the following components (Table 7):

Table 7. Catch composition allocated into Primary and Secondary species in 2015-2018

	Total amount caught (t) 2015-2018	Percentage of total catch (%)	Main/minor

Primary	*none*		
Secondary			
Scomber japonicus, chub mackerel	3,434	4.40*	Main
Brama australis, rays bream	543	0.70	Minor
Cubiceps caeruleus, blue fathead	485	0.62	Minor
Allothunnus fallai, slender tuna	33	0.04	Minor
Brama brama, pomfret	6	0.01	Minor
Seriola lalandi, yellowtail amberjack	2	0	Minor

* Since chub mackerel catches are > 5% in some years, this species has been classified as 'main', even though the average comes out a little below 5%

3.3.7.2 Self-sampling program

The PFA self-sampling program has been incrementally implemented on freezer-trawler vessels from the Netherlands, United Kingdom, Germany, France, Poland and Lithuania during the years 2015-2018. They have adapted a cross-referencing method in making sure that when there is an observer on board, there is also self-sampling data. This is used to increase confidence in the program. The intent is to improve on this cross-referencing, though it recognised it takes time and effort to align methods and results (pers. comment M. Pastoors at site visit).

From the PFA self-sampling report 2015-2018 (Pastoors et al, 2019):
"*The self-sampling program is designed in such a way that it follows as closely as possible the working practices on board of the different vessels and that it delivers the biological and fisheries information needed for the relevant scientific bodies (e.g. ICES, SPRFMO, CECAF), certification bodies (e.g. MSC) and as a mechanism of feedback for the participating companies.*

An important feature of the PFA self-sampling program is that it is tuned to the capacity of the vessel-crew to collect certain kinds of data. …
The following main elements can be distinguished in the self-sampling protocol:

- *haul information (date, time, position, weather conditions, environmental conditions, gear attributed, estimated catch, optionally: species composition)*
- *batch information (total catch per batch=production unit, including variables like species, average size, average weight, fat content, gonads y/n and stomach fill)*
- *linking batch and haul information (essentially a key of how much of a batch is caught in which of the hauls)*
- *length information (length frequency measurements, either by batch or by haul)*

The self-sampling information is collected using standardized Excel worksheets. Each participating vessel will send in the information collected during a trip by the end of the trip. The data will be checked and added to the PFA database. Standardized trip reports are generated (using RMarkdown) which

will be sent back to the vessel within one or two days. The compiled data for all vessels is being used for specific purposes, e.g. reporting to expert groups, addressing specific fishery or biological questions and supporting detailed biological studies. The PFA publishes an annual report on the self-sampling programme".

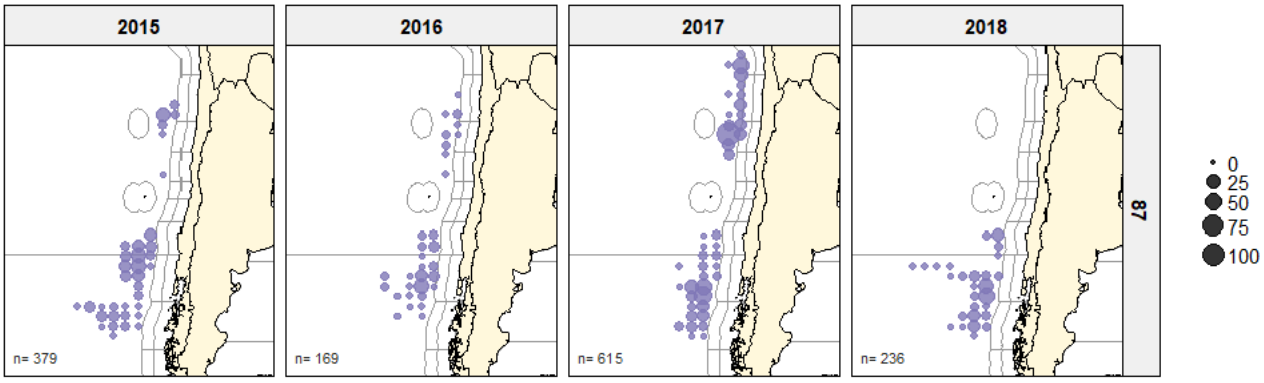

Figure 12. Number of hauls in PFA self-sampled fisheries by large FAO area (87 South Pacific). n indicates the total number of hauls (Figure 3.1.1 in Pastoors et al., 2019)

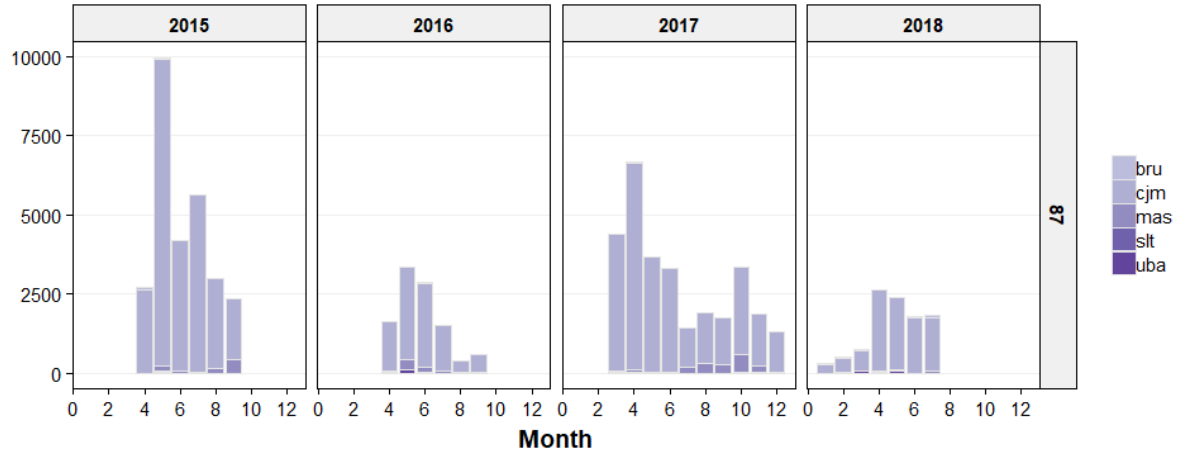

Figure 13. Total catch (tonnes) by month and species in PFA self-sampled fisheries, plotted by year and FAO area (Figure 3.1.2 in Pastoors et al., 2019)

The captain and crew get on the job training to carry out the self-sampling (often with the help of the observers), and a manual for self-sampling is provided (Pastoors, M., 2018). The program is an extension of work already done as part of quality assessment of the catch. The self-sampling is therefore carried out by the vessel quality managers on board of the vessels, who have a long experience in assessing the quality of the fish, and by the skippers/officers with respect to the haul information.

The overall number of length measurements between the self-sampling and observer trips is comparable, but self-sampling samples fewer fish per trip but more (all) trips while the observer program measures more fish but on fewer trips. Comparisons of the cumulative catch per trip show close correspondence between the two sampling programs, as does the species compositions (Pastoors, M. et al., 2018).

3.3.7.3 Chub mackerel

As shown in Table 7, the only species that can regarded as 'main' is chub mackerel (*Scomber japonicus*) since chub mackerel catches are > 5% in some years, even though the average comes out a little below 5%.

There are no specific management arrangements within the SPRFMO area with regards to chub mackerel, nor are there specific strategies to mitigate catches. It may benefit from measures put on the jack mackerel (*Trachurus murphyi*) fishery (as outlined in CMM 01-2018), and the fact that the European jack mackerel fishery only takes place between April – November on the South Pacific high seas.

Chub mackerel catches by the European fleet are monitored through the 'observer program of the European Union (EU) in the SPRFMO Convention', and the PFA self-sampling program (as described in sections 3.3.7.1 and 3.3.7.2). The self-sampling program delivers information on spatial and temporal evolution of the fishery, species and length compositions and ambient fishing conditions (temperature and depth). There is no stock assessment or annual review or Scientific Committee advice on chub mackerel.

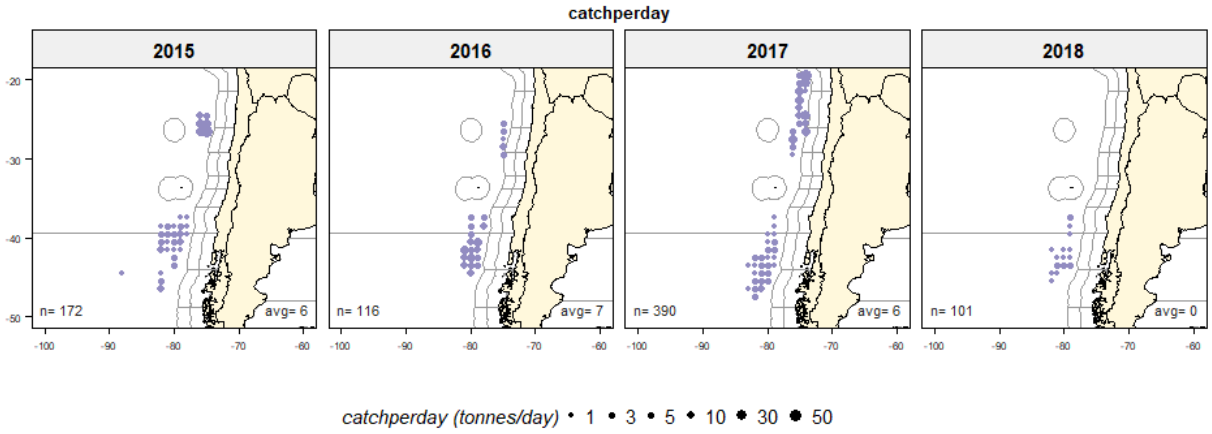

Figure 14. Chub mackerel (South Pacific) catch per day by year (Appendix 8.12 in Pastoors et al., 2019)

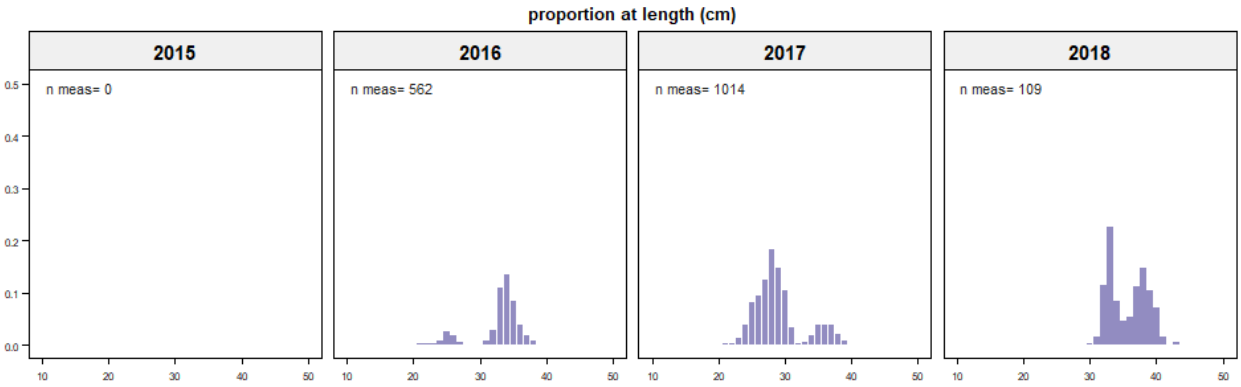

Figure 15. Chub mackerel (South Pacific) catch, proportion at length (Appendix 8.12 in Pastoors et al., 2019)

Chub mackerel reaches maturity at L_m 26.1 cm, with a maximum length of 64.0 cm TL male/unsexed, and common length: 30.0 cm FL male/unsexed (source: Fishbase). Catch data shows that the catches

of this species >20 cm, with a peak around 27-40 cm (see Figure 15). The mesh size used in the jack mackerel fishery is commonly between 43-65 cm.

Adults stay near the bottom during the day; go up to the open water at night, where they feed on copepods and other crustaceans, fishes and squids. Spawning most often occurs at water temperatures of 15° to 20°C. They spawn in batches with 250 to 300 eggs per g of fish with the total number of eggs per female ranging from 100,000 to 400,000. Eggs and larvae are pelagic (source: Fishbase).

The following information is derived from the SPRFMO chub mackerel species profile (SPRFMO, 2014 and references therein): ”Matsui (1967) describes the distribution of *S. japonicus* in South Pacific to be from Panama to Chile, around including around the Galapagos Islands, with austral limits at Guamblin Island, at 45°41’S. The longitudinal distribution includes areas outside EEZ limits in the south (off Chile), but it occurs mainly within 100 nm of the coast in the north.

In Chile there is no confirmed information about feeding or spawning migrations. Nevertheless, Hernández (1991) observes that it is considered the species migrates from feeding in deeper areas to spawning areas nearest the coast. This behaviour may cause substantial changes in fishery availability, and consequently high variability in fisheries catches”.

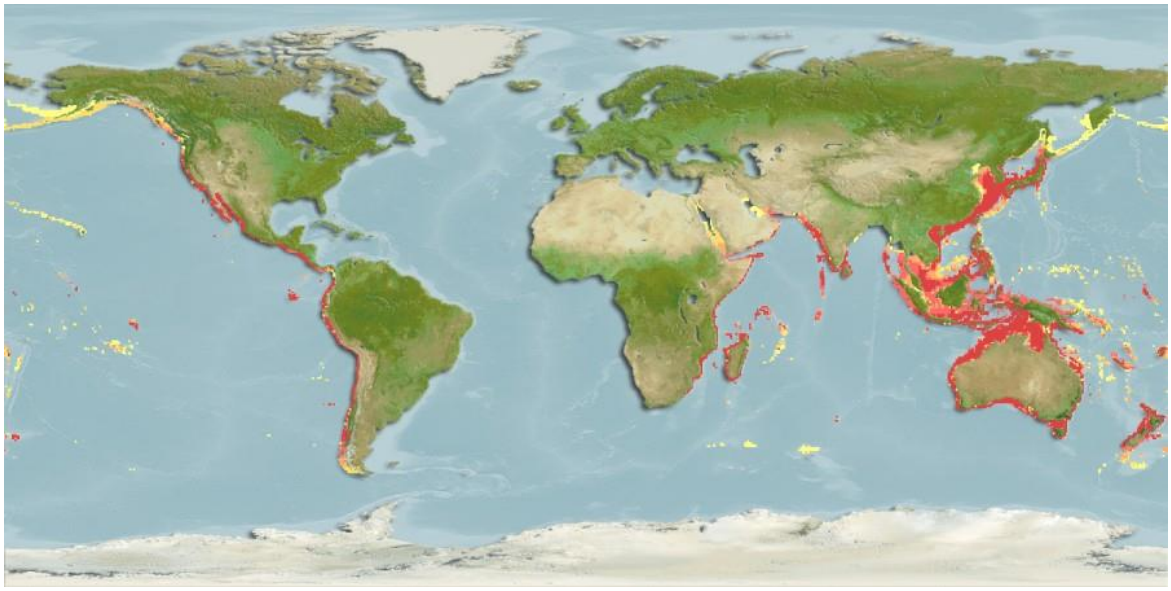

Figure 16. Computer generated distribution maps for *Scomber japonicus* (Chub mackerel), with modelled year 2100 native range map based on IPCC A2 emissions scenario. www.aquamaps.org, version of Aug. 2016. Web. Accessed 16 Jan. 2019. Distribution range colours indicate degree of suitability of habitat which can be interpreted as probabilities of occurrence.

The general distribution of chub mackerel seems to be more coastal (less oceanic) than jack mackerel, and that much of high abundances of chub mackerel in the high seas would not be expected (pers. comment Jorge Csirke - Independent Consultant Fish Stock Assessment and Fisheries Management).

SPRFMO, 2014 and references therein: “*S. japonicus* is a pelagic fish with gregarious behavior. In Chilean waters it forms schools usually with jack mackerel (*Trachurus murphyi*) and sardine (*Sardinops sagas*) at the adult stages, but also with anchovy (*Engraulis ringens*) when smaller than 15 cm. It is uncommon for *S. japonicus* to inhabit waters deeper than 50 m and according to Maridueña & Menz (1986) the species undertakes vertical migration to surface for feeding. However, Hernández (1991)

relates the occurrence of *S. japonicus* about the Big Canaries Islands to be over the continental slope, from the surface to 300 meters depth."

3.4 Principle Two: Ecosystem Background

3.4.1 Designation of species under Principle 2

The fishery's impact of non-target species is analysed differently if the species is from a "managed" stock or not, or considered Endangered, Threatened or Protected (ETP). These are defined as follows:

Primary species (MSC Component 2.1):

Species in the catch that are not covered under P1

Species that are within scope of the MSC program, i.e. no amphibians, reptiles, birds or mammals

Species where management tools and measures are in place, intended to achieve stock management objectives reflected in either limit (LRP) or target reference points (TRP). Primary species can therefore also be referred to as 'managed species'.

Secondary species (MSC Component 2.2):

Species in the catch that are not covered under P1

Species that are not managed in accordance with limit or target reference points, i.e. do not meet the primary species criteria

Species that are out of scope of the programme, but where the definition of ETP species is not applicable (see below).

ETP (Endangered, Threatened or Protected) species (MSC Component 2.3) are assigned as follows:

Species that are recognised by national ETP legislation

Species listed in binding international agreements (e.g. CITES, Convention on Migratory Species (CMS), ACAP, etc.)

Species classified as 'out-of scope' (amphibians, reptiles, birds and mammals) that are listed in the IUCN Redlist as vulnerable (VU), endangered (EN) or critically endangered (CE).

Both **primary** and **secondary** species are defined as 'main' if they meet the following criteria:

The catch comprises 5 % or more by weight of the total catch of all species by the UoC;

The species is classified as 'less resilient' and comprises 2 % or more by weight of the total catch of all species by the UoC. Less resilient is defined here as having low to medium productivity, or species for which resilience has been lowered due to anthropogenic or natural changes to its life-history;

The species is out of scope but is not considered an ETP species (secondary species only);

Exceptions to the rule may apply in the case of exceptionally large catches of bycatch species.

3.4.2 Endangered, Threatened or Protected (ETP) species

ETP (Endangered, Threatened or Protected) species are defined by MSC as species that are:

- Recognised by national ETP legislation;

- Listed in binding international agreements (e.g. CITES, Convention on Migratory Species (CMS), ACAP, etc.);
- Classified as 'out of scope' (amphibians, reptiles, birds and mammals) that are listed in the IUCN Redlist as vulnerable (VU), endangered (EN) or critically endangered (CE).

In the context of the SPRFMO area, ETP species include seabirds, marine mammals and reptiles. A number of fish species may also be considered in this definition, for example the elasmobranch species listed by the Convention on the Conservation of Migratory Species of Wild Animals (also known as CMS or Bonn Convention) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (Debski, I., 2013; SPRFMO, 2018b).

CMM 02-2018 (Data standards, SPRFMO, 2018b) Annex 14 defines "other species of concern" as being:

- *Carcharhinus longimanus* (Oceanic whitetip shark)
- *Carcharodon carcharis* (Great white shark)
- *Cetorhinus maximus* (Basking shark)
- *Lamna nasus* (Porbeagle shark)
- *Manta spp*. (Manta rays)
- *Mobula spp*. (Mobula nei)
- *Rhincodon typus* (Whale shark)

CMM 09-2017 (minimising bycatch of seabirds; SPRFMO, 2017a) notes that some species of albatrosses and petrels are threatened with global extinction and notes the overlap in the distribution of albatrosses and petrels with fishing effort in the Convention Area. The Agreement on the Conservation of Albatrosses and Petrels (ACAP) is cited as having established best practice seabird bycatch mitigation measures for trawl and demersal longline fisheries (SPRFMO, 2017a).

SPRFMO has signed a memorandum of understanding (MoU) with the Secretariat for the Agreement on the Conservation of Albatrosses and Petrels (ACAP) (SPRFMO, 2014b) and the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) (SPRFMO, 2016) to facilitate cooperation on efforts to minimise the incidental bycatch of albatrosses and petrels and advance shared objectives with respect to stocks and species with in the South Pacific and Antarctic regions (SPRFMO, 2016), respectively. ACAP applies to the following species:

Albatrosses (22 species)
Diomedea exulans
Diomedea dabbenena
Diomedea antipodensis
Diomedea amsterdamensis
Diomedea epomophora
Diomedea sanfordi
Phoebastria irrorata
Phoebastria albatrus
Phoebastria immutabilis
Phoebastria nigripes
Thalassarche cauta
Thalassarche steadi
Thalassarche salvini

Petrels (9 species)
Macronectes giganteus
Macronectes halli
Procellaria aequinoctialis
Procellaria conspicillata
Procellaria parkinsoni
Procellaria westlandica
Procellaria cinerea
Ardenna creatopus
Puffinus mauretanicus

Thalassarche eremita
Thalassarche bulleri
Thalassarche chrysostoma
Thalassarche melanophris
Thalassarche impavida
Thalassarche carteri
Thalassarche chlororhynchos
Phoebetria fusca
Phoebetria palpebrata

The observer program as described in section 3.3.7.1 includes incidental by-catches of larger animals. From the Observer Manual (Corten, A., 2015a): "Before starting the sampling for catch composition on the working deck, the observer has to check whether there are incidental by-catches of large animals (sharks, turtles, dolphins) that are not pumped into the tanks. If this is the case, the observer has to record these catches. However, the observer can go out on the deck only with permission from the officers on the bridge. Observations on by-catches are recorded on the By-catch Registration Form. In case no observations have been made, this is also indicated on the form. It is important to distinguish hauls with zero by-catches from hauls on which no observations were made."

From the observer data for the European fleet, as well as from the self-sampling data (see sections 3.3.7.1 and 3.3.7.2), no interactions with marine mammals, sharks or turtles have been reported in recent years (2015-2018).

According to the SPRFMO report 'A summary of current SPRFMO bycatch records (Including species of concern' (2018e), one capture of porbeagle shark (*Lamna nasus*) by an EU vessel took place in August 2009 (see Table 8).

Table 8. Summary of captures of seabird, mammal, reptile and species of concern from SPRFMO submissions (Table 1 in SPRFMO, 2018e)

Fishery	Member	Code	Species	Common name	Amount caught	Date	Datasets	Mitigation measures
Bottom longline	Australia	PFC	*Puffinus carneipes*	Flesh-footed shearwater	2	Mar 2008	Fishing activity, Observer	Line shooter, Tori lines
Bottom longline	Australia	CVX	*Carcharhiniformes*	Ground sharks	10 (kg), 1 event	Apr 2008	Fishing activity	
Bottom longline	Australia	TUG	*Chelonia myas*	Green turtle	2	June 2016	Fishing activity	
Bottom longline	Australia	XXS	*Unknown*	Sea Snake	1	June 2016	Fishing activity	
Bottom longline	Australia	WSH	*Carcharodon carcharis*	Great white shark	2	June 2016	Fishing activity	
Bottom longline	Australia	WSH	*Carcharodon carcharis*	Great white shark	1	Aug 2016	Fishing activity	
Bottom longline	Australia	PFC	*Puffinus carneipes*	Flesh-footed shearwater	1	Oct 2016	Fishing activity	
Bottom longline	New Zealand	PWA	*Pterodroma leucoptera*	Gould's Petrel	1	Oct 2014	Fishing activity, Observer	None specified
Bottom Trawl	New Zealand	PDM	*Pterodroma macroptera*	Grey-faced petrel	2	Dec 2015	Observer	Bird baffler
Bottom Trawl	New Zealand	WFS	*Pelagodroma marina*	White-faced storm petrel	1 (released alive)	Mar 2016	Observer	Bird baffler
Jack mackerel	EU	POR	*Lamna nasus*	Porbeagle shark	12 (kg)	Aug 2009	Observer	None specified
Jack mackerel	Korea	POR	*Lamna nasus*	Porbeagle shark	21 (kg), 2 events	July 2015	Fishing activity, Observer	None specified
Jack mackerel	Korea	POR	*Lamna nasus*	Porbeagle shark	5 (kg)	Aug 2016	Fishing activity, Observer	None specified
Jack mackerel	Korea	POR	*Lamna nasus*	Porbeagle shark	36 (kg), 4 events	Sept 2015	Fishing activity, Observer	None specified
Jack mackerel	Korea	POR	*Lamna nasus*	Porbeagle shark	42 (kg), 4 events	June 2016	Fishing activity, Observer	None specified
Jack mackerel	Korea	POR	*Lamna nasus*	Porbeagle shark	24 (kg), 3 events	July 2016	Fishing activity	
Jack mackerel	Korea	POR	*Lamna nasus*	Porbeagle shark	31 (kg), 1 event	Sept 2016	Fishing activity, Observer	None specified
Jack mackerel	Korea	POR	*Lamna nasus*	Porbeagle shark	23 (kg)	July 2017	Fishing activity	
Jack mackerel	Korea	POR	*Lamna nasus*	Porbeagle shark	30 (kg)	Sept 2017	Fishing activity	

The report also notes that: "Information provided by Korea suggests that rare captures of porbeagle sharks could be a consistent feature of the Jack mackerel fishery. It is worth recognizing that, within the jack mackerel fishery, Korean data generally contains the most amount of information on by catch species." (SPRFMO, 2018e)

At the site visit, the possibility of interactions with mammals and turtles was discussed with stakeholders (M. Pastoors, N. Hintzen, SPRFMO Secretariat). The consensus was that there are no interactions with mammals, as the fishery takes place too far away from the shore, nor are there

interactions with turtles, as the fishery takes place too far south. If interactions where to occur, the stakeholders were confident that these would be reported.

Following a recommendation adopted by the 2014 SPRFMO Commission Meeting (SPRFMO, 2014a, now superseded by SPRFMO, 2017a: CMM 09-2017), the observers now also report the numbers of birds around the vessel, and the number of birds that were caught in the net or that had collisions with the vessel or fishing lines. Results of these observations are reported in the national reports of the EU to the Science Committee (Wójcik et al, 2018).

Over the years some interaction (light and heavy contact) were observed, though no by-catches of birds were found (Corten, A., 2015; Wojcik et al., 2017; Wójcik et al, 2018a). From Wójcik et al, 2018a: "The observations of seabirds in the net and around the vessel, initiated in 2014, were continued in 2015 - 2018. No by-catches of birds in the catch were observed. In 2017 no killed sea birds were observed, but six "light" and one "heavy" contact were observed. In the latter case, the bird (Grey-headed Albatross) sat on the water after the collision, but it was not possible to see whether any damage had occurred to this bird."

In 2016, two collisions between birds and trawl warps were observed, one with a Black-browed Albatross and the other with a White-chinned Petrel. In both cases, the collision was classified as "light" (Wojcik et al., 2017).

In 2015, on two occasions, collisions between birds and trawl warps were observed. In both cases, this concerned Black-browed Albatrosses. One collision was classified as "light" since the bird continued to fly apparently unharmed. In the other case, the collision was classified as "heavy" since the bird sat on the water after the incident. The collisions occurred far behind the vessel where the scaring devices had no effect (Corten, A., 2015).

Table 9. Observations on birds around the "Annelies Ilena" in May - July 2015 (Corten, A., 2015)

English name	Latin name	Number of observations	Number sighted
Great Albatrosses	*Diomedea sp.*	14	22
Black-browed Albatross	*Thalassarche melanophrys*	43	1133
Salvin's Albatross	*Thalassarche salvini*	13	38
Chatham Albatross	*Thalassarche eremita*	1	1
Grey-headed Albatross	*Thalassarche chrysostoma*	24	83
Buller's Albatross	*Thalassarche bulleri*	2	3
Giant Petrels	*Macronectes sp.*	7	9
Cape Petrel	*Daption capense*	27	521
White-chinned Petrel	*Procellaria aequinoctialis*	34	84
Sooty Shearwater	*Puffinus griseus*	13	22
		Total	1937

More detailed results of the seabird observations in 2016 were presented in a separate document to the SC meeting in 2016 (Raczynski, et al., 2016). This report includes the observations on seabirds made in 2016, as well as a more detailed description of the birds that are present near the vessel.

Table 10. Results of bird observations in May - August 2016 (Table 1 in Raczynski, et al., 2016)

No°	English name	Latin name	IUCN Red List categories ver. 3.1	Populations trends	Number of observation	Number sighted
1	Great Albatrosses	Diomedea sp.	From Vulnerable till Critically Endangered	↓Decreasing One species →Stable	23	59
2	Black-browed Albatross	Thalassarche melanophrys	Near Threatened	↓Decreasing	37	9 714
3	Campbell Albatross	Thalassarche impavida	Vulnerable	↑ Increasing	9	13
4	Salvin's Albatross	Thalassarche salvini	Vulnerable	? Unknown	28	162
5	Chatham Islands Albatross	Thalassarche eremita	Vulnerable	↑ Increasing	10	13
6	Grey-headed Albatross	Thalassarche chrysostoma	Endangered	↓Decreasing	1	1
7	Buller's Albatross	Thalassarche bulleri	Near Threatened	→Stable	10	17
8	Giant Petrels	Macronectes sp.	Least Concern	↑ Increasing	17	29
9	Southern Fulmar	Fulmarus glacialoides	Least Concern	→Stable	1	1
10	Cape Petrel	Daption capense	Least Concern	→Stable	36	2 867
11	White-chinned Petrel	Procellaria aequinoctialis	Vulnerable	↓Decreasing	35	2 235
12	Grey Petrel	Procellaria cinerea	Near Threatened	↓Decreasing	4	11
13	Sooty Shearwater	Puffinus grisseus	Near Threatened	↓Decreasing	3	20
14	Blue Petrel and prions	Pachyptila sp. or Halobaena sp.			8	24
15	Wilson's Storm- petrel	Oceanites oceanicus	Least Concern	→Stable	23	1 397
				Total		16 563

During May - August 2016 period observations were made on a total of 37 days, 10 of which on the Polish "Janus", and 27 on the German "Maartje Theadora".

Based on Table 10 above, Figure 17 shows the species composition. This composition looks similar to the numbers reported in 2015 (see Table 9), with mainly Black-browed albatrosses (*Thalassarche melanophrys),* Cape petrels *(Daption capense*) and White-chinned Petrels (*Procellaria aequinoctialis*) observed, though in 2015 the grey-headed albatross (*Thalassarche chrysostoma*) was observed more often (83 sightings in 2015 vs 1 in 2016).

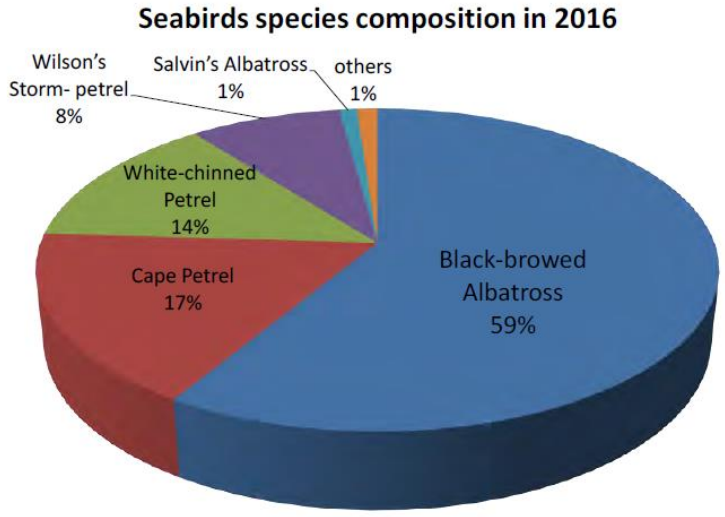

Figure 17. Species composition of all birds observed in 2016 (Figure 2 in Raczynski, et al., 2016)

Based on the information above, Grey-headed Albatross, Black-browed Albatross and White-chinned Petrel will be regarded as the ETP species the fishery under assessment has 'interactions' with, and used in scoring the ETP-species component (see Evaluation Table for PI 2.3.1 – ETP species outcome, though this may change somewhat between years, as evidenced from the observations (Table 9 and Table 10).

The main conclusion from Raczynski, et al. (2016) was that pelagic trawlers, in contrast to long liners, do not inflict a significant observed mortality on seabirds. The bird bafflers as a means to scaring birds away from the net (introduced as obligatory by the SPRFMO in 2014, through CMM 2.04) were found to present more of a danger for the birds than a protection. From Raczynski, et al., 2016: "On 22 July 2016 at 21:30 (GMT time) a Black-browed Albatross was observed to hit its wings to the iron beam to which the bird baffler was suspended. After this collision the bird sat on the water and looked like it had damaged its wing. In the opinion of the authors, bird bafflers on pelagic trawlers might increase bird mortality rather than reduce it." It is thought that especially the beam from which the bird baffler is suspended presents an extra risk for bird collisions.

At the site visit, stakeholders recognised the risk of missing interactions since the observer is not always on deck, but below deck measuring the catch.

Figure 18. Bird bafflers that are supposed to keep the birds away from the trawl (Figure 5 in Raczynski, et al., 2016).

Within the Scientific Committee it is recognised that the level of observer coverage influences the efficacy of the data collected (SPRFMO, 2018c; Cryer et al., 2018).

The SC (SPRFMO, 2018c) noted that the extent of observer coverage needed to generate robust estimates of the frequency and total number of interactions with seabirds varies with the characteristics of the fishery, the species of interest, and bycatch patterns, particularly patchiness and the prevalence of multiple captures. Observer coverage of around 5% may be adequate to identify some bycatch risks and issues but is unlikely to enable robust quantification of those issues. International experience suggested that approximately 20% observer coverage may be sufficient to estimate total bycatch and bycatch of frequently-caught species. Observer coverage levels of >50% may be necessary to robustly estimate bycatch of individual species that are caught infrequently but are nevertheless still at risk. Furthermore, in addition to observable bycatch, there can also be unobservable mortality (i.e. "cryptic" mortality) that can vary substantially between fisheries.
The SC has advised the Commission that observer coverage of 20% or more may be required to robustly estimate the incidental mortality of Seabirds, Marine Mammals, and Other Species of Concern in some fisheries, and that design should address multiple influencing factors to obtain representative coverage.

3.4.3 Habitat

The MSC Principles and Criteria require that fisheries do not cause serious or irreversible harm to habitat structure and function. When assessing the status of habitats and the impacts of fishing, teams are required to consider the full area managed by the local, regional, national, or international governance body(s) responsible for fisheries management in the area(s) where the UoA operates (the "managed area" for short) (SA3.13.5, MSC FCRv2.0). The MSC also specifies that the team shall use all available information (e.g. bioregional information) to determine the range and distribution of the habitat under consideration, and whether this distribution is entirely within the 'managed area' or extends beyond the 'managed area' (SA3.13.5.1, MSC FCRv2.0).

The MSC FCRv2.0 requires habitats interacting with the fishery to be defined as 'commonly-encountered', 'minor, or as 'vulnerable marine ecosystems (VME)', as shown in Table 11.

Commonly encountered and VME habitats are treated as 'main' habitats, in that they are scored at SG60 and SG80, whereas minor habitats are scored at SG100 only. More information is provided in the following sections of the report.

Table 11. Habitat definitions as per the MSC Fisheries Certification Requirements v2.0.

Habitat type **(FCR reference)**	**Definition**
Commonly encountered (SA3.13.3.1)	A commonly encountered habitat shall be defined as a habitat that regularly comes into contact with a gear used by the UoA, considering the spatial (geographical) overlap of fishing effort with the habitat's range within the management area(s) covered by the governance body(s) relevant to the UoA.
Minor (SA3.13.3)	All other habitats
Vulnerable marine ecosystem (VME)	A VME shall be defined as is done in paragraph 42 subparagraphs (i)-(v) of the FAO Guidelines. This definition shall be applied both inside and outside EEZs and

(GSA3.13.3.2)	irrespective of depth. VMEs have one or more of the following characteristics, as defined in paragraph 42 of the FAO Guidelines: • Uniqueness or rarity – an area or ecosystem that is unique or that contains rare species whose loss could not be compensated for by similar areas or ecosystems • Functional significance of the habitat – discrete areas or habitats that are necessary for survival, function, spawning/reproduction, or recovery of fish stocks; for particular life-history stages (e.g., nursery grounds, rearing areas); or for ETP species • Fragility – an ecosystem that is highly susceptible to degradation by anthropogenic activities • Life-history traits of component species that make recovery difficult – ecosystems that are characterised by populations or assemblages of species that are slow growing, are slow maturing, have low or unpredictable recruitment, and/or are long lived • Structural complexity – an ecosystem that is characterised by complex physical structures created by significant concentrations of biotic and abiotic features

The European jack mackerel fishery uses midwater otter trawl (see also Section 3.2.3). Jack mackerel are a pelagic fish which live in the upper part of the water column. The nets used in the fishery under assessment fish between 20-100 m depth. The nets are designed only for use in the water column, and do not come into contact with the seabed.

The jack mackerel fishery is therefore confined to the “epipelagic habitat” – the uppermost 200 m of the water column, often called the “sunlit zone”, where most of the ocean’s primary production takes place.

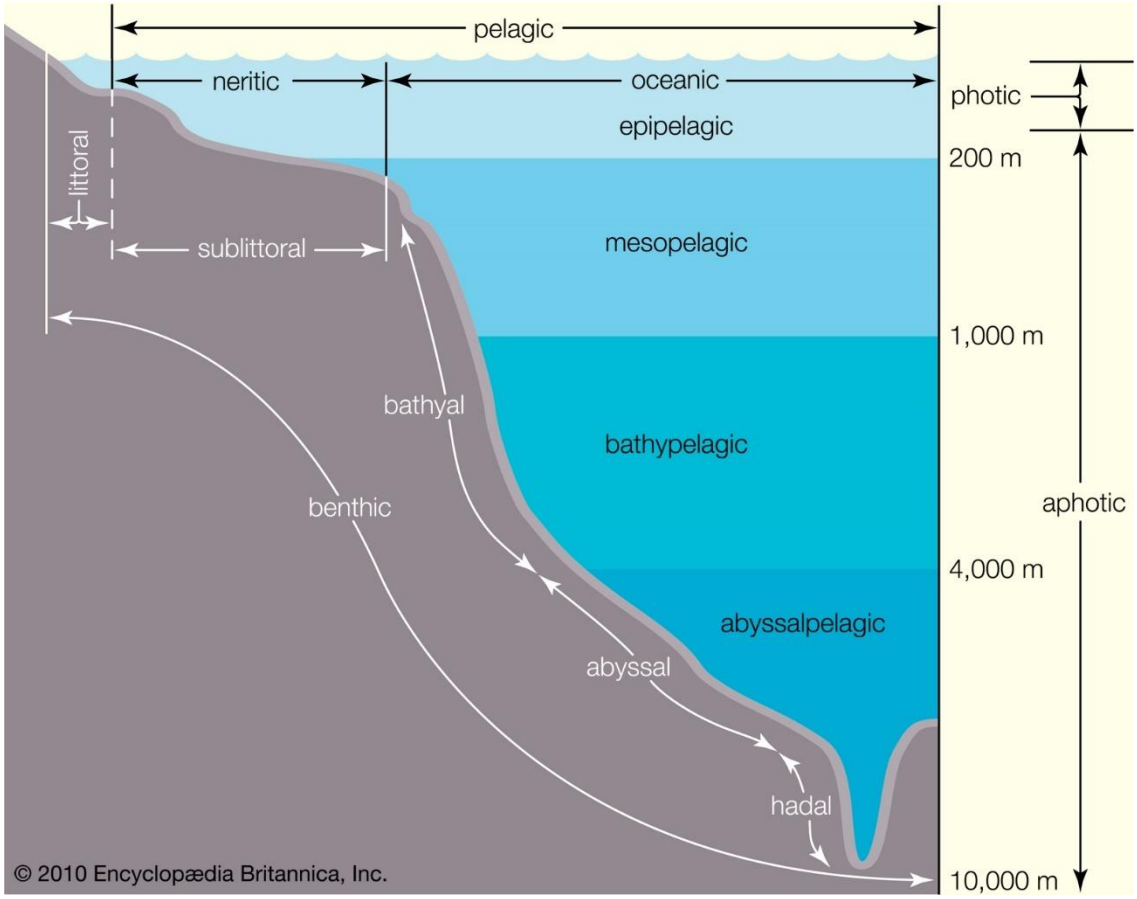

Figure 19. Zonation of the ocean (Encyclopædia Britannica, 2019)

A number of Ecologically or Biologically Significant Marine Areas (EBSAs) have been identified within the SPRFMO Convention Area by the Secretariat of the United Nations' Convention on Biological Diversity (CBD), as ratified by the United Nations in 1992 (http://www.cbd.int/ebsa/ebsas).

EBSAs are areas that meet CBD criteria that are very similar to FAO Guidelines referred to by the MSC in SA3.13.3.2 & GSA3.13.3.2 in its definition of Vulnerable Marine Ecosystems. The criteria that are used to identify EBSAs by the CBD are :

- Uniqueness or rarity
- Special importance for life-history stages of species
- Importance for threatened, endangered or declining species and/or habitats
- Vulnerability, fragility, sensitivity, or slow recovery
- Biological productivity
- Biological diversity
- Naturalness

The areas that have been designated as EBSAs in the Eastern Tropical and Temperate Pacific, lay within the EEZs of Chile and Peru, e.g. around the seamounts of the Juan Fernández islands, and the Humboldt Current Upwelling System along the Chilean coast, and have no overlap with the fishery under assessment.

Based on this, the SPRFMO SC notes the need for the Commission to implement appropriate and precautionary measures to protect vulnerable elements of the ecosystem.

There are Vulnerable Marine Ecosystems (VMEs) identified in CMM 03-2019 and CMM 3a-2019 (SPRFMO, 2019d and SPRFMO, 2019e). These VMEs only apply to gear that can be in contact with the seafloor, such as bottom trawl, midwater trawl (defined as fishing for bentho-pelagic species using a trawl net that is designed to be pulled through the water near the seabed), and bottom lines (fishing line using a hook or hooks). With regards to the fishery under assessment, outside the 200 nautical mile (nm) EEZs, there are no VMEs identified.

The SPRFMO Scientific Committee established a task group on habitats and ecosystems in September 2018. This task group is asked to bring together information on habitat and ecosystem for jack mackerel. They make use of available vessel information, with a wide range in the south pacific, e.g. the acoustic data, which can be used to understand the role of the environment on the occurrence of different fish species.

In May 2019 the Habitat Working Group discussed the use of fishers' acoustic data as a source of environmental information. This has been considered in the SPRFMO since 2009 after an initiative leaded by members of ICES' Fisheries Acoustics Science and Technology Working Group (WG-FAST). In 2014 a task group on "fishing vessels as scientific platforms" was created by SPRFMO for a duration of 3 years. It produced reports on calibration procedure for acoustic equipment aboard fishing vessels and on target strength (TS) standard measurements for Chilean jack mackerel (CJM). The task group recommended to create a working group on the theme of Habitat monitoring. The proposal for the creation of the Habitat Monitoring Working Group (HMWG) was approved by the SC during September 2018, assigning the CJM as first study case (SPRFMO, 2019c).

The HMWG will act as a management tool and provider of indicators obtained from the monitoring of the environment. The pieces of information required for such work come from diverse sources: the fishery, the acoustic surveys (scientific and from the fishery), oceanographic and biological surveys, remote sensing data etc. Some examples showed that this series of data allows to elaborate descriptive models on the dynamics of the CJM habitat. The contribution of the fishing industry at various levels was acknowledged as essential during the session (SPRFMO, 2019c).

Some pieces of equipment have been designed and are installed aboard European pelagic trawlers. A device has been developed (Oceanbox) to allow an automation of the different steps involved, from the calibration procedure until data analysis and calculation and results (SPRFMO, 2019c).

There are no VMEs established in the fishing areas for the European jack mackerel fishery outside the 200 nm zone (source SPRFMO secretariat, 2019). Gear loss has never occurred for this fishery (pers. comment client). Regulation prescribes the gear to be marked (with a tracker) (both through EU Regulation No 579/2011 (European Commission, 2011b) and SPRFMO CMM 17-2019). Overall, habitat impacts from this fishery are minimal.

3.4.4 Ecosystem

The habitat is mostly leaded by the trophic interactions within the ecosystem. The species that contribute the most to this level as far as pelagic environment is concerned are the macrozooplankton (e.g. krill), and mesopelagic fish, among which lantern fish (*Vinciguerria lucetia*) is the most important specie. In the case of the northern Humboldt Current System some studies on its distribution, behaviour patterns and biology exist (SPRFMO, 2019c). This is part of the information used by the HMWG as described in section 3.4.3, to establish the dynamics of the CJM habitat.

The key ecosystem with regards to the fishery under assessment is the Eastern South Pacific. The Humboldt Current System is the cold, low-salinity ocean current that flows north along the western coast of South America. It is an eastern boundary current flowing in the direction of the equator, and extends 500–1,000 km (310–620 nm) offshore. The Humboldt Current is a highly productive ecosystem. It is the most productive eastern boundary current system (Penven et al, 2005). The species are mostly pelagic: sardines, anchovies and jack mackerel. The system's high productivity supports other important fishery resources as well as marine mammals (eared seals and cetaceans) and seabirds. Periodically, the upwelling that drives the system's productivity is disrupted by the El Niño-Southern Oscillation (ENSO) event, often with large social and economic impacts.

As part of the Humboldt Current system, the main feature of the eastern half of the South Pacific Ocean is the establishment of the Anticyclonic Subtropical Gyre, which involves the South-equatorial currents towards the West (north of 25º S), from the South Pacific towards the East (between 30-40º S) and the Chile-Peru Current that flows along the coast towards Ecuador. The main feature of the eastern half of the South Pacific Ocean is the establishment of the Anticyclonic Subtropical Gyre, which involves the South-equatorial currents towards the West (north of 25º S), from the South Pacific towards the East (between 30-40º S) and the Chile-Peru Current that flows along the coast towards Ecuador (Government of Chile, 2007 and references therein).

Furthermore, the meteorological system with the greatest influence in the South East Pacific Ocean is the Subtropical Anticyclone of the Pacific (South Pacific Anticyclone). The Southeast Pacific Subtropical Anticyclone (SPSA) extends over the entire South Pacific Basin and it is the dominant forcing of the Humboldt Current System. The SPSA has seasonal, interannual, and decadal (interdecadal) variability. The latter variability has been associated with the Pacific Decadal Oscillation (PDO), recognized as a Pan-Pacific mode. Though the PDO signature can last up to decades, the PDO produces similar changes to the El Niño–Southern Oscillation, which occurs on a shorter timescale (usually over a year): a warm phase PDO produces climate and circulation patterns that are very similar to El Niño. Likewise, a cool phase PDO produces climate and circulation patterns similar to La Niña (Ancapichún et al., 2015; Gershunov et al., 1998).

Over the past 13 years, the SPSA has intensified and shifted toward the southwest, increasing the offshore Ekman transport and Ekman suction, which would explain much of the observed coastal cooling south of 33º S (central Chile) (Ancapichún et al., 2015). The productivity of the Humboldt Current System and the ecosystem it supports are affected by Pacific Decadal Oscillation and El Niño Southern Oscillation (ENSO) events. During an El Niño event, the colder nutrient rich waters are replaced by warmer nutrient poor waters. In addition to changes in the abundance of fish, the ENSO and PDO can affect the distribution of fish. During warmer years, jack mackerel migrate into coastal waters to feed on anchovies; in colder years jack mackerel are found further offshore, and their range may extend considerably to the west, outside the Chilean EEZ.

The biological characteristics show that jack mackerel presents a high tolerance to hydrological conditions. Given that two major points characterize the South East Pacific Ocean: the strength of the climatic signals (e.g. El Niño) and their high variability, fish populations must develop a high resilience and plasticity to adapt to these characteristics. Under these conditions jack mackerel has developed

- the ability to produce large cohorts through episodic successful recruitments;
- capacity to colonize a large part of the subtropical Southern Pacific Ocean seeking the most favourable areas for maintaining a correct abundance;
- a great individual tolerance to the local environment.

Considering that the species has no major predators in the bulk of its distribution area, the main limiting factor to its distribution and abundance is prey availability. Although the species has a great plasticity, it has an environmental preference in terms of O2, temperature, salinity and water masses (Hintzen et al, 2013).

Key explanatory variables for the distribution of jack mackerel are:

- Dissolved oxygen
- Sea surface temperature
- Chlorophyll-a concentration

Oxygen concentration is crucial in the South-East Pacific, as it can be absent at very shallow depths (up to 20m below the surface along the Peruvian coastline). Jack mackerel is unable to live in waters with oxygen concentrations below 1 ml/l although 2 ml/l is accepted as a more representative threshold (Hintzen et al, 2013).

Moreover, it seems that besides a minimum Dissolved Oxygen (DO) concentration, the jack mackerel requires a rather important height of the DO: if it presents a height lower that 40 meters, jack mackerel could not stay in the oxygenated volume. As minimum temperature observed among all the datasets is 8.7°C, 9°C is seen as the lowest tolerable temperature. The lowest tolerable chlorophyll concentration limit is between 0.1 and 0.2 mg/m^3. This is outside the subtropical gyre where concentration is considered <0.07 mg/m^3 (Hintzen et al, 2013 and references therein).

Other factors possibly influencing the habitat limits are probably biotic parameters (predation/competition e.g. interactions with different tuna species, giant squid, cetaceans) are playing a role in structuring the habitat.

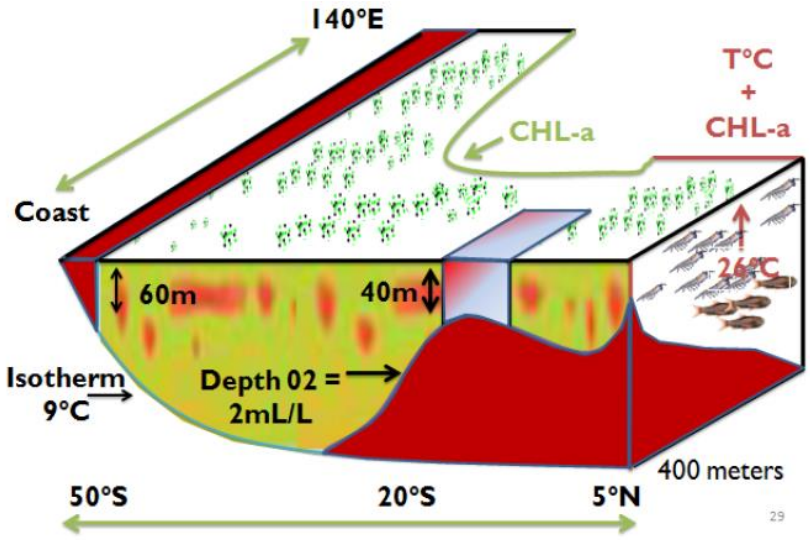

Figure 20. 3D conceptual model of the Jack Mackerel habitat describing the habitat on the basis of latitude (x-axis), longitude (y-axis), depth (z-axis), depth layer of the oxycline (Depth 02), the isotherm layer and chlorophyll concentration (Figure 8.3 in Hintzen et al., 2013).

South Pacific historical landings present a strong collapse over the last decades. Many factors explain this trend (fishing fleet development, overfishing, etc.) but palaeoceanography studies indicate that the environmental driver is probably highly important (Hintzen et al, 2013).

Hintzen et al (2013) state that for the Peruvian and North Chilean waters, the depth of minimum tolerable dissolved oxygen concentration seems to be a good proxy to validate the habitat compression hypothesis, meaning that the DO levels play a key part in the distribution and migratory behaviour for jack mackerel.

Environmental conditions affecting jack mackerel habitat is reported on regularly with state-of-the-art oceanographic recordings and surveys, including remote sensing (pers. comment SPRFMO secretariat).

Oceanographic conditions off the Chilean coast are monitored by Instituto de Fomento Pequero (Fisheries Development Institute) (IFOP) through research cruises and satellite data. Information on surface temperature (SST) and chlorophyll a concentrations in the Pacific Ocean is gathered continuously by satellites. Satellite data also provide real-time information on the status of the El Niño Southern Oscillation.

Based on this information, UoA ecosystem impacts relate mostly to removal of jack mackerel. In 2018, the total catch of *Trachurus murphyi* throughout the range of the stock was set to not more than 576,000 tonnes, with around 526,323 tonnes caught (preliminary data, SPRFMO, 2019f). In 2019, following the recommendations of the SPRFMO scientific committee, catches throughout the range of the stock were set not to exceed 591,000 tonnes (SPRFMO, 2019). The UoA has been allocated 6.1086 % of the catches (SPRFMO, 2019) and as such, the impact of the UoA itself is limited.

As discussed in section 3.3.6, the trophic levels and food web in the South Pacific is generally well understood. Jack mackerel inhabits one of the most productive marine ecosystems, where other pelagic species have a fundamental role in transferring energy from lower to higher trophic levels. In the South Pacific upwelling system anchovy is one of the dominant LTL species, together with *i.a.* lantern fish (*Vinciguerria sp*.) and squat lobsters (*Munida sp*.) and as such transfer a very large proportion of the total primary production to higher trophic levels (see Figure 10). Jack mackerel, by feeding on a large range of prey including zooplankton, transfers energy from primary producers to top predators. Moreover, jack mackerel can switch from zooplankton to pelagic fish depending on prey abundance (Cury et al., 2000) while a recent study have shown that jack mackerel has a predicted high trophic position of 4.2, being a top predator (Espinoza et al., 2017).

At the RFMO level, the SPRFMO Convention states that participants will be “Committed to ensuring the long-term conservation and sustainable use of fishery resources in the South Pacific Ocean and in so doing safeguarding the marine ecosystems in which the resources occur... Mindful that effective conservation and management measures must be based on the best scientific information available and the application of the precautionary approach and an ecosystem approach to fisheries management…” with the objective of the Convention thus being: “The objective of this Convention is, through the application of the precautionary approach and an ecosystem approach to fisheries management, to ensure the long-term conservation and sustainable use of fishery resources and, in so doing, to safeguard the marine ecosystems in which these resources occur.” (SPRFMO, 2015). Therefore, fishery impacts on ecosystems are considered, and the RFMO goal of managing stocks to MSY levels implicitly relates to ecosystem maintenance to some extent.

However, an ecosystem-based management strategy has not yet been implemented. In the first performance review of the SPRFMO (Ridings, et al., 2018), it is recognised that in the longer term

SPRFMO could look towards adopting a more comprehensive ecosystem approach to fisheries management. The panel "notes that although SPRFMO has generally taken into account an ecosystem approach to fisheries management in the individual management of Jack mackerel and bottom fishing, additional actions could be taken by the Commission and Scientific Committee to better integrate ecosystem elements into the assessment of target species. This could include, for example, consideration of deep water chondrichthyans, seabird mitigation measures for all fisheries, habitat mapping, and examination of climate change impacts".

3.5 Principle Three: Management System Background

3.5.1 Jurisdiction and overarching management set-up

Jack mackerel is widespread throughout the South Pacific, from the shelf adjacent to Ecuador, Peru, and Chile; throughout the oceanic waters along the Subtropical Convergence Zone; in the New Zealand EEZ south of about 34 ºS; and, in south-eastern waters of the Australian EEZ (SPRFMO, 2014). The South Pacific stock is managed through the SPRFMO, and all UoC catch is within the SPRFMO Convention area. The fishery is also managed within the context of EU's Common Fisheries Policy (CFP) of which the provisions are transposed into the relevant national legal systems. The CFP applies to all fishing activities in EU waters, including the EEZ, and to the activities of EU vessels outside EU's marine jurisdiction. Wherever they operate, EU fishing vessels are also under the jurisdiction of the state where they are registered, as well as the European Common Fisheries Policy (CFP). The institutions in charge, for management, policing and research are described in the national legislations:

In Germany, the legal framework is provided by the Federal Ministry of Food, Agriculture (BMEL), whereas the Bundesanstalt für Landwirtschaft und Ernährung (BLE) is the control authority. In The Netherlands, the legal framework is provided by the Ministry of Agriculture, Nature and Food Quality (LNV), with The Netherlands Food and Consumer Product Safety Authority (NVWA) as the control authority. In Lithuania, the Ministry of Agriculture of the Republic of Lithuania provides the legal framework, with the Fisheries service under the Ministry of Agriculture (Division of Fisheries Control and Monitoring) as the control authority. And in Poland, the Regional Maritime Fisheries Inspectorate in Szczecin (CMR) operates as a control authority under The Ministry of Maritime Economy · and Inland Navigation (Department of Fisheries).

Since the vessels mainly land in Chile, Chilean regulations with regards to landing and port inspections apply as well (enforced by the General Directorate of Maritime Territory and Merchant Marine (DIRECTEMAR)).

3.5.2 Management framework

3.5.2.1 International framework: Convention on the Conservation and Management of High Seas Fishery Resources in the South Pacific Ocean (SPRFMO)

SPRFMO is an inter-governmental Regional Fisheries Management Organisation (RFMO), and was formally established in 2012. The SPRFMO came about as a result of an initiative of Australia, Chile and New Zealand in 2006. These countries started to work on closing the gap that existed in the international conservation and management of non-highly migratory fisheries and protection of biodiversity in the marine environment in high seas areas of the South Pacific Ocean. This process resulted in a series of international meetings with the objective of discharging the duty of states under international law to cooperate with each other in the conservation and management of living

resources in such areas of the high seas. This led to a Preparatory Conference to assist the efficient commencement of the work of the Commission of the South Pacific Regional Fisheries Management Organisation (SPRFMO) established by the Convention in 2009, at which point the 8th International Meeting adopted the Convention on the Conservation and Management of High Seas Fishery Resources in the South Pacific Ocean (SPRFMO, 2019b).

The organisation consists of a Commission and a number of subsidiary bodies. There are currently 15 members of the Commission: Australia, Chile, China, The Cook Islands, Cuba, Ecuador, The European Union, Denmark (in respect of the Faroes Islands), Korea, New Zealand, Peru, Russia, Chinese Taipei, The United States and Vanuatu. There are also Cooperating non-Contracting Parties (CNCP): Colombia, Curaçao, Liberia and Panama (SPRFMO, 2019b).

The objective of the 'Convention on the Conservation and Management of High Sea Fishery Resources in the South Pacific Ocean' is, through the application of the precautionary approach and an ecosystem approach to fisheries management, to ensure the long-term conservation and sustainable use of fishery resources and, in so doing, to safeguard the marine ecosystems in which these resources occur (SPRFMO, 2015).

The Convention applies to waters of the Pacific Ocean beyond areas of national jurisdiction in accordance with international law (as defined by Article 5 of the Convention), as shown in Figure 1.

The SPRFMO Conservation and Management Measures (CMMs) define the regulatory framework for the SPRFMO fisheries in the high seas areas of the South Pacific Ocean.

Each year, the Commission may revise existing, or adopt new CMMs (SPRFMO, 2019b). Currently, there are 20 CMMs in place detailing various provisions such as the application of technical measures or output and input controls, requirements for data collection and reporting, as well as regulations for monitoring, control and surveillance and enforcement. One CMM relates directly to the *Trachurus murphyi* fishery (CMM 01-2019), although others are applicable as well (e.g. CMM 11-2015 on Boarding and Inspection Procedures and 12-2018 on transhipment).

The provisions set out by SPRFMO for the *T. murphyi* fishery in CMM 01-2019 cover effort management (setting Gross Tonnage limits), catch management (setting TAC, enforcing communication between member states, quota transfers), data collection and reporting (liaising with the secretariat, VMS implementation, evidencing that the CMM has been applied and enforced), cooperation of fisheries in adjacent areas under national jurisdiction, and special requirements of developing states.

The SPRFMO Scientific Committee provides TAC advice for the high seas' fisheries.

SPRFMO has signed memoranda of understanding with the Secretariat for the Agreement on the Conservation of Albatrosses and Petrels (ACAP) (SPRFMO, 2014b) and the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) (SPRFMO, 2016) to facilitate cooperation on efforts to minimise the incidental bycatch of albatrosses and petrels and advance shared objectives with respect to stocks and species with in the South Pacific and Antarctic regions (SPRFMO, 2016), respectively.

The Agreement on Port State Measures (PSMA) also applies. The PSMA was approved by the FAO Conference in 2009 and entered into force on 5 June 2016. The PSMA is the first binding international agreement to specifically target IUU fishing. Its main objective is to prevent, deter and eliminate IUU fishing by preventing vessels engaged in IUU fishing from using ports and landing their catches. The provisions of the PSMA apply to fishing vessels seeking entry into a designated port of a

State which is different to their flag State (FAO.com). The European Union is a member organisation, while Chile is Party to the agreement.

The PSMA places a particular responsibility on RFMOs, and several of its provisions stress the importance of regional cooperation through such bodies. CMM 07-2019 (Minimum Standards of Inspection in Port) is the SPRFMO implementation of Port state measures, together with CMM 04-2019 (Establishing a List of Vessels Presumed to Have Carried Out Illegal, Unreported and Unregulated Fishing activities in the SPRFMO Convention Area).

3.5.2.2 European Union

The Management of EU fisheries is based on the Common Fisheries Policy (CFP), a set of rules for managing European fishing fleets and for conserving fish stocks. Designed to manage a common resource, it gives all European fishing fleets equal access to EU waters and fishing grounds and allows fishermen to compete fairly. The CFP was first introduced in the 1970s and went through successive updates, the most recent of which took effect on 1 January 2014.

The current CFP regulation (EU Regulation 1380/2013) sets out the framework and objectives for the CFP, and enables the Commission to regulate individual fisheries (European Commission, 2013). It requires that member states, in accordance with international treaties such as the 1982 Law of the Sea Convention, the 1993 FAO Compliance Agreement and the 1995 Fish Stocks Agreement, apply the precautionary approach to fisheries management. It seeks to make fishing fleets more selective in what they catch, and to phase out the practice of discarding unwanted fish.

The objectives of the CFP are fixed in Article 2 of the Regulation 1380/2013. Worth mentioning are, in particular, the following:

- The CFP shall ensure that fishing and aquaculture activities are environmentally sustainable in the long-term and are managed in a way that is consistent with the objectives of achieving economic, social and employment benefits, and of contributing to the availability of food supplies.
- The CFP shall apply the precautionary approach to fisheries management and shall aim to ensure that exploitation of living marine biological resources restores and maintains populations of harvested species above levels which can produce the maximum sustainable yield (MSY), though in the case of SPRFMO, the MSY-criterion does not apply: the EU takes part in the management of the fishery as a party to SPRFMO, and the international policy aspects of the CFP come into play to split the quota share between member states.
- The CFP shall implement the ecosystem-based approach to fisheries management so as to ensure that negative impacts of fishing activities on the marine ecosystem are minimised and shall endeavour to ensure that aquaculture and fisheries activities avoid the degradation of the marine environment.

Further objectives of the CFP include the collection of scientific data, elimination of discards, provision of conditions for economically viable and competitive fishing industries, adjustment of fishing capacity to the levels of fishing opportunities and contributing to a fair standard of living for those who depend on fishing activities, bearing in mind coastal fisheries and socio-economic aspects.

Regulation (EU) No 1380/2013 aims to progressively eliminate discards in all Union fisheries through the introduction of a landing obligation for catches of species subject to catch limits (European Commission, 2013). Following this, discarding is forbidden of fish species for which a conservation measures applies, such as jack mackerel. This regulation also applies to EU vessels outside European

waters, and the fishery under assessment. Damaged fish is used for human consumption purposes as well, and there is no undersized fish in this fishery, because there is no minimum conservation reference size. All fish is therefore used.

The regional fisheries organisations (RFOs) are recognised by the European Commission (EC) as the main vehicle for international cooperation. The document "Community participation in Regional Fisheries Organisations (RFOs)" (COM/99/0613, European Commission, 1999) shows the intention of playing a more prominent role on the international stage. Formal participation in the RFO's has allowed the EC to assign the human and material resources needed for effective participation in the work of the RFOs, introduce arrangements for transposing the RFO recommendations, establish close and properly understood cooperation between the Commission and the Member States. The Member States themselves are to take on responsibility for monitoring, both financially and in terms of material and human resources (European Commission, 1999).

Following from COM/99/0613 (European Commission, 1999), in 2011 the EC "External Dimension of the Common Fisheries Policy" (COM (2011) 424 final) was published. In this, the EC lists its goals in participating in RFMOs: "To ensure sustainable management and conservation of fisheries resources and enhance performance of RFMOs, the EU should seek to:

Drive forward the global and multilateral agenda promoting sustainable fisheries worldwide while transforming its dialogues into working partnerships to address crucial issues such as eradication of illegal, unreported and unregulated (IUU) fishing or reduction of overcapacity.

Lead the process of strengthening the performance of RFMOs to better enable them to conserve and manage marine living resources under their purview through:

- Delivery of more reliable data and science to underpin the decision-making;
- Increased compliance and control;
- Reduction of capacity to levels commensurate with resources;
- More effective functioning of the RFMOs through improved decision-making;
- Introduction of fees for access to high seas by the members of the RFMO.

Better integrate the fisheries, development, environment, trade and other policies to further advance the objectives of sustainable and responsible governance." (European Commission, 2011).

The European Union is an official member of SPRFMO. As a result, EU vessels fishing jack mackerel are subject to SPRFMO Conservation and Management Measures (CMMs). The EU obtains a share of the TAC, which in turn is distributed among the Member States with fishing rights in the South Pacific: Germany, The Netherlands, Lithuania and Poland.

Each of these Member States has implemented (either through the direct effect of the CFP, in the case of Poland, or through Fishing Laws) the CFP legislation. The fisheries are managed by-and-large by the CFP (e.g. Regulation (EU) No 579/2011 on technical measures, or the above-mentioned regulation (EU) No 1393/2014 prohibiting discards), which is complemented by SPRFMO Conservation and Management Measures.

3.5.2.3 Chilean Regulations

The Ley General de Pesca y Aquicultura (the General Law on Fisheries and Aquaculture) was established in 1989 and amended in 1991, 2008 and 2013 (Government of Chile, 2013). It provides the legislative and regulatory framework for managing fisheries within Chile's EEZ, e.g. through quotas, and specified fishing areas and seasons. It also prohibits catch of species protected by international agreements (Title II, paragraph 1 Article 3b) and establishes sanctions for non-compliance (Article 110 j).

The Chilean Government allows for the use of Chilean harbours by overseas fisheries vessels. Regulation S.D. N° 123 as of 2004, approves the policy of use of ports by foreign-flagged fishing vessels fishing in the adjacent High Seas (subsumed by S.D. N° 329 as of 2009; Government of Chile, 2009). This obliges foreign-flagged fishing vessels to the following:

a) The flag state of the vessels that carry out the fishing activities on the high sea needs to exercise jurisdiction;

b) The flag state needs to cooperate with Chile in the conservation of adjacent high seas transmigration and highly migratory resources, when such species are common or associated with those that exist in the EEZ of Chile;

c) Conservation measures on the high seas may be taken that are compatible with those that apply to the same resources in the marine areas under national Chilean jurisdiction. In the negotiation, adoption and application of these measures, cooperation is expected from the flag state.

d) The vessels carrying out the fishing activities are obliged to permanently use, both inside and outside the Exclusive Economic Zone of Chile, a compatible satellite positioner, which can be connected to the Chilean system when required by regulations or provisions of the competent national authorities.

e) The flag-vessels will be submitted, in accordance with international practice and the recommendations of the international conservation and fisheries organizations, to the same controls and inspections that are required of national vessels.

The Chilean Government has an inspection program for foreign vessels, which is executed by the Chilean Navy and National Fisheries and Aquaculture Service (Sernapesca). Sernapesca will produce port inspection forms for EU vessels in Chile, and all reports are submitted to the Compliance and Technical Committee (CTC) of the SPRFMO. All EU vessels that come into port in Chile are inspected by the authorities.

3.5.3 Roles and responsibilities

3.5.3.1 SPRFMO

The Convention (SPRFMO, 2015) clearly outlines the structure and roles within the organisation.

Art. 6.2: The Organisation shall consist of:
(a) a Commission;
(b) a Scientific Committee;
(c) a Compliance and Technical Committee;
(d) an Eastern Sub-regional Management Committee;
(e) a Western Sub-regional Management Committee;

(f) a Finance and Administration Committee;
(g) a Secretariat

and any other subsidiary bodies that the Commission may, from time to time, establish to assist it in its work.

Various articles in the Convention further detail the roles, e.g. Article 8 details the functions of the Commission, and article 14 describes the role and function of the Secretariat. The Convention also prescribes the method of decision making within the Commission (Article 16) and the implementation of Commission decisions (Article 17).

Two committees (SC and CTC) play a key role in the jack mackerel fishery. In summary, the functions of the Scientific Committee (Article 10 of the Convention) shall be to:

(a) plan, conduct and review scientific assessments of the status of fishery resources;

(b) provide advice and recommendations to the Commission and its subsidiary bodies based on such assessments including, as appropriate: (i) reference points, including precautionary reference points; (ii) management strategies or plans for fishery resources based on such reference points; and (iii) analyses of conservation and management alternatives, such as the establishment of total allowable catch or total allowable fishing effort at different levels, that estimate the extent to which each alternative would achieve the objective or objectives of any management strategy or plan adopted, or under consideration, by the Commission;

(c) provide advice and recommendations to the Commission and its subsidiary bodies on the impact of fishing on the marine ecosystems in the Convention Area including advice and recommendations on the identification and distribution of vulnerable marine ecosystems, the likely impacts of fishing on such vulnerable marine ecosystems and measures to prevent significant adverse impacts on them;

(d) encourage and promote cooperation in scientific research in order to improve knowledge of the state of fishery resources and the marine ecosystems in the Convention Area including knowledge in relation to fishery resources straddling the Convention Area and areas under national jurisdiction; and

(e) provide such other scientific advice to the Commission and its subsidiary bodies as it considers appropriate, or as may be requested by the Commission.

The functions of the Scientific Committee (Article 11 of the Convention) shall be to:

(a) monitor and review the implementation of, and compliance with, conservation and management measures adopted under this Convention and provide advice and recommendations to the Commission;

(b) provide such other information, technical advice and recommendations as it considers appropriate or as may be requested by the Commission relating to the implementation of and compliance with the provisions of this Convention and the conservation and management measures adopted, or under consideration, by the Commission; and

(c) review the implementation of cooperative measures for monitoring, control, and surveillance and enforcement adopted by the Commission and provide advice and recommendations to the Commission.

Each committee holds annual meetings, though meetings on specific topics can be held throughout the year as well. These meetings provide a consulting mechanism for its Contracting Parties (CPs, which are any State or regional economic integration organisation which has consented to be bound by this Convention and for which the Convention is in force). National reports are submitted to the committees, as prescribed in the relevant CMMs (e.g. data collection in line with CMM 01-2019 on *Trachurus murphyi* feeds into the SC, whereas CMM 06-2018 on the Establishment of the Vessel Monitoring System in the SPRFMO Convention Area directly relates to the CTC). CPs may submit so-called Information Papers, detailing e.g. 'local' (country specific) research to the committees. The report quoted in section 3.4.2 on interaction with seabirds by the EU fleet (Raczynski et al, 2016) is an example of such a report.

Each year, scientists from the Contracting Parties are invited to present their latest results to the appropriate working groups/committees. The SPRFMO website includes minutes of the Commission meetings and minutes and reports from the Commissions advisory bodies (SPRFMO, 2019b).

3.5.3.2 European Community

New measures adopted by the SPRFMO are reported back to the European Parliament and The Council of the EU and will be adopted into EU regulations (see e.g. European Commission, 2018).

The Council of the EU negotiates and adopts legislative acts in most cases together with the European Parliament through the ordinary legislative procedure, also known as 'codecision'. Codecision is used for policy areas where the EU has exclusive or shared competence with the member states. In these cases, the Council legislates on the basis of proposals submitted by the European Commission. The Council mostly takes its decisions by consensus. However, in certain specific cases outlined in the EU treaties, it decides by unanimity or by qualified majority (www.consilium.europa.eu).

The European treaties (most notably the Treaty of Lisbon, 2007, which made co-decision the "ordinary legislative procedure") have given the European Parliament a broad range of powers as the EU's directly-elected body. Together with the representatives of EU governments in the Council, Parliament is responsible for adopting EU legislation. Under the ordinary legislative procedure, both institutions act as equal co-legislators. In some special cases, other procedures may apply. Member of the European Parliament oversee the work of EU institutions, notably the European Commission, which is the executive arm of the European Union (www.europarl.europa.eu).

The European Commission instigates and implements the EU's policies. The Commission's work is steered by a College of Commissioners and led by its President. The Commission's Directorate-General for Maritime Affairs and Fisheries (DG Mare) is responsible for the policy area of fisheries, the Law of the Sea and Maritime Affairs (https://ec.europa.eu/info/index_en).

The European Union is Contracting Party of the South Pacific Regional Fisheries Management Organisation (SPRFMO). As a result, EU fleets fishing jack mackerel are subject to SPRFMO Consultation process. Delegates from DG Mare take part in the SPRFMO meetings as representatives of the EU, in close consultation with the EU fishing industry. The position to be taken on behalf of the European Union in the SPRFMO is subject to Council decision (e.g. European Council, 2019).

Since 2000, an EU framework for the collection and management of fisheries data is in place. This framework was reformed last in 2008 resulting in the Data Collection Framework (DCF). Under this framework the Member States (MS) collect, manage and make available a wide range of fisheries data needed for scientific advice. The data are collected on the basis of National Programmes in which the MS indicate the type of data collected, the allocated resources and the method for collection. MS must

report annually on the implementation of their National Programmes and the Scientific, Technical and Economic Committee for Fisheries (STECF) evaluates these Annual Reports.

EFCA, the European Fisheries Control Agency has the mission to promote the highest common standards for control, inspection and surveillance under the CFP. European Union governments agreed to establish the agency in the 2002 reform as part of the drive to instil a culture of compliance within the fisheries sector across Europe. In April 2005, they adopted the necessary legislation with Council Regulation (EC) No 768/2005. Its primary role is to organise coordination and cooperation between national control and inspection activities, in cooperation with the European Border and Coast Guard Agency and the European Maritime Safety Agency, so that the rules of the CFP are respected and applied effectively. Though EFCA participates in international operations, e.g. with regards to illegal, unreported, and unregulated (IUU) fishing, EFCA has not yet been involved in the SPRFMO Convention Area

3.5.3.3 National level

At a national level, the organisations named in section 3.5.1 (German BLE, Dutch Ministry of LNV, Lithuanian Division of Fisheries Control and Monitoring and Polish CMR) mainly deal with quota management and the application of fishing licenses for the vessels of their nationality.

Vessels have to always have the appropriate licenses on board before fishing in the SPRFMO area. Regulation (EU) no 2017/2403 (European Commission, 2017) outlines a general EU system for the authorisation of all fishing activities of EU fishing vessels outside EU waters. For EU fishing vessels fishing outside EU waters, the procedure is as follows:

- Applications must be sent to the European Commission electronically by the competent authorities of the EU country in which the fishing vessel is registered.
- They must be sent no later than 5 working days before the deadline stated in the agreement concerned or in accordance with the rule provided for in the agreement with the non-EU country.
- The Commission checks that the applications for authorisations are eligible, and ensures that such applications are transmitted to the non-EU country concerned.
- The Commission informs the relevant EU country authorities whether the non-EU country concerned has decided to grant the fishing authorisation for a particular vessel. The EU country then informs the owner of the fishing vessel.

If a non-EU country decides to suspend or withdraw a fishing authorisation for a vessel flying the flag of an EU country, the Commission must immediately inform the EU country. The EU country must then either temporarily suspend or permanently withdraw the fishing authorisation granted.

A secure electronic EU information system contains the information related to the authorisations issued. EU countries must ensure that the information contained is up to date at all times (https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM%3Ape0006)

If a company applies for a license, the application from the company is checked against TAC and quota regulation, compliance with CMMs (e.g. whether the vessel qualifies under the regulation for the prevention of seabird bycatch). If all is in order, the application is sent on from the national authorities to the European Commission (DG Mare). The SPRFMO secretariat is also notified. The application for licenses is an annual process. The license has to be on board, and is also sent to the Chilean authorities if the vessels wants to come into port to land fish. The licensing process takes from 5 working days to a few weeks, but can be quick if the company is known and known to comply.

All catches are reported to the respective national fisheries administrations, through the use of the electronic logbook. The national authorities subsequently report the quota uptake to the European Commission (DG Mare), who will prepare an annual report for the SPRFMO.

TAC and quota regulations apply on an EU level. The EU gets a fixed share for jack mackerel within the SPRFMO Convention area, and there are fixed relative shares within the EU (Netherlands, Poland, Germany, Lithuania). Between these countries there are a lot of quota swaps needed to optimise the fishing plan for any given year. Swapping within the EU is straightforward and involves a written request from the fishing companies involved asking their respective authorities to agree to the quota swap. The authority of the receiving Member State will write to the 'donating' MS's authority to finalise the deal. Then the proposed exchange is sent to the European Commission (DG Mare) for final agreement. In case of quota swaps with third parties outside the EU, the SPRFMO secretariat needs to be involved.

When vessels come back to European ports, they will be inspected by the national authorities, who will e.g. check logbooks, and if needed carry out landing inspections. The fishery under assessment intends to continue landing mainly in Chile.

In Chile the General Law on Fisheries and Aquaculture (Government of Chile, 2013) defines the functions, roles and responsibilities of the public-sector bodies and their supporting advisory scientific and management committees involved in the management process for fisheries in Chile. This also includes their cooperation with international bodies.

The EU vessels landing in Chile mainly deal with the Chilean Navy and National Fisheries and Aquaculture Service (Sernapesca).

Sernapesca is responsible for enforcing regulations with respect to monitoring, surveillance and control (VMS, landing & quota control, enforcement and statistics gathering/entry) in the wild capture fisheries and aquaculture. The control of landings falls mainly on private enterprise companies contracted according to Sernapesca's requirements.

A summary of the roles and responsibilities at each level in the fisheries management framework is shown in Table 12.

Table 12. Summary of key roles and responsibilities

	Main management authority	**Legal basis**	**Control and enforcement**	**Scientific advice**
SPRFMO	Commission	Convention (SPRFMO, 2015)	Compliance and Technical Committee	Scientific Committee
EU	Council of EU and EP	CFP	National Fisheries Control Agencies, and European Fisheries Control Agency (EFCA) (n/a for SPRFMO)	through DG MARE
Chile	General Directorate of Maritime Territory and	Ley General de Pesca y Aquicultura (the	Chilean Navy and National Fisheries and Aquaculture	Instituto de Fomento Pequero

	Main management authority	Legal basis	Control and enforcement	Scientific advice
	Merchant Marine (DIRECTEMAR)	General Law on Fisheries and Aquaculture)	Service (Sernapesca)	(Fisheries Development Institute) (IFOP)
Lithuania	Ministry of Agriculture of the Republic of Lithuania	Law on Fisheries, adopted on 27 June 2000	Fisheries service under the Ministry of Agriculture (Division of Fisheries Control and Monitoring)	Institute of Ecology of Vilnius University
Poland	Ministry of Maritime Economy · and Inland Navigation (Department of Fisheries	Direct effect CFP, resource management policies harmonised	Fisheries Monitoring Center (FMC) in Gdynia (part of the Ministry of Maritime Economy and Inland Navigation)	Sea Fisheries Institute in Gdynia (SFI)
The Netherlands	Ministry of Agriculture, Nature and Food Quality (Dutch: Ministerie van Landbouw, Natuur en Voedselkwaliteit; LNV)	Dutch Fisheries Act 1963	NVWA (Netherlands Food and Consumer Product Safety Authority); Coast Guard	WMR (Wageningen Marine Research)
Germany	Bundesministerium für Ernährung und Landwirtschaft (BMEL, Federal Ministry of Food and Agriculture); Bundesanstalt für Landwirtschaft und Ernährung (BLE)	1984 Seefischereigesetz – Sea Fisheries Act (modified in 2016)	Bundesanstalt für Landwirtschaft und Ernährung (BLE); Coast Guard	Thünen Institute of Sea Fisheries

3.5.4 Consultation processes

3.5.4.1 SPRFMO

As described under section 3.5.3 the roles within the SPRFMO organisation are well defined, including the manner in which parties are consulted through the annual meetings, and workshops.

Article 18 of the Convention states that " The Commission shall promote transparency in decision making processes and other activities carried out under this Convention... Representatives of non-Contracting Parties, relevant intergovernmental organisations and non-governmental organisations, including environmental organisations and fishing industry organisations with an interest in matters pertaining to the Commission shall be afforded the opportunity to take part in the meetings of the Commission and of its subsidiary bodies, as observers or otherwise as appropriate".

Article 31 of the Convention specially refers to, “Cooperation with other organisations” and states: “1. The Commission shall cooperate, as appropriate, with other regional fisheries management organisations, the FAO, with other specialised agencies of the United Nations, and with other relevant organisations on matters of mutual interest.

2. The Commission shall take account of the conservation and management measures or recommendations adopted by other regional fisheries management organisations and other relevant intergovernmental organisations that have competency in relation to the Convention Area, or in relation to areas adjacent to the Convention Area or in respect of particular living marine resources including non-target and associated or dependent species, and that have objectives that are consistent with, and supportive of, the objective of this Convention. It shall endeavour to ensure that its own decisions are compatible with, and supportive of, such conservation and management measures or recommendations.

3. The Commission shall seek to make suitable arrangements for consultation, cooperation and collaboration with such other organisations. In particular it shall seek to cooperate with other relevant organisations with the aim of reducing and eventually eliminating IUU fishing.”

3.5.4.2 European Union

As for consultation within the EU, Regulation (EU) 2018/975 (European Commission, 2018) says that “ In order to swiftly incorporate into Union law future binding amendments to the SPRFMO conservation and management measures…It is of particular importance that the Commission carry out appropriate consultations during its preparatory work, including at expert level, and that those consultations be conducted in accordance with the principles laid down in the Interinstitutional Agreement of 13 April 2016 on Better Law-Making. In particular, to ensure equal participation in the preparation of delegated acts, the European Parliament and the Council receive all documents at the same time as Member States' experts, and their experts systematically have access to meetings of Commission expert groups dealing with the preparation of delegated acts. “

The Council has noted that “In the framework of the SPRFMO, the Union shall… work towards an appropriate involvement of stakeholders in the preparation phase for SPRFMO measures and ensure that measures adopted within the SPRFMO are in accordance with the objectives of the SPRFMO Convention.”

The CFP includes rules on stakeholder involvement, through the Advisory Councils (ACs). The ACs are stakeholder-led organisations that provide the Commission and EU countries with recommendations on fisheries management matters. This may include advice on conservation and socio-economic aspects of management, and on simplification of rules. Advisory Councils are consulted in the context of regionalisation. Advisory Councils should also contribute to data for fisheries management and conservation measures.

Advisory Councils are composed of representatives from the industry and from other interest groups. In both the General Assembly and Executive Committee, 60% of the seats are allotted to representatives of the fisheries sector and 40% to representatives of the other interest groups. They receive EU financial assistance as bodies pursuing an aim of general European interest (see also: https://ec.europa.eu/fisheries/partners/advisory-councils).

With regards to the fisheries under assessment, the Long Distance Advisory Council (LDAC) is the applicable AC. Within the LDAC, working groups and focus groups deal with specific issues. Working Group 3 in the LDAC deals with RFMO’s, including the SPRFMO. This working group e.g. consulted with

the EU on the access to Chilean ports (https://ldac.eu/en/publications). The LDAC currently has more than 50 members from 12 EU coastal Member States.

3.5.4.3 National level

At a national level, administrations operate both formal and informal consultation procedures, in which they combine mailings on current issues and proposed changes to management systems, and schedule regular face-to-face meetings with key stakeholders.

From interviews with stakeholders at the site visit, the team understood these forms of consulting to work well. Both the fishing industry and NGOs (WWF, Oceana, PEW) have regular contact with the respective national authorities, and there is also regular contact between the industry and authorities with scientists participating in the scientific committee. The client groups also noted that the contact with the NGOs is good. There is a Memorandum of Understanding (MoU) between the Pelagic Freezer-trawler Association and Greenpeace (P&P, 2016): Shared objective is to achieve a sustainable (pelagic) fisheries, such as the herring and mackerel fishery, and a healthy balance between fisheries and the marine environment. The agreements in the MoU recognize the leading role of the PFA in the collection of scientific data and scientific research regarding (pelagic) resources, avoiding bycatch, improving selectivity and the impact on the marine ecosystem, and in constructively contributing to effective fisheries management in all regions where members of the PFA have a pelagic fishing operation. The MoU allows for a structured dialogue between the parties.

3.5.5 Enforcement and compliance

3.5.5.1 SPRFMO

The Convention does not explicitly provide SPRFMO with competence related to fisheries monitoring, control and surveillance (MCS) and so has no enforcement capacity. As with other RFMOs, SPRFMO relies on its Contracting Parties to implement management measures.

Article 27 of the Convention requires the Commission to establish appropriate cooperative procedures for effective monitoring, control and surveillance of fishing and to ensure compliance with this Convention and the conservation and management measures adopted by the Commission. These include *i.e*. the establishment and maintenance of a record of vessels authorised to fish in the Convention Area, the marking of vessels and fishing gear, the recording of fishing activities, and the reporting of vessel movements and activities by a satellite vessel monitoring system, at-sea and in-port inspection, the regulation and supervision of transhipment, monitoring transhipment, landings, and trade to prevent, deter and eliminate IUU, reporting on violations detected, progress and outcomes of investigations, and enforcement actions taken; and, addressing IUU fishing activities. Article 27 also allows the Commission to adopt measures against those entities that engage in fishing activities that diminish the effectiveness of, or otherwise fail to comply with, the conservation and management measures.

The Commission also requires its Members and CNCPs to implement and comply with obligations arising under the Convention and CMMs adopted by the Commission and provide annual compliance reports to the SPRFMO Compliance Committee, in accordance with CMM 10-2019 (Compliance Monitoring Scheme). The Compliance Monitoring Scheme is designed to assess compliance, identify areas in which technical assistance or capacity building may be needed, take action against non-compliance through preventive and remedial options.

The Commission publish a Compliance Report based on the Members' and CNCP's Implementation Reports (in accordance with Article 24, “Obligations of Members of the Commission”) and on information available to the Secretariat (SPRFMO, 2019h).

3.5.5.2 European Union

The community control system for ensuring compliance with the rules of the CFP are laid down in Council Regulation (EC) No 1224/2009, which is subsequently implemented through Commission Implementing Regulation (EU) No 404/2011. The Control Regulation (1224/2009) lays out provisions, and provides for the adoption of detailed rules and measures to implement these provisions. It e.g. demands that a fishing license is obtained, that logbooks are maintained, that the engine power of fishing vessels is not exceeded, and that vessels are equipped with a vessel monitoring system (VMS).

Control of the fishery is maintained by a variety of different methods, as defined by the Controls Regulation (1224/2009):

Logbooks: The main means of keeping track of catches is via vessel logbooks, which all vessels of 10m length overall or more are required to complete; for vessels of 12m length overall or more, the fishing logbook should be in electronic form. The logbooks record all catches of all retained species on a daily basis. All vessels are required to keep logbooks. Daily log sheets are completed and by agreement are submitted weekly to officers of the National Competent Authority. The daily submissions through the e log-books go to national authorities, who will inform the EC of the quota uptake, and in turn the EC will keep the SPRFMO Secretariat updated.

VMS: Within EU member states[1], each flag state National Competent Authority is required to ensure that vessels >12m length overall (L_oA) are equipped with VMS, thus providing spatial and temporal information on fishing effort. The satellite tracks can be cross-referenced to the logbook data to ensure that logbooks have been completed correctly. It is possible to assess by the track (speed, changes in direction) whether or not a vessel is fishing at any given point.

All vessels >15m also have an Automatic Information System (AIS), as directed by Article 10 of Council regulation (EC) 1224/2009 (the Control Regulation). This is an implementation of the SOLAS (Safety of Life at Sea) Convention, Regulation 19 Chapter V, which is published by the International Maritime Organisation (IMO). In 2000 IMO adopted a new requirement (as part of a revised new chapter V) for all ships to carry automatic identification systems (AISs) capable of providing information about the ship to other ships and to coastal authorities automatically. AIS, however, is geared towards shipping safety, and not designed with control and enforcement in mind, although Member States may use the automatic identification system data when such data are available for the purpose of cross-checking with other available data.

The EU Controls Regulation also covers e.g. maritime surveillance, control observers and controls in port. These are not applicable to the EU fleet when operating in the SPRFMO convention area, though similar regulations apply, and controls are carried out by e.g. the Chilean Navy following the procedures outlined in CMM 11-2015 (as described below).

[1] Although the VMS requirement from the EU applies to EU waters, SPRFMO CMM 06-2018 details similar regulations as described for the EU.

3.5.5.3 Controls at sea

With CMM 11-2015, the SPRFMO has adopted at sea inspection procedures Articles 21 and 22 of the 1995 Agreement (UN Fish Stocks Agreement), and Contracting Parties may conduct at sea inspections following the procedures contained in Articles 21 and 22 of the 1995 Agreement in respect of a vessel flying the flag of a Cooperating non-Contracting Party.

Article 21 states that: "In any high seas area covered by a sub-regional or regional fisheries management organization or arrangement, a State Party which is a member of such organization or a participant in such arrangement may, through its duly authorized inspectors, board and inspect, in accordance with paragraph 2, fishing vessels flying the flag of another State Party to this Agreement, whether or not such State Party is also a member of the organization or a participant in the arrangement, for the purpose of ensuring compliance with conservation and management measures for straddling fish stocks and highly migratory fish stocks established by that organization or arrangement." Article 22 lays out the basic procedures for boarding and inspection, such as presenting credentials to the master of the vessel, notifying the flag State at the time of the boarding and inspection, provide a copy of a report on the boarding and inspection to the master and to the authorities of the flag State, promptly leave the vessel following completion of the inspection if they find no evidence of a serious violation, and avoid the use of force. Article 22 also outlines the ways in which the flag State shall ensure that vessel masters comply with the inspection and boarding of the vessel.

As noted above, following regulation (EU) 1380/2013 (European Commission, 2013), discarding is forbidden of fish species for which a conservation measures applies, such as jack mackerel. This regulation also applies to EU vessels outside European waters, and the fishery under assessment. There is no evidence of the UoA engaging in slipping of catches, since there is no discards chute on the vessel, all fish is used for human consumption and slippage is very rare, confirmed by all stakeholders.
Controls on the compliance with regulation (EU) No 1393/2014 is not done by EFCA, since this Agency is not active in the South Pacific (see also section 3.5.3.2), nor are the National Authorities from the European Member States where the vessels originate from. Controls at sea are mainly carried out by the Chilean Navy.

The navy is increasingly involved in control of IUU fishing; not just coast guard vessels, but also frigates, and submarines. Currently, boarding of the vessel to carry out inspections is not an option in the SPRFMO area. There are not enough provisions yet to make boarding safe. If a vessel is encountered, the vessel will be issued a questionnaire to get relevant information from the master or the captain. So far, there have been no issues with the EU vessels. The Navy can cross-check the information with information already provided to the national authorities. The
EU vessels always answer the questions, and the information given by the vessel matches the info from the authorities.

As mentioned before, following CMM 06-2018 (VMS) shall apply to vessels included in the Commission Record of Vessels Authorised to Fish in the SPRFMO Convention Area. Updates on vessel positioning through VMS shall be given to the Secretariat at an interval not less frequent than hourly (either directly, or through the National Competent Authority).

3.5.5.4 Controls at landing

Before fishing is undertaken in the SPRFMO Convention Area, the Secretariat needs to be informed 3 weeks prior to entering the convention area. Subsequently, if a vessel wishes to offload fish at a

Chilean port, it needs to notify the authorities 72 hours before going into port, and 48 hours before entering the Chilean EEZ, indicating where the vessels intends to go, when they expect to be in port and what they are going to land. Though checks at sea are still carried out, the focus is currently on checks in ports where fish is landed, or on transhipped. At every point along the production chain, for every batch of fish, information must be provided that proves that the fish was caught legally.

As described in Section 3.5.3.3, Sernapesca is responsible for enforcing regulations with respect to monitoring, surveillance and control, including landing controls. The control of landings falls mainly on private enterprise companies contracted according to Sernapesca's requirements. 100% of vessels offloading in Chile will be inspected. The ports of first call enabled for this purpose are Arica, Iquique, Coquimbo, Valparaiso, Talcahuano, San Vicente (Talcahuano) and Punta Arenas. The vessels cannot commence landing until given permission. All landings are observed, monitored and certified by a 3rd party dockside monitoring company and Sernapesca are often present to monitor the landing and the dockside monitors. At landing, a copy of the logbook is submitted to the authorities in paper form, since the signature of the captain is needed. The whole catch gets weighed (though EU law only prescribes a sample).

Sernapesca will produce port inspection forms for EU vessels in Chile, and all reports are submitted to the Compliance and Technical Committee (CTC) of the SPRFMO.
During the site visit, representatives from the control agency explained clearly the functions and tasks of Sernapesca regarding the landings of jack mackerel by foreign ships. They also mentioned that the catch controls are complemented by documentation on the sanitary inspection services performed on the catches. In a separate interview, the role of the Navy with regards to maritime security and the protection of national security was explained to the team. The control and control protocols, the fight against illegal fishing and compliance with international agreements for shipping on the high seas were highlighted. In both interviews, no major issues with control and enforcement were brought to the attention of the team. The vessels are collaborative and give the dockside monitoring company and Sernapesca access to everything needed, included all licenses. Sernepesca highlighted one issue where an EU vessel had overfished their quota as listed on the fishing license. This was caused by a quota swap while the vessel was at sea, and the vessel had not yet received the updated license. In the end, the vessel was able to show the new license, with enough quota to account for the landed catch. Sernepesca mentioned that the communication between the EU, Chile and the SPRFMO Secretariat is not frequent: issues like these are resolved, but it takes work from the authorities.

3.5.6 Dispute resolution

At the international level, a state can institute proceedings against another state through mechanisms such as the International Court of Justice (ICJ) and the International Tribunal for the Law of the Sea (ITLOS), or bring a dispute before the Permanent Court of Arbitration (PCA).

In Article 34 of the SPRFMO Convention, the guidelines and procedure to "Settlement of Disputes" are established (SPRFMO, 2015):
"1. Contracting Parties shall cooperate in order to prevent disputes and shall use their best endeavours to resolve any disputes by amicable means which may include, where a dispute is of a technical nature, referring the dispute to an ad hoc expert panel.
2. In any case where a dispute is not resolved through the means set out in paragraph 1, the provisions relating to the settlement of disputes set out in Part VIII of the 1995 Agreement shall apply, mutatis mutandis, to any dispute between the Contracting Parties."

Part VIII of the 1995 UN Fish Stocks Agreement (United Nations, 1995), refers to conciliation and arbitration, and the use of courts or tribunals to rule on disputes.

Article 17 of the SPRFMO Convention (Implementation of Commission Decisions) also provides an opportunity for contracting parties to object to a Commission decision and, in so doing, initiate a process of review by a Commission established review panel. The panel provides their findings and recommendations to the Commission. These are presented to the contracting parties and, if a resolution cannot be achieved, then Article 34 is initiated.

According to the SPFRMO website, the objection process has been tested twice, and proven to be effective. It includes a recent objection (2018) involving Ecuador and its request for a catch entitlement of jack mackerel, and another jack mackerel entitlement request, from Russia in 2013. The PCA provided assistance in the proceedings conducted by a Review Panel with regards to the objection by Russia, and served as registry to the proceedings conducted by a Review Panel with regards to the objection by Ecuador.
All written submissions can be found on the SPFRMO website, with additional information, including the audio and transcript of the proceedings, available on the PCA website.

Dispute resolution in the EU is mostly dealt with at a national level. In some cases, individuals, companies, organisations or Member States can make their case for the Court of Justice of the European Union (CJEU), in the case of individuals or organisation often after an extensive journey through their national justice system. The role of the CJEU is to ensure EU law is interpreted and applied the same in every EU country, thus ensuring countries and EU institutions abide by EU law.

The CJEU gives rulings on cases brought before it. The most common types of case are:

- Interpreting the law (preliminary rulings): National courts of EU countries are required to ensure EU law is properly applied, but courts in different countries might interpret it differently. If a national court is in doubt about the interpretation or validity of an EU law, it can ask the Court for clarification. The same mechanism can be used to determine whether a national law or practice is compatible with EU law.
- Enforcing the law (infringement proceedings): This type of case is taken against a national government for failing to comply with EU law. A case can be started by the European Commission or another EU country. If the country is found to be at fault, it must put things right at once, or risk a second case being brought, which may result in a fine.
- Annulling EU legal acts (actions for annulment): If an EU act is believed to violate EU treaties or fundamental rights, the Court can be asked to annul it – by an EU government, the Council of the EU, the European Commission or (in some cases) the European Parliament. Private individuals can also ask the Court to annul an EU act that directly concerns them.
- Ensuring the EU takes action (actions for failure to act): The EU Parliament, Council and Commission must make certain decisions under certain circumstances. If they do not EU governments, other EU institutions or (under certain conditions) individuals or companies can complain to the Court.
- Sanctioning EU institutions (actions for damages): Any person or company who has had their interests harmed as a result of the action or inaction of the EU or its staff can take action against them through the Court.

At the national level both in The Netherlands, Germany, Poland, Lithuania, and in Chile there is an effective, transparent dispute resolution mechanism in place, as fishers can take their case to court if

they do not accept the rationale behind an infringement accusation by enforcement authorities or the fees levied against them. Verdicts at the lower court levels can be appealed to higher levels. Most issues are, however, resolved before they reach the court system, e.g. in discussions between authorities and actors in the fishing industry.

3.5.7 Review of the management system

At the SPRFMO level, article 30 (Reviews), of the Convention states the Commission shall: "review the effectiveness of the conservation and management measures and examine the effectiveness of the Convention itself at least every five years; determine the terms of reference and methodology of such reviews which shall be carried out by an independent person or persons of recognised competence who is independent of the Commission; take account of the recommendations with the appropriate amendment of its conservation and management measures and the mechanisms for their implementation."

SPRFMO has just completed the first review in 2018 (Ridings et al, 2018). The review looked at the effectiveness of the conservation and management measures adopted by the Commission in meeting the objectives of the convention. The Review Panel was made up of four international independent experts, two of which are nationals of SPRFMO Members with experience in the SPRFMO context and a thorough understanding of the SPRFMO Convention, and two external experts, among whom there is experience in relevant areas of science, fisheries and marine ecosystems management and legal matters, including compliance and enforcement issues.

Ridings et al (2018) conclude, in summary, the following: "*Over the six years since its establishment, SPRFMO has put in place a credible range of conservation and management measures to conserve and manage the fisheries within its Convention Area.*

SPRFMO has a strong legal and institutional structure. Much of the success of SPRFMO as an organisation is due to the Commission heeding the advice of the Scientific Committee. The recovery of the Jack mackerel stock required hard decisions to be taken by Members. This was facilitated by a decision-making process which enables decisions to be taken by consensus and, if that fails, to take decisions by vote. Of note is SPRFMO's objection procedure which has been used twice to date and allows Members to object to a decision of the Commission and have a fair and impartial hearing of their concerns. This is a point of difference between SPRFMO and other RFMOs.

SPRFMO has a robust suite of measures and is working diligently to implement its monitoring, control and surveillance (MCS) measures. While some improvements could be made to the existing MCS measures, the Commission should focus on fully implementing the MCS measures it has adopted. The one exception to this is the need for a SPRFMO-specific high sea boarding and inspection scheme. Most pressing, however, in order to fully implement the SPRFMO Observer Programme and make use of the MCS data that is collected, a dedicated Secretariat staff member in the professional category to undertake the compliance function is needed.

SPRFMO faces certain challenges in the future. In particular it needs to move away from its initial concentration on the necessary recovery of the Jack mackerel stock to other stocks within its purview, particularly Jumbo flying squid and updating the bottom fishing measure. The organisation also needs to make more effective use of the data that it collects. These and the application of the precautionary approach are priority areas for the immediate future. In the longer term SPRFMO could look towards adopting a more comprehensive ecosystem approach to fisheries management."

At EU level, the CFP is reviewed in connection with the major revisions of its basic regulations every tenth year. In addition to internal review processes, an independent evaluation was commissioned by the European Commission ahead of the 2013 reform to assess the CFP from both a natural and social sciences point of view.

At the national level, fisheries management is regularly evaluated by the Ministries, with input from stakeholders (e.g. fishing industry, environmental NGOs, national research institutes). In the case of CFP reviews, or proposed changes to the management of the fishery at EU level, the Ministries will consult with stakeholders as discussed in section 3.5.4.3.

In Chile, the General Law on Fisheries and Aquaculture requires that the effectiveness and implementation of conservation and management measures are evaluated every five years. Chile also carries out annual reviews of their national objectives and strategies with regards to the jack mackerel fishery, which may feed into the SPRFMO data set, through the SC.

3.6 Cumulative impacts (optional)

The MSC introduced requirements for cumulative impact assessments in Principle 2 with the release of the Fisheries Certification Requirements v2.0. These requirements are to ensure that MSC certified fisheries will no longer cumulatively be at risk of generating negative impacts on Principle 2 species (and habitat).

- For primary species, cumulative impacts assess whether the collective impact of overlapping MSC fisheries are hindering the recovery of 'main' primary species that are below a point of recruitment impairment (PRI); i.e. ensuring that the combined impact of MSC fisheries are not harming the recovery of the stock; if relevant this is scored at PI 2.1.1 SIa SG80.
- For secondary species, the same intent applies when a species is below a biologically based limit, but only in cases where two or more MSC fisheries have 'main' catches that are 'considerable', defined as a species being ten per cent or more of the total catch; if relevant this is scored at PI 2.2.1 SIa SG80.
- For ETP species, the combined impacts of MSC fisheries on all ETP species needs to be evaluated, but only in cases where either national and/or international requirements set catch limits for ETP species and only for those fisheries subject to the same national legislation or within the area of the same binding agreement'; if relevant this is scored at PI 2.3.1 SIa SG80.
- For habitats, in contrast, cumulative impacts are evaluated in the management PI (PI 2.4.2). The requirements here aim to ensure that the impacts of all fisheries (including non-MSC fisheries) on habitats, including vulnerable marine ecosystems (VMEs), are managed cumulatively to ensure serious and irreversible harm does not occur; this is scored for all fisheries and habitat types at SIa SG100. If relevant, there is also consideration of the UoA's compliance with VME management measures established by other fisheries at SId SG80.

Outcome Performance Indicator	Element	Cumulative impact?	Rationale
2.1.1 Primary species (main)	n/a	No	No primary species caught in the fishery under assessment (see Table 7)
2.2.1 Secondary species (main)	n/a	No	No secondary species classified as 'considerable' (see Table 7)
2.3.1 ETP outcome	n/a	No	No national and/or international requirements set catch limits for ETP species. The assessment team has reviewed the Public Certification Reports and found that there is a little overlap with the Chile Purse Seine Jack Mackerel. Both the fishery under assessment, and the Chile Purse seine fishery have interactions with the Black browed albatross (*Thallasarche melanophris*), Grey headed albatross (*Thallasarche chrysostoma*), and White chinned petrel (*Procellaria aequinoctialis*). This is further detailed under Evaluation Table for PI 2.3.1 – ETP species outcome.
2.4.2 VME management	n/a	No	No impact on habitat, including VMEs due to nature of fishery (pelagic)

4 Evaluation Procedure

4.1 Harmonised Fishery Assessment

A review of other MSC overlapping fisheries was completed prior to announcing the fishery. The fishery overlaps with one MSC fishery in assessment, in terms of the target species (P1), and fishing area (habitats and ecosystem under P2) (see Table 13).

Table 13. Overlapping fisheries in the MSC programme

Fishery name	Status	PCR reference	MSC Requirements assessed under
Chile Purse Seine jack mackerel jurel	Certified	Llyods Register (Acoura)	V2.0

The Chile Purse Seine jack mackerel jurel fishery has a lot of overlap with the fishery described in this report: this is a fishery with overlap in stock and fishing areas (SPRFMO Convention area: high seas). The team has therefore made sure to align scores on Principle 1. The team also has looked at the scoring of PIs 2.4 and 2.5 with this fishery that relate to the high seas, and made sure that scoring and rationales were lined up. Similarly, for Principle 3, the team has made sure scoring and rationales for that part of the management that referred to the SPRMO were aligned.

The scores from the Chile Purse Seine jack mackerel jurel fishery are provided in Table 14.

Table 14. Comparison of scores

Princi -ple	Performance Indicator (PI)		Score Purse Seine jack mackerel jurel	Score EU South Pacific midwater otter trawl
One	1.1.1	Stock status	90	70
	1.1.2	Stock rebuilding	n/a	100
	1.2.1	Harvest strategy	75	90
	1.2.2	Harvest control rules & tools	75	75
	1.2.3	Information & monitoring	80	90
	1.2.4	Assessment of stock status	95	100
Two	2.4.1	Outcome	100	100
	2.4.2	Management strategy	85	85
	2.4.3	Information	80	80
	2.5.1	Outcome	80	80
	2.5.2	Management	80	80
	2.5.3	Information	90	90
Three	3.1.1	Legal &/or customary framework	95	100
	3.1.2	Consultation, roles & responsibilities	95	95
	3.1.3	Long term objectives	100	100
	3.2.1	Fishery specific objectives	100	100
	3.2.2	Decision making processes	65	90
	3.2.3	Compliance & enforcement	75	80
	3.2.4	Monitoring & management performance evaluation	70	80

Conclusion P1: This fishery harmonised with the fisheries listed in Table 13. The fishery under assessment has aligned the score on PI 1.2.2 with that of Lloyd's Register, and raised a similar condition for PI 1.2.2, so as to ensure consistency of outcomes. The differences in 1.1.1 can be explained by the different perception of the stock between years, while the difference in 1.2.1 is due to the lack of discarding by the UoA. Regarding 1.1.1, new information available to the assessment in September 2018, namely an update in the Chinese CPUE, a change in assumption on fleet selectivity, and reduced previous estimates of recruitment (2016-year class) resulted in the projected stock increase being somewhat moderated (SPRFMO, 2018a) as what was predicted in the previous assessment. The scores were discussed in a harmonisation call and email with Lloyd's Register, and the differences agreed on.

Conclusion P2: This fishery harmonised where needed in relation to the SPRFMO Convention area with the fisheries listed in Table 13. A comparison of scores indicates that despite small differences in scoring, these all occur within the SG80 – 100 range, indicating no material difference in outcome.

Conclusion P3: This fishery harmonised where needed in relation to the SPRFMO Convention area with the fisheries listed in **Error! Reference source not found.**. The differences in scoring for PI 3.2.2 – 3.2.3 – 3.2.4 are caused by differences in the management regimes that apply: the Chile Purse Seine jack mackerel jurel fishery also fishes inside the Chilean EEZ and falls under the jurisdiction of Chile. This is not the case for the EU South Pacific midwater otter trawl fishery, which only fishes in the SPRFMO convention area and only relies on the Chilean authorities for controls at landing.

4.2 Assessment Methodologies

This assessment was conducted in accordance with the MSC Fisheries Standard v2.0 and MSC Full Assessment Reporting Template version 2.0. Adjustments to the Default Assessment Tree were not required. The Risk-Based Framework (RBF) was used in this assessment to score Secondary species outcome (PI2.2.1) for Chub mackerel (*Scomber japonicus*). This species makes up >5% of the catch and has no formal stock assessment or reference points set out, nor are there management tools and measures are in place. The team has therefore carried out a Productivity Susceptibility Analysis (PSA).

4.3 Evaluation Processes and Techniques

4.3.1 Site Visits and consultations

The site visit was held at The Hague (The Netherlands), on the 23rd-25th January 2019. The site visit was held alongside the annual SPRFMO Commission meetings, so as to have access to the various stakeholders for this fishery. After the site visit, a few stakeholders were contacted to gather more information. The individuals consulted during and after the site visit and affiliation are listed in Table 15.

Table 15. List of attendees at the on-site meetings.

Affiliation	Name	Date
CU Pesca	Cora Seip-Markensteijn	23th – 25th January
Independent assessor for CU Pesca	Lisa Borges	23th – 25th January
CU Pesca	Alejandro Karstegl	23th – 25th January
CU Pesca (observer)	Toru Tzusaki	23-24 January
Assurance Services International (ASI) (audit witness)	Stephanie Good	23th – 25th January
Atlantic High Sea Fishing Company (AHSFC)	Aivaras Labanduskas	23th January
North Atlantic Producers Organization (NAPO)	Emil Remisz	23th and 25th January
Parlevliet & van der Plas (P&P)	Rob Banning	23th – 25th January
Wageningen Marine Reseach (WMR)	Niels Hintzen*	24th January
Pelagic Freezertrawler Association (PFA)	Martin Pastoors*	24th January
Sernapesca	Francisco Fernandez	24th January
Sernapesca	Alicia Gallardo	24th January
SPRFMO Secretariat	Craig Loveridge	24th January
SPRFMO Secretariat	Sabastian Rodriguez	24th January

Affiliation	Name	Date
SPRFMO Secretariat	Jim Ianelli	24th January
PEW (consultant)	Cristian Laborda Mora	25th January
Chilean Navy	Jorge Imhoff	25th January
Ministry of Maritime Economy in Poland	Justyna Szumlics	25th January
Independent Consultant Fish Stock Assessment and Fisheries Management	Jorge Csirke	Email correspondence
National Marine Fisheries Research Institute Gdynia	Irek Wójcik	Email correspondence
Parlevliet & van der Plas (P&P)	Jutta Guijt	Visit to P&P 26th June
Parlevliet & van der Plas (P&P)	Ger Dieke	Visit to P&P 26th June
Parlevliet & van der Plas (P&P)	Rob Banning	Visit to P&P 26th June

* Participant in the RBF workshop, see section 4.3.

The information obtained during the site visit has been incorporated throughout the main report; however key points are summarised below:

- Dutch Pelagic BV (client group): Information about traceability from capture to offloading to 1st point of sale, details on fishing operations, gear use, bycatch protocol and reports, ETP interactions, gear loss;
- SPRFMO secretariat: Information on stock assessment, and other data collection regarding jack mackerel, information on management and implementation of the fishery;
- Wageningen University (WMR): Information about the observer program, surveys, and bycatch reporting;
- Pelagic Freezer trawler Association (PFA): Information about the self-sampling program;
- Sernapesca: Information about the control of the fishery (controls at sea and controls at landing).

4.3.2 Evaluation Techniques

a) Media announcements: CU Pesca selected the MSC as media outlet. The MSC press release targeted a wide range of stakeholders within the sustainable seafood industry, ensuring that key stakeholders were notified of this fishery's announcement. Aside from the general communication to stakeholders about the assessment, the team also reached out to a few stakeholders directly, to ensure their participation during the site visit.

b) Methodology for information gathering: Review of data and documentation, interview of stakeholders.

c) Scoring process: Scoring was agreed by the team via Skype and email correspondence. Consensus was reached for all scores. The scores were decided as follows:

How many scoring issues met?	SG60	SG80	SG100

All	60	80	100
Half	FAIL	70	90
Less than half	FAIL	65	85
More than half	FAIL	75	95

Note that where there is only one scoring issue in the SG, the issue can be partially scored – in this case the team used their judgement to determine what proportion of it was met, e.g. at the 100 level, a small part met = 85, about half met = 90, nearly all met = 95.

d) Decision rule for reaching the final recommendation: The decision rule for MSC certification is as follows: No PIs scores below 60; The aggregate score for each Principle, rounded to the nearest whole number, is 80 or above. The aggregate score for each Principle is the sum of the weighted score of each Performance Indicator within that Principle.

e) Scoring elements: The set of scoring elements considered in the assessment is listed in Table 16.

Table 16. Scoring elements

Component	Scoring elements	Main/Not main	Data-deficient or not
Target species – Jack mackerel	N/a	No	No
Primary species	N/a, see Table 7		
Secondary species	*Scomber japonicus*, chub mackerel	Main	Yes
	Brama australis, rays bream	minor	No
	Cubiceps caeruleus, blue fathead	minor	No
	Allothunnus fallai, slender tuna	minor	No
	Brama brama, pomfret	minor	No
	Seriola lalandi, yellowtail amberjack	minor	No
	See Table 7		
ETP species	Elasmobranchs, seabirds, cetaceans (see Table 7)	N/a	No
Habitats	Commonly encountered: N/a	N/a	No
	VMEs: N/a	N/a	No

f) Use of the RBF: The 'Risk Based Framework' is used to assess the fishery. Stock status reference points were available to score both PI 1.1.1, and 2.1.1, so the RBF was not needed for these PIs. The RBF was used in this assessment to score Secondary species outcome (PI2.2.1) for Chub mackerel (*Scomber japonicus*). This species makes up >5% of the catch and has no formal stock assessment or reference points set out, nor are there management tools and measures are in place. The team has therefore carried out a Productivity Susceptibility Analysis (PSA).

The impact of the fishery in assessment on ETP species can be analytically determined, so the RBF was also not needed for PI 2.3.1 (ETP Species outcome). Sufficient information on fishing locations was

available, and distribution of the main habitats are understood from a variety of sources. The RBF was therefore not needed to score PI 2.4.1, nor 2.5.1.

Prior to the RBF workshop, the intended participants were provided background information for the RBF workshop and Questionnaire by the CAB. The data included in the information pack, as well as the stakeholder contributions has been used in section 3.3.7.3 and Appendix 2 Outcome RBF

Appendix 2.1 Productivity-Susceptibility Analysis (PSA). Due to the fact that the site visit and RBF workshop took place at the same time as the SPRFMO annual Committee meeting, which in general allowed for greater access to stakeholders, participation in the RBF workshop was limited, though the team believes that the expertise of the scientists from WMR and PFA involved was more than sufficient to come to a conclusion. Key information (mainly the distribution of chub mackerel) has been verified though email with Jorge Csirke (an expert on chub mackerel). At the workshop, the Susceptibility Indicators were discussed with the participants, and a consensus reached on the Susceptibility Scores.

5 Traceability

5.1 Eligibility Date

The Eligibility Date has been set as the date of certification, pending the successful outcome of this evaluation. Product caught by European vessels with quota for Chilean jack mackerel (vessels of the Parlevliet & Van der Plas group and vessels from Samherji HF) after the date of certification will be eligible to enter further chains of custody.

5.2 Traceability within the Fishery

The catch is frozen on board and destined for human consumption. The main markets are West African countries (mainly Nigeria, some goes to Angola), where the fish is further processed (smoked) by the wholesaler.

The vessels fishing for jack mackerel are pelagic Freezer Trawlers. The fish is pumped out of the cod-end into refrigerated sea water (RSW) tanks, where they are chilled till -1°C. Following that, the fish is sorted by species and size. Sorting is done automatic, with checking by hand. The fish goes over a conveyor belt into in a plate freezer, where they freeze for 3-4 hours. Next, the fish is put in cardboard boxes of standard weight and size, containing ca. 1,5 kg each. Each box is labelled with a code: a unique number relating back to area and date of catch. All catches can be traced back to the logbook, which is update daily and sent to the national authorities. The batch number contains indications to:

- The month of departure;
- A code for the species caught;
- A number indicating the size and quality of the fish;
- The date of catch;
- The date of production (packaging into boxes);
- Whether or not the catch is MSC.

Figure 21. Standard box with batch number (CJM referring to Chilean Jack mackerel, and GDY-151 being the vessel number, the rest of the code is linked to the company system and contains the information described above)

The code is also linked the Hazard analysis and critical control points (HACCP)-plan.

The quality manager samples the fish when it comes on board, and lists the quality in productions sheets, including the number of boxes filled with the haul, the location of storage of the batch in the hold, with additional data (quality of catch, e.g. fat percentage). This way, there is paperwork aiding in traceability of the boxes. If there is too little catch to fill enough boxes, this goes into a buffer tank, and is processed later. This is done to make sure the holds are filled up properly (ensuring even weight distribution). These boxes get marked accordingly.

The fish is 'whole round', frozen at sea, meaning there is no grading and processing of the catch (other than sorting by size and species). After about 6 weeks the catch is offloaded, the ports used in Chile are Talcahuano, San Vicente (Talcahuano). Transhipment could be possible (and is allowed in the SPRFMO convention area, following measures in CMM 12-2018), but since the vessel has to go into port anyway for a crew change, and to take in fuel, offloading at a port is easier.

Aside from their own VMS, the vessels also comply with national regulations of Chile, and all have the ARGOS system for electronic notification on board, allowing Sernepesca to follow the vessel's movements. The ARGOS system is sealed by Sernepesca, to avoid tampering.

The holds are designed according to EU regulations, which is checked by the Human Environment and Transport Inspectorate (Inspectie Leefomgeving en Transport in The Netherlands) to allow for inspections of the catch by the authorities.

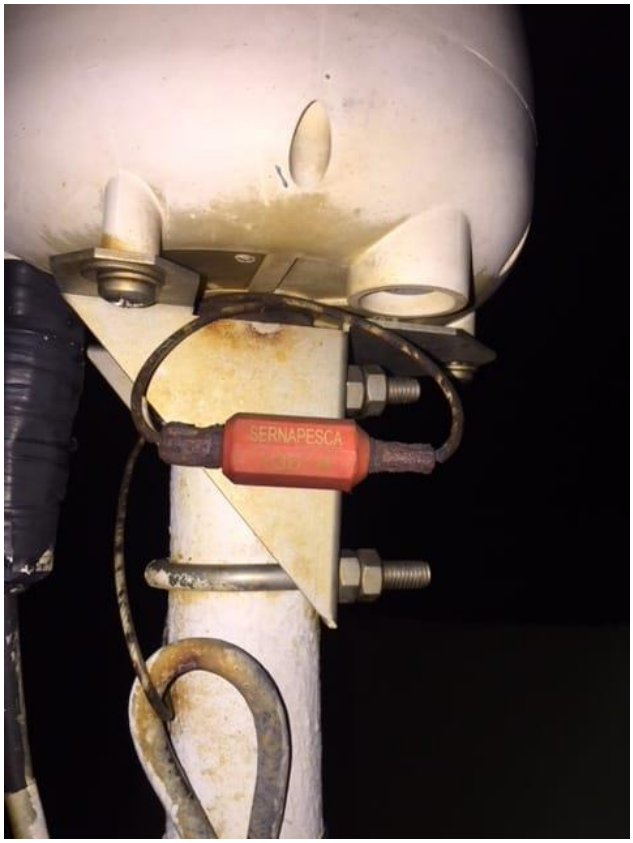

Figure 22. Seal provided by Sernepesca (photo provided by client)

Once the vessel decides to come into port, the authorities are notified following CMM 07-2019, and fill out all forms accordingly, detailing e.g. what the plans are (offloading catch, changing crew, etc), what licenses are available, and details on the vessel (like the name of the captain, and length of the vessel).

All contacts with the authorities go through an agent (through Juan Eduardo Maturana Vessel Operations Coordinator International Accounts). He is the go-between the vessel, the company and the authorities. The agent at no point owns the fish, just acts on behalf of the vessels/client group.

When permission for landing is given, the catch is unloaded. Senepesca weighs the total catch, and compares this to the logbook data. If all is ok, the catch is loaded into containers, which in turn are put on a ship. All boxes will be labelled indicating MSC or non-MSC. Under normal circumstances, a whole container would contain MSC-catch, but even if MSC and non-MSC catch would be placed in a container together, there would be no risk of mixing because of the labelling.

Sometimes the catch is stored at the port (most often San Vincente). These are public facilities in Chile that are rented by the P&P Group. There are no auctions involved, everything is sold directly by P&P group (Dutch Pelagic) themselves, also on behalf of the Lithuanian, German and Polish vessels. Most times, the catch has been sold before offloading, and the containers for further transport are provided for by the buyer.

Change of ownership takes place at production of ‘bill of lading’ (when a container is cleared for further transport).

Paper work that is available to trace the catch consist of logbooks, VMS tracks, production sheets, vessel hold plans, inspection reports by Senepesca and transportation documentation. Each document can be related to the batch number on the box.

Table 17. Traceability Factors within the Fishery:

Traceability Factor	Description of risk factor if present. Where applicable, a description of relevant mitigation measures or traceability systems (this can include the role of existing regulatory or fishery management controls)
Potential for non-certified gear/s to be used within the fishery	There is no risk of non-certified gears being used with the fishery as the vessels only use mid-water otter trawl and no other fishing gears.
Potential for vessels from the UoC to fish outside the UoC or in different geographical areas (on the same trips or different trips)	Low-risk: Trips are completed in the UoC area only and then return to unload or are offloaded at sea, before completing another trip. This can be verified through VMS data and electronic logbook data.
Potential for vessels outside of the UoC or client group fishing the same stock	Vessels from outside the UoC are likely to fish for the same stocks but will not be covered by this assessment. To avoid the risk of vessels landing product from outside the UoC as MSC (i.e. vessels not associated with this assessment) an up to date list of vessels will be published with the certificate (pending a successful outcome of this evaluation). This list can then be used by companies with MSC CoC to ensure product is originating from a vessel covered by this assessment.
Risks of mixing between certified and non-certified catch during storage, transport, or handling activities (including transport at sea and on land, points of landing, and sales at auction)	MSC and non-MSC trips will always be recorded by the client group. Processing is only completed at sea and completed immediately upon hauling gear, ending with boxed frozen product. Further processing is only completed after change of ownership and is therefore the responsibility of the product purchaser. The packed product can be verified through labels, linked to VMS and logbook data, which are inspected by control authorities before offloading.
Risks of mixing between certified and non-certified catch during processing activities (at-sea and/or before subsequent Chain of Custody)	There is no risk of non-certified gears being used with the fishery as the vessels only use mid-water otter trawl and no other fishing gears. MSC and non-MSC trips are always recorded by the client group. Processing is only completed at sea and completed immediately upon hauling gear, ending with boxed frozen product. Further processing is only completed after change of ownership and is therefore the responsibility of the product purchaser. The packed product can be verified through labels, linked to VMS and logbook data, which are inspected by control authorities before offloading.
Risks of mixing between certified and non-certified catch during transhipment	Low-risk: Trips are completed in the UoC area only and then return to unload or are offloaded at sea, before completing another trip. This can be verified through VMS data and

Traceability Factor	Description of risk factor if present. Where applicable, a description of relevant mitigation measures or traceability systems (this can include the role of existing regulatory or fishery management controls)
	electronic logbook data. NB: transhipment is not covered under the fisheries' certificate and requires CoC.
Any other risks of substitution between fish from the UoC (certified catch) and fish from outside this unit (non-certified catch) before subsequent Chain of Custody is required	None: The block-frozen product is packed on-board and is labelled with a batch number per box. If the vessel changes fishing area (from UoC to outside the UoC), this need to be documented, and will be subject to inspections by the control authorities. There are no separate holds on the ship, but there are separate regions per holds, and separation nets to keep MSC and non-MSC separate, and alert the crew at offloading that different product is being handled.

Point of intended change of ownership of product: The intended change of ownership of the product is after purchase by a third party after landing. This is where the product is directly bought from the vessel and transported to the new owner.

Point from which Chain of Custody is required: Separate Chain of Custody certification will be required from the first point of sale.

Conclusion for product eligibility to be sold as MSC certified: Product caught by the vessels in **Error! Reference source not found.** is strictly controlled, as described above. Catch location in MSC certified areas is verifiable through VMS and electronic logbook data. MSC and non-MSC product will be kept and labelled accordingly. Traceability documentation allows tracing of the products back to the area, day and method of capture. Invoicing and product labelling of product provides clear identification of product into further chains of custody. **Transhipment is allowed in the SPRFMO area. However, transhipment does not take place in this fishery at this moment. The client is to notify the CAB if this changes.**

The conclusion of the team is that the product conforming to the UoAs by the vessels listed in Table 1 should be eligible to carry the MSC ecolabel.

5.3 Eligibility of Inseparable or Practicably Inseparable (IPI) stock(s) to Enter Further Chains of Custody

No IPI stocks were identified in this assessment.

6 Evaluation Results

6.1 Principle Level Scores

The final principal scores are provided in Table 18.

Table 18. Final Principle Scores

Principle	Score
Principle 1 – Target Species	87,5
Principle 2 – Ecosystem	85,7
Principle 3 – Management System	92,9

6.2 Summary of PI Level Scores

Princi-ple	Compo-nent	Wt	Performance Indicator (PI)		Wt	Score
One	Outcome	0.33	1.1.1	Stock status	0.5	70
			1.1.2	Stock rebuilding	0.5	100
	Manage-ment	0.67	1.2.1	Harvest strategy	0.25	90
			1.2.2	Harvest control rules & tools	0.25	75
			1.2.3	Information & monitoring	0.25	90
			1.2.4	Assessment of stock status	0.25	100
Two	Primary species	0.2	2.1.1	Outcome	0.33	100
			2.1.2	Management strategy	0.33	80
			2.1.3	Information/Monitoring	0.33	95
	Secondary species	0.2	2.2.1	Outcome	0.33	80
			2.2.2	Management strategy	0.33	80
			2.2.3	Information/Monitoring	0.33	80
	ETP species	0.2	2.3.1	Outcome	0.33	90
			2.3.2	Management strategy	0.33	85
			2.3.3	Information strategy	0.33	80
	Habitats	0.2	2.4.1	Outcome	0.33	100
			2.4.2	Management strategy	0.33	85
			2.4.3	Information	0.33	80
	Eco-system	0.2	2.5.1	Outcome	0.33	80
			2.5.2	Management	0.33	80
			2.5.3	Information	0.33	90
Three		0.5	3.1.1	Legal &/or customary framework	0.33	100

Princi-ple	Compo-nent	Wt	Performance Indicator (PI)		Wt	Score
	Govern-ance and policy		3.1.2	Consultation, roles & responsibilities	0.33	95
			3.1.3	Long term objectives	0.33	100
	Fishery specific manage-ment system	0.5	3.2.1	Fishery specific objectives	0.25	100
			3.2.2	Decision making processes	0.25	90
			3.2.3	Compliance & enforcement	0.25	80
			3.2.4	Monitoring & management performance evaluation	0.25	80

6.3 Summary of Conditions

Number	Condition	Performance Indicator
1	The client shall ensure by the fourth surveillance audit there are well defined HCRs in place that ensure that the exploitation rate is reduced as the PRI is approached and they are expected to keep the stock fluctuating around a target level consistent with (or above) MSY.	1.2.2

6.4 Determination, Formal Conclusion and Agreement

(REQUIRED FOR FR AND PCR)

1. The report shall include a formal statement as to the certification determination recommendation reached by the Assessment Team about whether or not the fishery should be certified.

(Reference: FCR 7.16)

(REQUIRED FOR PCR)

2. The report shall include a formal statement as to the certification action taken by the CAB's official decision-makers in response to the Determination recommendation.

7 References

ACAP: https://www.acap.aq/en/acap-species

Ancapichún, S. & Garcés-Vargas, J., 2015. Variability of the Southeast Pacific Subtropical Anticyclone and its impact on sea surface temperature off north-central Chile. Ciencias Marinas. 41. 1-20. 10.7773/cm.v41i1.2338.

www.aquamaps.org

Bertrand, A., Barbieri, M.A., Córdova, J., Hernández, C., Gómez, F., Leiva, F., 2004. Diel vertical behaviour, predator–prey relationships, and occupation of space by jack mackerel (*Trachurus murphyi*) off Chile, ICES Journal of Marine Science, 61(7): 1105–1112. https://doi.org/10.1016/j.icesjms.2004.06.010

Convention on Biological Diversity: http://www.cbd.int/ebsa/ebsas

Corten, A., 2015. European Union Annual report. 3rd Meeting of the Scientific Committee. SC-03-18

Corten, A., 2015a. Observer Manual for PFA vessels in the Pacific. Rapport CMR 2015-01

Corten, A., I. Wojcik, 2017. The European Union's Observer Implementation report. 5th Meeting of the Scientific Committee Shanghai, China 23 – 28 September 2017. SC5-Doc14: https://www.sprfmo.int/assets/SC5-2017/SC5-Doc14-EUs-Observer-implementation-report.pdf

Cryer, M., I. Debski, T. Bock, 2018. Observer coverage to monitor seabird captures in fisheries. 6th Meeting of the Scientific Committee Puerto Varas, Chile, 9 - 14 September 2018. SC6-Doc30

Cury, P., Bakun, A., Crawford, R. J. M., Jarre, A., Quin˜ones, R. A., Shannon, L. J., and Verheye, H. M. 2000. Small pelagics in upwelling systems: patterns of interaction and structural changes in ''wasp-waist'' ecosystems. – ICES Journal ofMarine Science, 57: 603–618.

Debski, I., 2013. Review of bycatch data collection and reporting standards. 1st Meeting of the Scientific Committee La Jolla, United States of America, 21-27 October 2013. SC-01-11

Encyclopædia Britannica, 2019. https://www.britannica.com/science/epipelagic-zone#/media/1/190091/10293

Espinoza, P, Lorrain, A, Ménard, F, Cherel, Y, Tremblay-Boyer, L, Argüelles, J, Tafur, R, Bertrand, S, Tremblay, Y, Ayón, P, Munaron, JM, Richard, P & Bertrand, A. 2017. Trophic structure in the northern Humboldt Current system: new perspectives from stable isotope analysis. Marine Biology, 164: 86

European Commission website, link to CFP: https://ec.europa.eu/fisheries/cfp_en

European Commission, 1999. Communication from the Commission to the Council and the European Parliament Community - participation in Regional Fisheries Organisations (RFOs). COM/99/0613 final: https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A51999DC0613

European Commission. 2009. Council Regulation (EC) No 1224/2009 of 20 November 2009 establishing a Community control system for ensuring compliance with the rules of the common fisheries policy, amending Regulations (EC) No 847/96, (EC) No 2371/2002, (EC) No 811/2004, (EC) No 768/2005, (EC) No 2115/2005, (EC) No 2166/2005, (EC) No 388/2006, (EC) No 509/2007, (EC) No 676/2007, (EC) No 1098/2007, (EC) No 1300/2008, (EC) No 1342/2008 and repealing Regulations (EEC)

No 2847/93, (EC) No 1627/94 and (EC) No 1966/2006. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009R1224&from=EN

European Commission, 2011. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on External Dimension of the Common Fisheries Policy (COM/2011/0424): https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A52011DC0424

European Commission, 2011b. Regulation (EU) No 579/2011 of the European Parliament and of the Council of 8 June 2011 amending Council Regulation (EC) No 850/98 for the conservation of fishery resources through technical measures for the protection of juveniles of marine organisms and Council Regulation (EC) No 1288/2009 establishing transitional technical measures from 1 January 2010 to 30 June 2011. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32011R0579&qid=1507230462659&from=EN

European Commission, 2011c. Commission Implementing Regulation (EU) No 404/2011 of 8 April 2011 laying down detailed rules for the implementation of Council Regulation (EC) No 1224/2009 establishing a Community control system for ensuring compliance with the rules of the Common Fisheries Policy. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32011R0404&qid=1507928571492&from=EN

European Commission, 2013. Regulation (EU) No 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy, amending Council Regulations (EC) No 1954/2003 and (EC) No 1224/2009 and repealing Council Regulations (EC) No 2371/2002 and (EC) No 639/2004 and Council Decision 2004/585/EC: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32013R1380

European Commission, 2014. Commission delegated regulation (EU) No 1393/2014 of 20 October 2014 establishing a discard plan for certain pelagic fisheries in north-western waters. http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32014R1393&from=NL.

European Commission, 2017. Regulation (EU) 2017/2403 of the European Parliament and of the Council of 12 December 2017 on the sustainable management of external fishing fleets, and repealing Council Regulation (EC) No 1006/2008: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32017R2403

European Commission, 2018. Regulation (Eu) 2018/975 of the European Parliament and of the Council of 4 July 2018 laying down management, conservation and control measures applicable in the South Pacific Regional Fisheries Management Organisation (SPRFMO) Convention Area: https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1571147070289&uri=CELEX:32018R0975

European Council, 2008. Council Regulation (EC) No 1006/2008 of 29 September 2008 concerning authorisations for fishing activities of Community fishing vessels outside Community waters and the access of third country vessels to Community waters, amending Regulations (EEC) No 2847/93 and (EC) No 1627/94 and repealing Regulation (EC) No 3317/94: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32008R1006

European Council, 2019. Council Decision (EU) 2019/859 of 14 May 2019 on the position to be taken on behalf of the European Union in the South Pacific Regional Fisheries Management Organisation (SPRFMO), and repealing the Decision of 12 June 2017 establishing the position to be adopted, on behalf of the Union, in the SPRFMO: https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1571147070289&uri=CELEX:32019D0859

European Council: www.consilium.europa.eu

European Parliament: www.europarl.europa.eu

FAO.org

FAO, 2000. Synopsis of Biological Data on the Chub Mackerel (*Scomber japonicus* Houttuyn, 1782). FAO Fisheries Synopsis No 157

Fishbase, 2019

Fishsource: https://www.fishsource.org/fishery_page/4793

Germany, 1984 (last revised 2016). Gesetz zur Regelung der Seefischerei und zur Durchführung des Fischereirechts der Europäischen Union (Seefischereigesetz SeeFischG) (Law on the Regulation of Marine Fishing and the Implementation of the European Union Fishing Legislation (the Marine Fisheries Act)), Parliament of the Federal Republic of Germany (Bundestag)

Gershunov, A., T. P. Barnett, 1998. Interdecadal Modulation of ENSO Teleconnections. DOI:10.1175/1520-0477(1998)079<2715:imoet>2.0.co;2

Government of Chile, 1978. Sustituye Ley De Navegacion. D.L. N°2.222

Government of Chile, Ministry of Economic promotion and rebuilding – Undersecretary for fisheries (Ministerio de Economia foment y reconstruccíon, Subsecretaria de Pesca), 2004. Policy of Use of Ports by Foreign-Flagged Fishing Vessels fishing in the adjacent High Seas (Reglamento para aplicar el acuerdo para promover el cumplimiento de las medidas internacionales de conservacíon y ordenación por los buques pescueros que pescan en alta mar). S.D. N° 123: http://www.subpesca.cl/portal/616/articles-86430_SD_N123.pdf

Government of Chile, 2013. Ley General De Pesca Y Acuicultura (General Law on Fisheries and Aquaculture, amended from the 1989 law). Fija El Texto Refundido, Coordinado Y Sistematizado De La Ley Nº 18.892, De 1989 Y Sus Modificaciones, Ley Generalde Pesca Y Acuicultura.

Government of Chile, Undersecretariat for Fisheries, 2007. Research and management of Chilean Jack Mackerel (Trachurus murphyi) exploited in the South East Pacific Ocean

Government of Chile, Ministry of Economic promotion and rebuilding – Undersecretary for fisheries (Ministerio de Economia foment y reconstruccíon, Subsecretaria de Pesca), 2009. Modifies Supreme Decree N° 123 as of 2004, from the Ministry of Economy, Development and Reconstruction, that Approves Policy of Use of Ports by Foreign-Flagged Fishing Vessels fishing in the adjacent High Seas. S.D. N° 329 as of 2009: http://www.subpesca.cl/portal/616/articles-86430_recurso_2.pdf

Hintzen, N.T., A. Corten, F. Gerlotto, J. Habasque, A. Bertrand, P. Lehodey, T. Brunel, A. Dragon, I. Senina, 2013. Hydrography and Jack Mackerel stock in the South Pacific – Interim report. Studies for carrying out the Common Fisheries Policy, Open call for tenders No MARE/2011/16 Lot 1. IMARES Report number C156/13

IUCN: https://www.iucnredlist.org/

MARPOL Convention: http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-(MARPOL).aspx

MSC, 2014. MSC Fisheries Certification Requirements v2.0 (Annex PF)

Pastoors, M.A., 2018. PFA Self-sampling manual v2.11 PFA report 2018/10

Pastoors, M.A., van Helmond, A.T.M., van Overzee, H.M.J., Wójcik, I., Verver, S.W., 2018. 6th Meeting of the Scientific Committee Puerto Varas, Chili 9 - 14 September 2018 SC6-JM04 Comparison of PFA self-sampling with EU observer data: https://www.sprfmo.int/assets/2018-SC6/Meeting-Documents/SC6-JM04-Comparison-of-PFA-self-sampling-with-EU-observer-data.pdf

Pastoors, M.A. and F. Quirijns, 2019. PFA self-sampling report 2015-2018 SPRFMO. PFA report 2019/03

Penven, P., V. Echevin, J. Pasapera, F. Colas, and J. Tam, 2005. Average circulation, seasonal cycle, and mesoscale dynamics of the Peru Current System: A modeling approach, J. Geophys. Res., 110, C10021, doi:10.1029/2005JC002945.

Permanent Court of Arbitration: https://pca-cpa.org/en/home/

Raczynski, T. and Ad Corten, 2016. Seabirds and large pelagic trawlers in the south-eastern Pacific. 4th Meeting of the Scientific Committee. The Hague, Kingdom of the Netherlands 10 - 15 October 2016. SC-04-22_rev1

Republic of Lithuania, 2000. Law on Fisheries, 27 June 2000, No VIII-1756

Ridings, P. (Chair), A. Cole, L. Goldsworthy, S. Kaye, 2018. Report of the South Pacific Regional Fisheries Management Organisation Performance Review Panel. 1 December 2018: https://www.sprfmo.int/assets/Basic-Documents/Convention-and-Final-Act/2018-SPRFMO-Performance-Review/2018-12-01-REPORT-SPRFMO-PERFORMANCE-REVIEW-FINAL.pdf

San Martín, M.A., E. Leal, and T. M. Canales, 2017. Spatial and bathymetric occurrence of Brama australis off the Chilean Coast and in the South Pacific Ocean. Revista de Biología Marina y Oceanografía Vol. 52, N°2: 405-409, agosto 2017

Scarcella, G., J. Andrews, P. Knapman, 2019. MSC Sustainable Fisheries Certification Chile Purse Seine Jack Mackerel. Lloyd's Register

SERNEPESCA, 2016. División de Administración Pesquera. Estado de Situación de las principales pesquerías chilenas, año 2015

P&P website, 2016: https://www.pp-group.nl/news/id/14/pelagic-fishing-fleet-and-greenpeace-join-forces-for-sustainable-fisheries

SPRFMO, 2007. Information describing chub mackerel (*Scomber japonicus*) fisheries relating to the South Pacific Regional Fishery Management Organisation: https://www.sprfmo.int/assets/Fisheries/Species-Profiles/chub-mackerel-species-profile-040507-Science-IV.pdf

SPRFMO, 2013. Harvest control rule for the recovery of the jack mackerel stock at the South Eastern Pacific. SC-01-05. 1st Meeting of the Scientific Committee La Jolla, United States of America, 21-27 October 2013: https://www.sprfmo.int/assets/Meetings/Meetings-2013-plus/SC-Meetings/1st-SC-Meeting-2013/SC-01-05-Harvest-control-rule-for-the-recovery-of-the-jack-mackerel-stock-at-the-South-Eastern-Pacific.pdf

SPRFMO, 2014. Information describing Chilean jack mackerel (*Trachurus murphyi*) fisheries relating to the South Pacific Regional Fishery Management Organisation. SC-01-23. 41 pp.: https://www.sprfmo.int/assets/Fisheries/Species-Profiles/SC-01-23-rev2-Jack-Mackerel-species-profile-pdf.pdf

SPRFMO 2014a. Conservation and Management Measure for minimising bycatch of seabirds in the SPRFMO Convention Area. Report of the 2nd Commission Meeting, Annex N, CMM 2.04.

SPRFMO, 2014b. Memoranda of understanding with the Secretariat for the Agreement on the Conservation of Albatrosses and Petrels (ACAP) https://www.sprfmo.int/assets/Cooperationwith-others/MoU-Between-ACAP-and-SPRFMO-final-signed-28-Oct-2014.pdf

SPRFMO, 2015. Convention on the Conservation and Management of High Sea Fishery Resources in the South Pacific Ocean: https://www.sprfmo.int/assets/Basic-Documents/Convention-web-12-Feb-2018.pdf

SPRFMO, 2016. Memoranda of understanding with the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) https://www.sprfmo.int/assets/Cooperation-with-others/SPRFMO-CCAMLR-MoU15April2016.pdf

SPRFMO, 2017. Report of the 4th Scientific Committee meeting. Annex 7 – JM Stock assessment. 53 pp.

SPRFMO, 2017a. Conservation and Management Measure for minimising bycatch of seabirds in the SPRFMO Convention Area CMM 09-2017 https://www.sprfmo.int/assets/Fisheries/Conservation-and-Management-Measures/2019-CMMs/CMM-09-2017-Seabirds-FormattedMay2019.pdf

SPRFMO, 2017b. Report of the Habitat Monitoring Task Group. 6th Meeting of the Scientific Committee Puerto Varas, Chile, 9 - 14 September 2018. SC6-Doc07: https://www.sprfmo.int/assets/2018-SC6/Meeting-Documents/SC6-Doc07-Report-of-the-Habitat-Task-Group.pdf

SPRFMO, 2018a. Conservation and Management Measure for *Trachurus murphyi*. CMM 01-2018. 5 pp: https://www.sprfmo.int/assets/Fisheries/Conservation-and-Management-Measures/2018-CMMs/CMM-01-2018-Trachurus-murphyi-8March2018.pdf

SPRFMO, 2018b. Conservation and Management Measure on Standards for the Collection, Reporting, Verification and Exchange of Data. CMM 02-2018: https://www.sprfmo.int/assets/Fisheries/Conservation-and-Management-Measures/2019-CMMs/CMM-02-2018-Data-Standards-FormattedMay2019.pdf

SPRFMO, 2018c. 6th SCIENTIFIC COMMITTEE MEETING REPORT 9-14 September 2018 Puerto Varas, Chile. SPRFMO SC6-Report. Report location: https://www.sprfmo.int/meetings/scientific-committee/6th-sc-2018/

SPRFMO, 2018d. Report of the Jack mackerel stock assessment. Valparaiso Chile, May 28th - 30th, 2018. SPRFMO–2018–SCW6, 27 pp.

SPRFMO, 2018e. A summary of current SPRFMO bycatch records (Including species of concern). 6th Meeting of the Scientific Committee Puerto Varas, Chile, 9 - 14 September 2018. SC6-Doc09: https://www.sprfmo.int/assets/2018-SC6/Meeting-Documents/SC6-Doc09-Summary-of-current-SPRFMO-by-catch-records.pdf

SPRFMO, 2019. Conservation and Management Measure for *Trachurus murphyi*. CMM 01-2019. 6 pp. https://www.sprfmo.int/assets/Fisheries/Conservation-and-Management-Measures/2019-CMMs/CMM-01-2019-5Mar2019.pdf

SPRFMO, 2019b. website SPRFMO: https://www.sprfmo.int/

SPRFMO, 2019c. Habitat Monitoring Working Group. Galway, Ireland, 30 April 2019. Report of the SPRFMO Habitat Monitoring Working Group (HMWG) Session Annual Meeting of the ICES's Fisheries Acoustics Science and Technology Working Group (WG-FAST): https://www.sprfmo.int/assets/Fisheries/Habitat-Monitoring-WG/2019/30-Apr-2019-HMWG-meeting-report-with-participants1.pdf

SPRFMO, 2019d. Conservation and Management Measure for the Management of Bottom Fishing in the SPRFMO Convention Area. CMM 03-2019: https://www.sprfmo.int/assets/Fisheries/Conservation-and-Management-Measures/2019-CMMs/CMM-03-2019-5Mar2019.pdf

SPRFMO, 2019e. Conservation and Management Measure for Deepwater Species in the SPRFMO Convention Area. CMM 03a-2019: https://www.sprfmo.int/assets/Fisheries/Conservation-and-Management-Measures/2019-CMMs/CMM-03a-2019-5Mar2019.pdf

SPRFMO, 2019f. Trachurus murphyi catch history. 7th MEETING OF THE SCIENTIFIC COMMITTEE La Havana, Cuba, 7 to 12 October 2019. SC7-JM01_rev1 and Annex 1_rev2: https://www.sprfmo.int/assets/0-2019-SC7/Meeting-Docs/SC7-JM01-rev1-CJM-catch-data.pdf

SPRFMO, 2019g. Follow-up actions taken in relation to the 2018 Final Compliance report. 6th Meeting of the Compliance and Technical Committee (CTC6) The Hague, The Netherlands, 23 to 27 January 2019. CTC 6 – Doc 06: https://www.sprfmo.int/assets/0-2019-Annual-Meeting/CTC-6/CTC6-Doc06-Follow-up-actions-taken-relating-to-Compliance.pdf

SPRFMO, 2019h. 6th COMPLIANCE AND TECHNICAL COMMITTEE MEETING REPORT 19-21 January 2019 The Hague, The Netherlands. SPRFMO CTC6–Report: https://www.sprfmo.int/meetings/ctc/6th-ctc-2019/

SPRFMO, 2019i. Conservation and Management Measure for the Establishment of the Commission Record of Vessels Authorised to Fish in the Convention Area. CMM 05-2019: https://www.sprfmo.int/assets/Fisheries/Conservation-and-Management-Measures/2019-CMMs/CMM-05-2019-5Mar2019.pdf

SPRFMO, 2019j. Conservation and Management Measure on Fishing Gear and Marine Plastic Pollution in the SPRFMO Convention Area. CMM 17-2019. https://www.sprfmo.int/assets/Fisheries/Conservation-and-Management-Measures/2019-CMMs/CMM-17-2019-5Mar2019.pdf

SPRFMO, 2019k. Conservation and Management Measure for the Management of New and Exploratory Fisheries in the SPRFMO Convention Area. CMM 13-2019: https://www.sprfmo.int/assets/Fisheries/Conservation-and-Management-Measures/2019-CMMs/CMM-13-2019-5Mar2019.pdf

SPRFMO, 2019l. Catch data submitted to the SPRFMO Secretariat (as at 16 July 2019) COMM 7 – Inf 01_rev3: https://www.sprfmo.int/assets/2019-Annual-Meeting/COMM-7/Info/COMM7-Inf01-rev3-Data-Submitted-to-the-Secretariat-16July19.pdf

Scientific, Technical and Economic Committee for Fisheries (STECF) – Preparations for future data collection under the revised DCF (STECF-14-24), 2014. Publications Office of the European Union, Luxembourg, EUR 26954 EN, JRC 93103, 44 pp.

The Netherlands, 1963. Fisheries Law 1963 (Visserijwet 1963): http://wetten.overheid.nl/BWBR0002416/2015-01-01

United Nations, 1992. Convention on Biological Diversity: https://www.cbd.int/doc/legal/cbd-en.pdf

United Nations, 1995. Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks.

Vásquez, S., M. Correa-Ramírez, C. Parada, A. Sepúlveda, 2013. The influence of oceanographic processes on jack mackerel (Trachurus murphyi) larval distribution and population structure in the southeastern Pacific Ocean. ICES Journal of Marine Science, Volume 70, Issue 6, September 2013, Pages 1097–1107, https://doi.org/10.1093/icesjms/fst065

Wojcik, I., A. Corten, 2017. The European Annual Report. 5th Meeting of the Scientific Committee Shanghai, China 23 - 28 September 2017. SC5-Doc13: https://www.sprfmo.int/assets/SC5-2017/SC5-Doc13-EUs-Annual-report.pdf

Wójcik I., Janusz J., 2018. The European Union's Observer Implementation report. 6th Meeting of the Scientific Committee - SC6-Doc18: https://www.sprfmo.int/assets/2018-SC6/Meeting-Documents/SC6-Doc18-EU-Observer-Implementation-Report.pdf

Wójcik I., Janusz J. 2018a. National report of the European Union to the 2018 SPRFMO Scientific Committee meeting. 6th Meeting of the Scientific Committee Puerto Varas, Chile, 9 - 14 September 2018. SC6-Doc17: https://www.sprfmo.int/assets/2018-SC6/Meeting-Documents/SC6-Doc17-EU-Annual-Report-2018.pdf

Zuzunaga, J., 2013. Medidas de conservación y ordenación pesquera del jurel Trachurus murphyi en el Perú. Revista Peruana de Biología, 20(1): 107-113.

Appendices

Appendix 1 Scoring tables

Appendix 1.1 Principle 1

Evaluation Table for PI 1.1.1 – Stock status

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue		SG 60	SG 80	SG 100
a	Stock status relative to recruitment impairment			
	Guidepost	It is **likely** that the stock is above the point where recruitment would be impaired (PRI).	It is **highly likely** that the stock is above the PRI.	There is a **high degree of certainty** that the stock is above the PRI.
	Met?	Y	Y	Y
	Justification	The eastern and central South Pacific jack mackerel stock biomass is assessed to be increasing since its lowest historical levels in 2010, and in 2018 (4.8 million tonnes) is above the estimated B_{MSY} for that year (4.5 million tonnes), and near the B_{MSY} estimated in recent years (6.9 million tonnes). No limit reference point is estimated or assumed in the assessment for this stock. However, considering the lowest historical biomass on record, stock biomass in 2010 and that recruitment has been increasing since 2011, recruitment does not seem to be impaired at this low SSB historical value. Therefore, SSB in 2010 could be used as a precautionary proxy for a limit reference point. Considering B_{loss} as a PRI, stock size in 2018 is 3.11 above. Therefore, there is a high degree of certainty that the stock is above the PRI and SG 100 is reached.		
b	Stock status in relation to achievement of MSY			
	Guidepost		The stock is at or fluctuating around a level consistent with MSY.	There is a **high degree of certainty** that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.
	Met?		N	N
	Justification	SSB estimate for jack mackerel stock in 2018, although above the B_{MSY} estimated for that year, is nevertheless below the provisional B_{MSY} value estimated in 2013 and assumed in the HCR, but is also below the recent high B_{MSY} estimates which were considered in order to provide the 2019 catch advice. According to the SPRFMO SC (2018a): "although the stock is estimated to be in the "second tier" of the harvest control rule (>80% of B_{MSY}), the retrospective analysis shows a tendency of overestimating the stock size. In addition, there is information that suggests that the growth of jack mackerel has been underestimated. These two factors warrant additional precaution and further investigation". Nevertheless, biomass has been increasing and with recruitment increasing also, while F is very low and below F_{MSY}, it is likely that stock will continue to increase. However, as the most recent estimated biomass does not reach B_{MSY} the stock is not at a level consistent with MSY and SG 80 is not reached.		

References	(SPRFMO, 2013, 2014b, 2017, 2018a)		
Stock Status relative to Reference Points			
	Type of reference point	**Value of reference point**	**Current stock status relative to reference point**
Reference point used in scoring stock relative to PRI (SIa)	$B_{loss} = B_{2010}$	1 538 000 tonnes	SSB_{2018} = 4 777 000 tonnes SSB_{2018}/B_{loss} = 3.11
Reference point used in scoring stock relative to MSY (SIb)	$B_{MSY2018}$ Provisional HCR 80% B_{MSY} Provisional HCR B_{MSY} Assumed B_{MSY} for 2019 advice Provisional F_{MSY} $F_{MSY2018}$	4 514 000 tonnes 4 400 000 tonnes 5 500 000 tonnes 6 900 000 tonnes 0.25 0.13	$SSB_{2018}/B_{MSY2018}$ = 1.06 SSB_{2018}/80% HCR B_{MSY} = 1.09 SSB_{2018}/HCR B_{MSY} = 0.87 SSB_{2018}/2019 Advice B_{MSY} = 0.7 F_{2018} = 0.09 F_{2018}/F_{MSY} = 0.36 $F_{2018}/F_{MSY2018}$ = 0.69
OVERALL PERFORMANCE INDICATOR SCORE:			**70**
CONDITION NUMBER (if relevant):			**PI 1.1.2 – Stock rebuilding**

Evaluation Table for PI 1.1.2 – Stock rebuilding

PI 1.1.2		Where the stock is reduced, there is evidence of stock rebuilding within a specified timeframe		
Scoring Issue		SG 60	SG 80	SG 100
a	**Rebuilding timeframes**			
	Guidepost	A rebuilding timeframe is specified for the stock that is **the shorter of 20 years or 2 times its generation time**. For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.		The shortest practicable rebuilding timeframe is specified which does not exceed **one generation time** for the stock.
	Met?	Y		Y
	Justification	There are indications that the stock is rebuilding with stock biomass increasing since 2010 and in 2018 to be near B_{MSY}. Recruitment is also increasing since 2011, and biomass is predicted to increase in 2019 to 5.6 million t. F has decreased since its second historical peak in 2009, and is low and below annual F_{MSY} since 2013, and provisional HCR F_{MSY} since 2011. Considering that jack mackerel reproduces on average between 2-3 years of age, and considering a natural mortality of around 0.23 an approximated generation time of 6-7 years is estimated. Therefore, stock biomass is very likely to continue to increase in the upcoming years, likely reaching MSY levels in one generation time or less and thus SG60 and SG100 both are reached.		
b	Rebuilding evaluation			
	Guidepost	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within the specified timeframe.	There is evidence that the rebuilding strategies are rebuilding stocks, **or it is likely** based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe.	There is **strong** evidence that the rebuilding strategies are rebuilding stocks, **or it is highly likely** based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe.
	Met?	Y	Y	Y
	Justification	The annual monitoring schemes in place are sufficient to provide data to allow for an annual analytical stock assessment to be performed in order to determine stock status. Thus, SG60 is reached. There is evidence of rebuilding from the current monitoring. Stock biomass is increasing since 2010 and near B_{MSY} in 2018. F has decreased since its second historical peak in 2009, and is low and below annual F_{MSY} since 2013, and provisional HCR F_{MSY} since 2011. Therefore, considering that biomass is increasing as well as recruitment, and that F has decreased and has been low and below F_{MSY} for five years there is strong evidence that the rebuilding strategies are rebuilding the stock. This meets SA2.3.4.2 - Current F shall be “highly likely” to be		

		less than FMSY to justify a 100 score. The TACs agree have followed scientific advice and have reduce F which has allowed the stock to continue to grow. Furthermore, stock biomass is predicted to continue to increase, reaching 5.6 million t in 2019. Therefore it is highly likely that the rebuilding strategies will be able to rebuild the stock, and so both SG80 and SG100 are reached.
References		(SPRFMO, 2017, 2018a)
OVERALL PERFORMANCE INDICATOR SCORE:		**100**
CONDITION NUMBER (if relevant):		**-**

Evaluation Table for PI 1.2.1 – Harvest strategy

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Scoring Issue		SG 60	SG 80	SG 100
a	Harvest strategy design			
	Guidepost	The harvest strategy is **expected** to achieve stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy **work together** towards achieving stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and is **designed** to achieve stock management objectives reflected in PI 1.1.1 SG80.
	Met?	Y	Y	N
	Justification	MSC defines a harvest strategy as 'the combination of monitoring, stock assessment, harvest control rules and management actions, which may include a Management Plan (MP) or an MP (implicit) and be tested by MSE' (MSC – MSCI Vocabulary v1.1). The south pacific jack mackerel is managed internationally under the SPRFMO and nationally by its coastal States. SPRFMO has the commitment to rebuilding the stock of *Trachurus murphyi* and ensuring its long-term conservation and sustainable management according to MSY objectives. Furthermore, a licensing scheme exists associated to an effort control system, a set of specific management measures are adopted (including TACs, and closed areas) and monitoring minimum requirements need to be reached. Peru and Chile, as members of the SPRFMO have also agreed to these rules and set management measures in line with the SPRFMO. Therefore, the assessment team concludes that the harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 and SG60 and SG80 are reached. There is also a rebuilding plan agreed designed to achieve stock management objectives in place. However, there are issues with the HCR formulation that could maintain stock size at below 80% of BMSY indefinitely, thus not reflecting PI 1.1.1 SG80 management objectives. Therefore, SG100 is not met.		
b	Harvest strategy evaluation			
	Guidepost	The harvest strategy is **likely** to work based on prior experience or plausible argument.	The harvest strategy may not have been fully **tested** but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been **fully evaluated** and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	Met?	Y	Y	N

	Justification	The harvest strategy is likely to have decreased F since its second peak in 2010 to be now below F_{MSY} for at least five years, and biomass has increased to be near B_{MSY}. Therefore, evidence exists that the harvest strategy is achieving its objectives and SG80 has been reached. The harvest strategy, namely the rebuilding plan and its harvest control rule, has also been evaluated in the past. However, the rebuilding plan has not been fully evaluated considering the recent uncertainty in the jack mackerel growth and a tendency by the assessment to overestimate biomass, while simulations base on a low productivity stock phase (Figure 6) show that in the long term the stock will stabilized just below B_{MSY}. Therefore, SG100 is not met.		
c	Harvest strategy monitoring			
	Guidepost	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Met?	Y		
	Justification	There is a monitoring scheme in place for the stock and the fisheries. There are several sampling programmes and fishery-independent surveys in the coastal states of Chile and Peru. Foreign fleets operating in the high seas are also monitored regularly. There is a port sampling scheme in the coastal countries involved, at-sea observers programmes to collect biological information on catches (length, sex, maturity and otoliths). All these data collected are used to inform the stock assessment on stock status, which allows for an evaluation of the harvest strategy and therefore SG60 is reached.		
d	Harvest strategy review			
	Guidepost			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			Y
	Justification	The harvest strategy is reviewed within the SPRFMO and also its HCR components in the SWG. The data collection provisions, as well as national sampling programmes are also periodically reviewed. Finally, SPRFMO stock assessments are also reviewed and benchmarked regularly. Therefore all components of the harvest strategy, namely the management system and its ability to control fishing mortality and respond to stock status, the stock assessment and monitoring systems are periodically reviewed so SG100 is met.		
e	Shark finning			
	Guidepost	It is **likely** that shark finning is not taking place.	It is **highly likely** that shark finning is not taking place.	There is a **high degree of certainty** that shark finning is not taking place.
	Met?	Not relevant	Not relevant	Not relevant

	Justification	The target species is not a shark – not relevant.		
f	**Review of alternative measures**			
	Guidepost	There has been a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock.	There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock and they are implemented as appropriate.	There is a **biannual** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock, and they are implemented, as appropriate.
	Met?	NA	NA	NA
	Justification	Definition of 'unwanted catch' (SA3.1.6): the term 'unwanted catch' shall be interpreted by the team as the part of the catch that a fisher did not intend to catch but could not avoid, and did not want or chose not to use. There are no discards by the UoA, and the SI has not been scored. The catch from the EU fleet operating in international waters freezes the whole catch after capture. The vessels also have no possibility for discarding as there are no discarding shoots. Slippage does not occur, or very rarely only for reasons of crew safety. The catch is processed directly after capture into frozen blocks, and all species and sizes are used for human consumption. The fleet is also monitored by observers, and a change in onboard processing practices to allow for discarding would be immediately detected. Observer evidence reflects that discarding is not practiced.		
References		(SPRFMO, 2017, 2018a) Information collected during the audit visit.		
OVERALL PERFORMANCE INDICATOR SCORE:				**90**
CONDITION NUMBER (if relevant):				**-**

Evaluation Table for PI 1.2.2 – Harvest control rules and tools

PI 1.2.2		There are well defined and effective harvest control rules (HCRs) in place		
Scoring Issue		SG 60	SG 80	SG 100
a	HCRs design and application			
	Guidepost	**Generally understood** HCRs are in place **or available** that are **expected** to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached.	**Well defined** HCRs are **in place** that **ensure** that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock **fluctuating around** a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	The HCRs are expected to keep the stock **fluctuating at or above** a target level consistent with MSY, or another more appropriate level taking into account the ecological role of the stock, **most** of the time.
	Met?	Y	N	N
	Justification	Generally understood HCRs are in place. SPRFMO is committed to recover the jack mackerel stock to MSY levels, through an adopted rebuilding plan with a specific HCR to set the TAC. SG60 is met. The HCR is also **well-defined** (see Table 5) , while the TAC has followed scientific advice provided by the SWG, which uses the rebuilding plan HCR to provide advice, and thus the HCR **is also in place**. However, although the HCR is expected to reduce the exploitation rate when PRI is approached, there are issues with the HCR formulation. Exploitation rate is reduced when the stock is below 80% of B_{MSY} but only when the catch of current fishing mortality is below projected catch with the same stock biomass, if not current F is maintained. Furthermore, because stock size could be maintained at below 80% of B_{MSY} indefinitely, the HCR is not expected to keep the stock fluctuating at or above a target level consistent with MSY and both SG80 and SG100 are not met.		
b	HCRs robustness to uncertainty			
	Guidepost		The HCRs are likely to be robust to the main uncertainties.	The HCRs take account of a **wide** range of uncertainties including the ecological role of the stock, and there is **evidence** that the HCRs are robust to the main uncertainties.
	Met?		Y	N
	Justification	The HCR specified in the rebuilding plan is likely robust to the main uncertainties since it is based on the estimation of stock size and fishing mortality provided from the assessment, and the assessment does take in to account stock productivity, selectivity, natural mortality, growth and error assumptions, and provides consistent results of F and SSB. Furthermore, the HCR has been tested against alternative HCRs and has been demonstrated		

		that the stock is able to recover to MSY level in less than 1 GT. Therefore, SG80 is met. As noted in the 2018 SC meeting, the HCR is nevertheless sensitive to growth underestimation and overestimates biomass and requires more investigation to be shown to be robust to assessment uncertainties. Even considering that the 2019 TAC followed the scientific advice that did not used the provisional set B_{MSY} to determine stock status in relation to the rebuilding plan HCR, and instead used a more precautionary estimate B_{MSY} to take into account these assessment uncertainties, the assessment team concludes that there is currently insufficient evidence that the HCR is indeed robust to main uncertainties, SG100 is not reached.		
c	**HCRs evaluation**			
	Guidepost	There is **some evidence** that tools used **or available** to implement HCRs are appropriate and effective in controlling exploitation.	**Available evidence indicates** that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.	**Evidence clearly shows** that the tools in use are effective in achieving the exploitation levels required under the HCRs.
	Met?	Y	Y	Y
	Justification	Fishing mortality has decreased twice historically, but most recently from the second historical peak in 2009 and is now low and below F_{MSY} for the last five years. Stock biomass has also increased since 2010 and it is almost near B_{MSY}, while TACs set have not been exhausted, although being set following a (more) precautionary advice (see SI(b)). Therefore, evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the HCRs and SG100 is reached.		
References		(SPRFMO, 2017, 2018a) Information collected during the audit visit.		
OVERALL PERFORMANCE INDICATOR SCORE:				**75**
CONDITION NUMBER (if relevant):				**-**

Evaluation Table for PI 1.2.3 – Information and monitoring

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue		SG 60	SG 80	SG 100
a	Range of information			
	Guidepost	**Some** relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	**Sufficient** relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.	A **comprehensive range** of information (on stock structure, stock productivity, fleet composition, stock abundance, UoA removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
	Met?	Y	Y	N
	Justification	Information on catch, length and age structure, growth, maturity, abundance and fleet composition are all available for jack mackerel. The majority of catches and the whole area of occurrence and where the fishery operates are sampled on a regular basis. Therefore, sufficient information is available to support the harvest strategy and SG80 is met. Furthermore, comprehensive studies on stock spatial distribution and migration patterns, as well as environmental information such as related to El Nino event have been carried out. Nevertheless, while there is uncertainty in terms of jack mackerel stock definition and growth, SG100 cannot be met.		
b	Monitoring			
	Guidepost	Stock abundance and UoA removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and UoA removals are **regularly monitored at a level of accuracy and coverage consistent with the harvest control rule**, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.	**All information** required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent **uncertainties** in the information [data] and the robustness of assessment and management to this uncertainty.
	Met?	Y	Y	Y
	Justification	Stock abundance is monitored annually by five surveys, although only three cover the whole stock distribution. Catch per unit of effort is available from all major fisheries from off shore high seas to coastal areas, covering the majority of landings. UoA is sampled through self-sampling programmes, where all hauls are sampled for biological data, age and maturity estimates. Therefore, SG80 is met. However, the two Peruvian surveys only cover the stock area partially, while sensitivities to the early fishery age composition data should be evaluated. Nevertheless, these data		

		limitations were studied at the benchmark exercise in 2016 and 2018, and in previous SWG meetings. Furthermore, the recent 2018 benchmark has highlighted issues regarding uncertainty related to growth assumptions and a tendency for the assessment to overestimate biomass. Thus there is a good understanding of inherent uncertainties and the robustness of assessment and management to this uncertainty and SG100 is met.		
c	Comprehensiveness of information			
	Guidepost		There is good information on all other fishery removals from the stock.	
	Met?		Y	
	Justification	Jack mackerel is caught mainly by purse seiners from the coastal states (Chile and Peru), and by distant water fleets from various countries, operating beyond the EEZ of the coastal states with pelagic trawl. There is good information in all components of the catch: catch estimates are available for all the fleets, from the high sea offshore to the national coastal fleets. Thus SG80 is reached.		
References	(SPRFMO, 2017, 2018a) Information collected during the audit visit.			
OVERALL PERFORMANCE INDICATOR SCORE:				**90**
CONDITION NUMBER (if relevant):				**-**

Evaluation Table for PI 1.2.4 – Assessment of stock status

PI 1.2.4		There is an adequate assessment of the stock status		
Scoring Issue		SG 60	SG 80	SG 100
a	Appropriateness of assessment to stock under consideration			
	Guidepost		The assessment is appropriate for the stock and for the harvest control rule.	The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA.
	Met?		Y	Y
	Justification	Jack mackerel in the eastern and central South Pacific is assessed by the SPRFMO SWG. The SWG uses a statistical catch-at-age model (JJM) that uses a forward projection approach and maximum likelihood estimation to solve for model parameters. The model is flexible and permits the use of catch information either at age or size for any fleet, and explicitly incorporates regime shifts in population productivity. Furthermore, two types of population structure are evaluated, as well as changes in Catch per Unit Effort (CPUE) indices, weighting of specific input datasets and different growth assumptions through a sensitivity analysis. SG80 is met. The assessment also takes into account stock identification, age and length composition, growth and natural mortality, and selectivity associated to an El Niño event. Therefore major features of the biology of jack mackerel and the nature of UoA are taken into account in the assessment and SG100 is reached.		
b	Assessment approach			
	Guidepost	The assessment estimates stock status relative to generic reference points appropriate to the species category.	The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.	
	Met?	Y	Y	
	Justification	The assessment carried out by the SWG estimates stock status relative to MSY reference points. Reference points for jack mackerel in the eastern and central South Pacific are estimated within the JJM model, and are a function of time-varying selectivity and average weight. There are distinct annual values of F_{MSY} and B_{MSY}. SG60 and SG80 are reached.		
c	Uncertainty in the assessment			

	Guidepost	The assessment **identifies major sources** of uncertainty.	The assessment takes uncertainty into account.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a **probabilistic** way.
	Met?	Y	Y	Y
	Justification	The assessment takes uncertainty into account in the catch data, abundance indices and in measurement error (see section 3.3.2). SG60 and SG80 are met. It also estimates stock status in a probabilistic way relative to biomass reference points and so SG100 is reached.		
d	Evaluation of assessment			
	Guidepost			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?			Y
	Justification	The 2016 and 2018 SGW benchmark exercise tested different assumptions of selectivity, stock structure, natural mortality, growth and different data series, as well as different productivity scenarios to account for environmental conditions. Although a retrospective analysis revealed an overestimation of stock biomass and of both MSY reference points, B_{MSY} and F_{MSY}, all the model runs showed very similar results in terms of SSB and F, particularly in recent years and therefore SG100 is met.		
e	Peer review of assessment			
	Guidepost		The assessment of stock status is subject to peer review.	The assessment has been **internally and externally** peer reviewed.
	Met?		Y	Y
	Justification	The stock assessment is reviewed internally through benchmarks exercises. SG80 is met. The assessments are also externally peer reviewed with the participation of invited expert (for example by C. Fernandez, SPRFMO, 2018d) and benchmark exercises that review, among other issues, the assessment data, models and assumptions used. SG100 is therefore also met.		
References	(SPRFMO, 2017, 2018a, d) Information collected during the audit visit.			
OVERALL PERFORMANCE INDICATOR SCORE:				**100**

CONDITION NUMBER (if relevant):	-

Appendix 1.2 Principle 2

Evaluation Table for PI 2.1.1 – Primary species outcome

PI 2.1.1		**The UoA aims to maintain primary species above the PRI and does not hinder recovery of primary species if they are below the PRI.**		
Scoring Issue		SG 60	SG 80	SG 100
a	Main primary species stock status			
	Guidepost	Main primary species are **likely** to be above the PRI OR If the species is below the PRI, the UoA has measures in place that are **expected** to ensure that the UoA does not hinder recovery and rebuilding.	Main primary species are **highly likely** to be above the PRI OR If the species is below the PRI, there is either **evidence of recovery** or a demonstrably effective strategy in place **between all MSC UoAs which categorise this species as main**, to ensure that they collectively do not hinder recovery and rebuilding.	There is a **high degree of certainty** that main primary species are above the PRI **and are** fluctuating around a level consistent with MSY.
	Met?	Y	Y	Y
	Justification	There are no primary species identified for this fishery (see Section 3.3.7 and Table 7). In the absence of main primary species, following FCR 2.0 SA3.2.1 SG100 has been reached: 'If a team determines that a UoA has no impact on a particular component, it shall receive a score of 100 under the Outcome PI.'		
b	Minor primary species stock status			
	Guidepost			For minor species that are below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species
	Met?	Y	Y	Y
	Justification	There are no primary species identified for this fishery (see Section 3.3.7 and Table 7). In the absence of minor primary species, following FCR 2.0 SA3.2.1 SG100 has been reached: 'If a team determines that a UoA has no impact on a particular component, it shall receive a score of 100 under the Outcome PI.'		
References		Pastoors, M.A. and F. Quirijns, 2019; Wójcik I., Janusz J. 2018a		

OVERALL PERFORMANCE INDICATOR SCORE:	**100**
CONDITION NUMBER (if relevant):	**-**

Evaluation Table for PI 2.1.2 – Primary species management strategy

PI 2.1.2		There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guidepost	There are **measures** in place for the UoA, if necessary, that are expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are likely to above the point where recruitment would be impaired.	There is a **partial strategy** in place for the UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the point where recruitment would be impaired.	There is a **strategy** in place for the UoA for managing main and minor primary species.
	Met?	Y	Y	N
	Justification	There are no primary species identified for this fishery (see Section 3.3.7 and Table 7). In the absence of primary main species, and thus no impact, this scoring issue reaches SG80 by default (GSA3.5.1 – if necessary). With regards to potential gear loss, or other impacts on primary species, the regulations prescribes the gear to be marked (with a tracker), both through EU Regulation No 579/2011 (European Commission, 2011b) and SPRFMO CMM 17-2019, which is complied with. Gear loss has never occurred for this fishery (pers. comment client). Currently, SPRFMO only has established management measures for jack mackerel, and the deep-water species orange roughy (*Hoplostethus atlanticus*). As for possible by-catch of primary species, though very rare, a possible primary species is Humboldt squid (*Dosidicus gigas*) (see Table 6). The SPRFMO have been working on stock assessments for this species, with a view to establishing management measures. This could result in this species becoming a "primary" non-target species, if the status of this species changes and by-catch of this species occurs in the future. The assessment team will need to review this at surveillance audits to ensure that if management measures are introduced for this or other species, they are appropriately assessed as primary species against this PI. SG100 does not have the "if necessary" qualifier and is therefore not met.		
b	Management strategy evaluation			
	Guidepost	The measures are considered **likely** to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some **objective basis for confidence** that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	**Testing** supports **high confidence** that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.
	Met?	Y	Y	N

	Justification	There are no primary species identified for this fishery (see Section 3.3.7 and Table 7). With regards to scoring issues (b) and (c), it is the MSC's intent that the 'if necessary' also applies (MSC Interpretations log). Therefore, a management strategy is not necessary in the absence of any primary species in the catch. The SG60 and SG80 requirements are met. SG100 does not have the "if necessary" qualifier and is therefore not met, since a strategy for the UoA for managing main and minor primary species currently does not exist, nor is tested.		
c	Management strategy implementation			
	Guidepost		There is **some evidence** that the measures/partial strategy is being **implemented successfully**.	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its overall objective as set out in scoring issue (a).
	Met?		Y	N
	Justification	There are no primary species identified for this fishery (see Section 3.3.7 and Table 7). With regards to scoring issues (b) and (c), it is the MSC's intent that the 'if necessary' also applies (MSC Interpretations log). Therefore, a management strategy is not necessary in the absence of any primary species in the catch. The SG60 and SG80 requirements are met. SG100 does not have the "if necessary" qualifier and is therefore not met, since a strategy for the UoA for managing main and minor primary species currently does not exist.		
d	Shark finning			
	Guidepost	It is **likely** that shark finning is not taking place.	It is **highly likely** that shark finning is not taking place.	There is a **high degree of certainty** that shark finning is not taking place.
	Met?	Not applicable	Not applicable	Not applicable
	Justification	There were no catches of sharks under Primary species, so this issue is not scored.		
e	Review of alternative measures			
	Guidepost	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species.	There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate.	There is a **biennial** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all primary species, and they are implemented, as appropriate.
	Met?	Not applicable	Not applicable	Not applicable

	Justification	There are no primary species identified for this fishery (see Section 3.3.7 and Table 7). Following GSA3.5.3, in the absence of unwanted catch of primary species, this scoring issue is not applicable.
References		MSC, 2014; Pastoors, M.A. and F. Quirijns, 2019; Wójcik I., Janusz J. 2018a; MSC interpretations log: Use of 'if necessary' in P2 management PIs (FCR v2.0 - Annex SA PI 2.1.2, 2.2.2, 2.4.2, 2.5.2)
OVERALL PERFORMANCE INDICATOR SCORE:		**80**
CONDITION NUMBER (if relevant):		**-**

Evaluation Table for PI 2.1.3 – Primary species information

PI 2.1.3		Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impact on main species			
	Guidepost	Qualitative information is **adequate to estimate** the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Qualitative information is adeqaute to estimate productivity and susceptibility attributes for main primary species.	Some quantitative information is available and is **adequate to assess** the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptiblity attributes for main primary species.	Quantitative information is available and is **adequate to assess with a high degree of certainty** the impact of the UoA on main primary species with respect to status.
	Met?	Y	Y	Y
	Justification	There is enough information, both through the observer program and observer reports on the SPRFMO website, and through the self-sampling program, to track landings. There is sufficient quantitative data about the non-target species caught in the fishery. These data are adequate to determine that there are no primary species in the catch, and that the catch of any non-target species is very low. Therefore SG60, SG80 and SG100 are met.		
b	Information adequacy for assessment of impact on minor species			
	Guidepost			Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.
	Met?			Y
	Justification	There is enough information, both through the observer program and observer reports on the SPRFMO website, and through the self-sampling program, to track landings. There is sufficient quantitative data about the non-target species caught in the fishery. These data are adequate to determine that there are no primary species in the catch, and that the catch of any non-target species is very low. Therefore SG100 is met.		

c	Information adequacy for management strategy			
	Guidepost	Information is adequate to support **measures** to manage **main** primary species.	Information is adequate to support a **partial strategy** to manage **main** Primary species.	Information is adequate to support a **strategy** to manage **all** primary species, and evaluate with a **high degree of certainty** whether the strategy is achieving its objective.
	Met?	Y	Y	N
	Justification	The catch information indicates that there are no primary species in the catch (see Table 6). SG 60 and SG 80 are therefore met. The information available is considered to be adequate to support both "measures" and a "partial strategy" as required by SG60 and SG80, but not a "strategy" as required at SG100 (see also SI 2.1.2a). There is evidence that information is being gathered to support a management strategy for the Humboldt squid (*Dosidicus gigas*), but there is no evidence of similar work being carried out for other catch components. Taking a precautionary view, it is therefore considered that the SG 100 is not met.		
References		Pastoors, M.A. and F. Quirijns, 2019; Wójcik I., Janusz J. 2018a		
OVERALL PERFORMANCE INDICATOR SCORE:				**95**
CONDITION NUMBER (if relevant):				-

Evaluation Table for PI 2.2.1 – Secondary species outcome

PI 2.2.1		The UoA aims to maintain secondary species above a biological based limit and does not hinder recovery of secondary species if they are below a biological based limit.		
Scoring Issue		SG 60	SG 80	SG 100
a	Main secondary species stock status			
	Guidepost	Main Secondary species are **likely** to be within biologically based limits. OR If below biologically based limits, there are measures in place expected to ensure that the UoA does not hinder recovery and rebuilding.	Main secondary species are **highly likely** to be above biologically based limits OR If below biologically based limits, there is either **evidence of recovery** or a **demonstrably effective partial strategy** in place such that the UoA does not hinder recovery and rebuilding. AND Where catches of a main secondary species outside of biological limits are considerable, there is either evidence of recovery or a, demonstrably effective strategy in place between those MSC UoAs that also have considerable catches of the species, to ensure that they collectively do not hinder recovery and rebuilding.	There is a **high degree of certainty** that main secondary species are within biologically based limits.
	Met?	Y	Y	N
	Justification	As shown in Table 7, the only species that can regarded as 'main' is chub mackerel (*Scomber japonicus*) since chub mackerel catches are > 5% in some years, even though the average comes out a little below 5%. There are no specific management arrangements within the SPRFMO area with regards to chub mackerel, nor are there specific strategies to mitigate catches. It may benefit from measures put on the jack mackerel (*Trachurus murphyi*) fishery (as outlined in CMM 01-2018), and the fact that the European jack mackerel fishery only takes place between April – November on the South Pacific high seas. This PI is scored using the RBF, with outcome at a PSA derived score of 97 (see Appendix 2 Outcome RBF Appendix 2.1 Productivity-Susceptibility Analysis (PSA)). As per PF5.3.2.1 "If the team has only considered "main" species in the PSA analysis, the final PI score shall not be greater than 80." Score: 80		

b	**Minor secondary species stock status**			
	Guidepost			For minor species that are below biologically based limits', there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species
	Met?			N
	Justification	The minor species identified for this fishery are (see Table 7): *Brama australis*, rays bream (0.7%) *Cubiceps caeruleus*, blue fathead (0.62%) *Allothunnus fallai,* slender tuna (0.04%) *Brama brama,* pomfret (0.01 %) *Seriola lalandi,* yellowtail amberjack (0%, with a total of 2 tonnes caught in 2016) Only rays bream showed up in the observer data with catches above 1% (varying between years, see Figure 11). The rest of the species made up less than 1% of the total catch from the jack mackerel fishery during observer trips. The catches of slender tuna, pomfret and yellowtail amberjack are very incidental, and do not occur each year (none of these species have been caught in the last two years, see Table 6). It is therefore unlikely that the UoA would hinder the recovery and rebuilding. Rays bream is almost exclusively caught by an artisanal fleet from Chile (95 % of landings) where longlines and gillnets are used (SERNEPESCA, 2016). In 2013, Instituto de Fomento Pequero in Chile (Fisheries Development Institute) (IFOP) initiated a number of improvements in both data collection and analysis, including: estimating yields of different units of fishing effort; fleet characteristics, duration and number of trips, fishing performance, size structure, updating historical series of biological – fisheries indicators; provision of technical support to the evaluation of stock, to explore data in order to implement a first assessment model to allow the determination of the stock condition in the future (fishsource.org). From what is known of the distribution of this species, there is overlap between the distribution pattern Chilean jack mackerel, though jack mackerel occurs further north than rays bream. This may account for most of the by-catch occurring in the more southernly fishing trips. As is evident from the observer reports, where reported fishing trips took place between 45°S-35°S. A study by San Martín,et al (2017) only detected the occurrence of *B. australis* until 27°S, but the Chilean jack mackerel reaches latitude close to the Equator. Due to the uncertainties in information as presented above, the team opted to only consider 'main' species in the PSA analysis. SG100 is therefore not met, and the default score of SG80 for PI 2.2.1 is used.		
References		Corten, A., 2015; Pastoors, M.A. and F. Quirijns, 2019; Wojcik, I., A. Corten, 2017; Wójcik I., Janusz J. 2018a; San Martín, M.A., E. Leal, and T. M. Canales, 2017; SERNEPESCA, 2016		

	Fishsource: https://www.fishsource.org/fishery_page/4793
OVERALL PERFORMANCE INDICATOR SCORE:	**80**
CONDITION NUMBER (if relevant):	**-**

Evaluation Table for PI 2.2.2 – Secondary species management strategy

PI 2.2.2		There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.		
Scoring Issue		SG 60	SG 80	SG 100
a	**Management strategy in place**			
	Guidepost	There are **measures** in place, if necessary, which are expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be within biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a **partial strategy** in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be within biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a **strategy** in place for the UoA for managing main and minor secondary species.
	Met?	Y	Y	N
	Justification	MSC Definitions (FCR v2.0): "**Measures**" are actions or tools in place that either explicitly manage impacts on the component or indirectly contribute to management of the component under assessment having been designed to manage impacts elsewhere. A "**partial strategy**" represents a cohesive arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome and an awareness of the need to change the measures should they cease to be effective. It may not have been designed to manage the impact on that component specifically. A "**strategy**" represents a cohesive and strategic arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome, and which should be designed to manage impact on that component specifically. A strategy needs to be appropriate to the scale, intensity and cultural context of the fishery and should contain mechanisms for the modification fishing practices in the light of the identification of unacceptable impacts. It is thought that the strategy used to manage the jack mackerel stock will also benefit the chub mackerel. The main management measures are outlined in CMM 01-2019, and detail both effort management and catch management. The EU vessels operate outside the 200 nm EEZs, and specifically target shoals of jack mackerel (located using satellite and oceanographic data). The mesh size used in the jack mackerel fishery is commonly between 43-65 cm. The evidence available for chub mackerel (the only 'secondary main' species) through both the observer data and the self-sampling program, indicates that the partial strategy results in a very low level of catches (mortality). The fishery is therefore not expected to hinder recovery of the stock. There are measures in place, SG60 is met. Given that the management measures for jack mackerel can be considered to form partial strategy, and the UoA is expected to not hinder rebuilding/ recovery of this main secondary species, SG80 is met.		

		There is no cohesive and strategic arrangement in place that addresses the main and minor secondary species, SG100 is not met.		
b	Management strategy evaluation			
	Guidepost	The measures are considered **likely** to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species).	There is **some objective basis for confidence** that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved.	**Testing** supports **high confidence** that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.
	Met?	Y	Y	N
	Justification	The evidence available for chub mackerel (the only 'secondary main' species) indicates that the partial strategy in place results in a very low level of catches of chub mackerel (= low mortality). Since the SPRFMO members do not have to report on their chub mackerel catches, it is difficult to obtain a full view of landings. From the countries that do report their catches in similar fishing areas off the coast of Chile (Chile, Russia, Korea and the EU), the EU catches are between 0.2 % and 2.6 % of the total catches of chub mackerel in the SPRFMO area (2015-2018, based on observer reports submitted to the SPRFMO). Over the last 10 years the (reported) catches of chub mackerel in the SPRFMO area made up around 3.4% of the total catches in the jack mackerel fisheries (SPRFMO, 2019l). The catches have somewhat fluctuated over the years, though not much: between 237 – 547 tonnes overall between 2015-2018, with the percentage of chub mackerel as part of the EU catches of jack mackerel fluctuating between 0.7 - 6.3%. Chub mackerel is a somewhat incidental by-catch species that mainly lives in the coastal region (see also Appendix 2 Outcome RBF Appendix 2.1 Productivity-Susceptibility Analysis (PSA)). The UoA fishery is therefore not hindering their recovery, and there is some objective basis for confidence that the partial strategy as discussed in SIa works. SG80 is met. There is no testing (neither in the form of further analyses of the stock status and function, not simulation testing), and SG100 is not met.		
c	Management strategy implementation			
	Guidepost		There is **some evidence** that the measures/partial strategy is being **implemented successfully**.	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a).
	Met?		Y	N

	Justification	As noted above under SIa and SIb, the evidence provided through the observer reports to the SPRFMO (see for details on the EU implementation Section 3.3.7.1), as well as the compliance reports available through the SPRFMO website demonstrates the effective implementation of the partial strategy: the catch rates of any non-target species in the jack mackerel fishery are very low. SG80 is met. In the absence of clearly defined management objectives in relation to chub mackerel, the partial strategy in place does not meet the SG 100 requirements.		
d	Shark finning			
	Guidepost	It is **likely** that shark finning is not taking place.	It is **highly likely** that shark finning is not taking place.	There is a **high degree of certainty** that shark finning is not taking place.
	Met?	Not applicable	Not applicable	Not applicable
	Justification	Sharks are not caught in this fishery, and therefore no secondary species are sharks. This issue is not scored.		
e	Review of alternative measures to minimise mortality of unwanted catch			
	Guidepost	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of **unwanted** catch of main secondary species.	There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of **unwanted** catch of main secondary species and they are implemented as appropriate.	There is a **biennial** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of **unwanted** catch of all secondary species, and they are implemented, as appropriate.
	Met?	Not applicable	Not applicable	Not applicable
	Justification	Definition in FCR v2.0 SA3.1.6 of unwanted catch: 'the part of the catch that a fisher did not intend to catch but could not avoid, and did not want or chose not to use'. There is no unwanted catch of secondary species (second part of the definition does not apply, since chub mackerel is used), so this scoring issue is not applicable.		
References		Corten, A., 2015; Pastoors, M.A. and F. Quirijns, 2019; Wojcik, I., A. Corten, 2017; Wójcik I., Janusz J. 2018a; SPRFMO, 2019; SPRFMO, 2019g; SPRFMO, 2019h; SPRFMO, 2019l; MSC, 2014; observer reports other SPRFMO members through: https://www.sprfmo.int/meetings/scientific-committee/6th-sc-2018/		
OVERALL PERFORMANCE INDICATOR SCORE:				**80**
CONDITION NUMBER (if relevant):				**-**

Evaluation Table for PI 2.2.3 – Secondary species information

PI 2.2.3		Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species.		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts on main secondary species			
	Guidepost	Qualitative information is **adequate to estimate** the impact of the UoA on the main secondary species with respect to status. OR **If RBF is used to score PI 2.2.1 for the UoA:** Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species.	Some quantitative information is available and **adequate to assess** the impact of the UoA on main secondary species with respect to status. OR **If RBF is used to score PI 2.2.1 for the UoA:** Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.	Quantitative information is available and **adequate to assess with a high degree of certainty** the impact of the UoA on main secondary species with respect to status.
	Met?	Y	Y	N
	Justification	Sufficient information was available from published sources and stakeholders to score the PSA (see Appendix 2 Outcome RBF Appendix 2.1 Productivity-Susceptibility Analysis (PSA)). SG80 is met. The analysis relies on the risk based framework (RBF) so SG100 is not met.		
b	**Information adequacy for assessment of impacts on minor secondary species**			
	Guidepost			Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
	Met?			N
	Justification	Minor secondary species were not evaluated, as discussed under PI2.2.1b. This guidepost is not met.		
c	Information adequacy for management strategy			
	Guidepost	Information is adequate to support **measures** to manage **main** secondary species.	Information is adequate to support a **partial strategy** to manage **main** secondary species.	Information is adequate to support a **strategy** to manage **all** secondary species, and **evaluate** with a **high degree of certainty**

				whether the strategy is **achieving its objective**.
	Met?	Y	Y	N
	Justification	As discussed under PI2.2.2 there is enough information, both through the observer program and observer reports on the SPRFMO website, and through the self-sampling program, to track landings and stock trends and to monitor the effectiveness of the partial strategy (described in 2.2.2a). On this basis, SG80 is met. Since there is neither a full strategy for all secondary species, nor a high degree of certainty, SG100 is not met.		
References		Appendix 2.2 Productivity-Susceptibility Analysis (PSA): Fishbase; FAO, 2000; SPRFMO, 2007 SPRFMO.int Corten, A., 2015; Pastoors, M.A. and F. Quirijns, 2019; Wojcik, I., A. Corten, 2017; Wójcik I., Janusz J. 2018a		
				80
CONDITION NUMBER (if relevant):				**-**

Evaluation Table for PI 2.3.1 – ETP species outcome

PI 2.3.1		The UoA meets national and international requirements for the protection of ETP species The UoA does not hinder recovery of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
a	Effects of the UoA on population/stock within national or international limits, where applicable			
	Guidepost	Where national and/or international requirements set limits for ETP species, the effects of the UoA on the population/stock are known and **likely** to be within these limits.	Where national and/or international requirements set limits for ETP species, the **combined effects of the MSC UoAs** on the population/stock are known and **highly likely** to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a **high degree of certainty** that the **combined effects of the MSC UoAs** are within these limits.
	Met?	Not applicable	Not applicable	Not applicable
	Justification	There are no formal limits set for any of the ETP species groups identified in Section 3.4.2. Although the classification of the conservation status of different species by the IUCN and the SPRFMO (CMM-09-2017) use clear and objective criteria, these do not set limits for ETP species in terms of management of impacts. Likewise, the Agreement on the Conservation of Albatrosses and Petrels (ACAP) identifies long term objectives (such as "favourable conservation status" but does not set any limits. This scoring issue is therefore not scored.		
b	Direct effects			
	Guidepost	Known direct effects of the UoA are likely to not **hinder recovery** of ETP species.	Known direct effects of the UoA are **highly likely** to not **hinder recovery** of ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species.
	Met?	Y	Y	Y
	Justification	In this evaluation ETP species have not been treated as individual elements, as the issues considered apply to all those listed in section 3.4.2 equally. According to FCR v 2.0, GSA3.10, the team should consider whether the ETP species overlaps with other MSC UoAs. The assessment team has reviewed the Public Certification Reports for the other MSC-certified fisheries on the South Pacific High Sea and found that there is a		

		little overlap with the Chile Purse Seine Jack Mackerel. Both the fishery under assessment, and the Chile Purse seine fishery have interactions with the Black browed albatross (*Thallasarche melanophris*), Grey headed albatross (*Thallasarche chrysostoma*), and White chinned petrel (*Procellaria aequinoctialis*). Following the IUCN Red List, the black browed albatross is considered Near Threatened (NT), the Grey headed albatross Endangered (E), and the White chinned petrel Vulnerable (V) (see also Table 10). As detailed in section 3.4.2, many albatrosses and petrels can be observed near the vessel (see e.g. Table 9 and Table 10). Incidents with birds coming into contact with the vessel or the fishing gear were few between 2015-2017, and limited to a few individuals of Grey-headed Albatross, White-chinned Petrel and Black-browed Albatrosses (section 3.4.3). No mortalities were observed. This is similar for the Chile Purse seine fishery, where these three species each scored SG100 for this SI. From the observer data for the European fleet, as well as from the self-sampling data (see sections 3.3.7.1 and 3.3.7.2), no interactions with marine mammals, sharks or turtles have been reported in recent years (2015-2018). At the site visit, the possibility of interactions with mammals and turtles was discussed with stakeholders (M. Pastoors, N. Hintzen, SPRFMO Secretariat). The consensus was that there are no interactions with mammals, as the fishery takes place too far away from the shore, nor are there interactions with turtles, as the fishery takes place too far south. If interactions where to occur, the stakeholders were confident that these would be reported. According to the SPRFMO report 'A summary of current SPRFMO bycatch records (Including species of concern', one capture of porbeagle shark (*Lamna nasus*) (12 kg) by an EU vessel took place in August 2009 (see Table 8). The report also notes that: "Information provided by Korea suggests that rare captures of porbeagle sharks could be a consistent feature of the Jack mackerel fishery. It is worth recognizing that, within the jack mackerel fishery, Korean data generally contains the most amount of information on by catch species." (SPRFMO, 2018e) As discussed in section 3.4.3, there is the risk of missing interactions since the observer is not always on deck, but below deck measuring the catch. The Scientific Committee also recognised that the level of observer coverage influences the robustness of the data collected. The SC has advised the Commission that coverage of 20% or more may be required to robustly estimate the incidental mortality of Seabirds, Marine Mammals, and Other Species of Concern in some fisheries. The fishery under assessment currently has an observer coverage of 24% of fishing days. In 2018, at the time of writing the annual report (July 2018; Wójcik et al., 2018) two out of three trips were covered by observers (see section 3.3.7.1). Over the years 2015-2017 analysis showed that around 35% of the catch was covered. The fishery under assessment therefore meets the advised 20% observer coverage already. Based on the above, known direct effects of the UoA are highly likely to not hinder recovery of ETP species. SG60 and SG80 are met. Given that the observer data for the European fleet, as well as the self-sampling data show no interactions with marine mammals, sharks or turtles in recent years (2015-2018), that no mortality of albatrosses and petrels has been observed and only a few instances of contact between birds and the vessels, mainly "light" though some one "heavy" contact, were observed, and given that the observer coverage for the UoA is > 20%, the team is confident that there are no significant detrimental direct effects of the UoA on ETP species, also in accumulation with the Chile Purse seine fishery. SG100 is met.

c	Indirect effects			
	Guidepost		Indirect effects have been considered and are thought to be **highly likely** to not create unacceptable impacts.	There is a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species.
	Met?		Y	N
	Justification	The possible indirect effects of the fishery on the ETP species observed could arise through loss of gear or through the depletion of the jack mackerel stock to the extent that the availability of food was reduced. Gear loss has never occurred for this fishery (pers. comment client). Regulation prescribes the gear to be marked (with a tracker), which is complied with (both through EU Regulation No 579/2011 (European Commission, 2011b) and SPRFMO CMM 17-2019). The consequences of the removal of jack mackerel can be inferred from existing information such as the food web and trophic interactions in the Humboldt Current System (see e.g. Figure 10). These studies indicate that jack mackerel is not the main, nor the only prey item available to ETP species, so the removal of jack mackerel is not considered likely to have an indirect effect upon them. The current management regime for the jack mackerel stock ensures that the stock is recovering, with an increasing trend in biomass. The fishery is therefore currently highly unlikely to be having unacceptable impacts on any of the ETP species identified. Indirect effects on ETP species might also include disturbance, noise or pollution. For seabirds, the vessel does not operate in coastal areas, so generally disturbance while breeding or resting in specific areas would not apply. The impact of one or two vessels on seabirds foraging out at open sea, is highly likely to be negligible given the very large area of the fishery. Noise might impact cetaceans, but again, the impact of one or two vessels, is highly likely to be negligible. The removal potential prey species in the bycatch is not considered to cause an indirect impact on ETPs, as the bycatch levels are extremely low, and thus any impact may not be measurable beyond the noise of ecological-environmental fluctuation. As for pollution: CMM 17-2019 was adopted by the SPRFMO in April 2019. This CMM details the retrieval of lost fishing gear, and Members and CNCPs are encouraged to implement appropriate onboard storage and to prohibit their fishing vessels operating within the SPRFMO Convention Area from discharging oil, garbage and sewage. Since the start of the observations on board EU trawlers, much progress has been made in reducing the discards of plastic waste. Whereas in 2008 nearly all plastic was thrown overboard, the trawlers now store the plastic on board in large bags that are offloaded in port. Other offal is burnt on board using special equipment. According to Raczynski et al (2016) it is hard to judge whether the reduction in discarding of plastic and other offal is the effect of the presence of observers on board, or of a changed mentality of the ship owners. The client has implemented the MARPOL requirements into company policy and is thus complying with the regulation for dealing with any pollution issues. Amongst other issues, the Convention deals with different types of garbage and specifies the distances from land and the manner in which they may be disposed of; the most important feature of the Annex (V) is the complete ban imposed on the disposal into the sea of all forms of plastics. Annex IV contains requirements to control pollution of the sea by sewage.		

		Based on the above, SG80 is met. As there is little specific research considering the indirect effect of the jack mackerel fishery, and given the status of the three species the fishery interacts with (Black browed albatross, Grey headed albatross, and White chinned petrel: respectively near threatened, endangered and vulnerable) it cannot be said that there is a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species. SG100 is not met.
References		Corten, A., 2015; Pastoors, M.A. and F. Quirijns, 2019; MARPOL Convention; Raczynski, T. and Ad Corten, 2016; Scarcella, G., J. Andrews, P. Knapman, 2019; SPRFMO, 2019j; Wojcik, I., A. Corten, 2017; Wójcik I., Janusz J. 2018a Interviews with M. Pastoors, N. Hintzen, SPRFMO Secretariat at site-visit
OVERALL PERFORMANCE INDICATOR SCORE:		**90**
CONDITION NUMBER (if relevant):		**-**

Evaluation Table for PI 2.3.2 – ETP species management strategy

PI 2.3.2		The UoA has in place precautionary management strategies designed to: meet national and international requirements; ensure the UoA does not hinder recovery of ETP species. Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place (national and international requirements)			
	Guidepost	There are **measures** in place that minimise the UoA-related mortality of ETP species, and are expected to be **highly likely to achieve** national and international requirements for the protection of ETP species.	There is a **strategy** in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be **highly likely to achieve** national and international requirements for the protection of ETP species.	There is a **comprehensive strategy** in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to **achieve above** national and international requirements for the protection of ETP species.
	Met?	Y	Y	N
	Justification	Although there are some international agreements for the protection of ETP species (such as the Agreement on the Conservation of Albatrosses and Petrels, ACAP), there are no equivalent national requirements in place at present, though ACAP is also recognised by the EU, which can be regarded as a 'national level': RFMOs have adopted some form of mitigation measures aimed at avoiding seabird mortality in longline fisheries, and as a contracting party to many RFMOs, the EU is bound to implement those measures. Furthermore, the EU has also made a number of commitments related to the principles of sustainable development and others more specifically related to the management of the shared ocean resources. One of these is the Convention on the Conservation of Migratory Species of Wild Animals (also known as CMS or Bonn Convention). ACAP also falls under the auspices of CMS. At the international level, ACAP forms the basis for CMM 09-2017 to minimize the bycatch of seabirds in the SPRFMO Convention Area. This CMM prescribes the implementation of seabird mitigation measures: For the trawl fishery this means the use of bird scaring devices to deter birds away from warp cables and net monitoring cable, and using responsible discharge management to avoid attracting seabirds to the vessel. Where operational practices prevent the effective deployment of bird scaring lines, such as deep-water trawls targeting bathymetric features, a bird baffler may be used instead. As discussed in section 3.4.2, the UoA deploys bird bafflers. As discussed under PI2.3.1b, the vessels store plastic waste on board in large bags that are offloaded in port, and the client has implemented the MARPOL requirements into company policy, through which indirect effects on ETP species are limited.		

		The team considered that the above international measures constitute a strategy, designed to minimise mortality on seabirds specifically, and that SG 60 and SG80 are met. SG100 is not met, as there is no 'complete and tested strategy made up of linked monitoring, analyses, and management measures and responses'. Although the observer coverage provides monitoring on the effectiveness of the bird-deterrents, and some analyses on the encounters with birds have been done, so far the team has not seen evidence of 'management measures and responses'.		
b	Management strategy in place (alternative)			
	Guidepost	There are **measures** in place that are expected to ensure the UoA does not hinder the recovery of ETP species.	There is a **strategy** in place that is expected to ensure the UoA does not hinder the recovery of ETP species.	There is a **comprehensive strategy** in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species
	Met?	n/a	n/a	n/a
	Justification	Since there are requirements for protection and rebuilding provided through international agreements, the team has only scored scoring issue (a), following SA3.11.2.1.		
c	Management strategy evaluation			
	Guidepost	The measures are **considered likely** to work, based on **plausible argument** (e.g., general experience, theory or comparison with similar fisheries/species).	There is an **objective basis for confidence** that the measures/strategy will work, based on **information** directly about the fishery and/or the species involved.	The strategy/comprehensive strategy is mainly based on information directly about the fishery and/or species involved, and a **quantitative analysis** supports **high confidence** that the strategy will work.
	Met?	Y	Y	N
	Justification	No ETP species as defined by ACAP, nor sharks and marine mammals have been recorded by observers in the bycatch, nor was mortality of seabirds observed as a result of 'contact' with the vessel and/or the fishing gear. Seabirds have been observed near the vessel (either flying or on the surface of the water), and there is detailed quantitative observer information available for 2015-2018. There is an objective basis for confidence that the strategy will work, based on observer information of bycatch and associated observations about the fishing process. SG 60 and SG80 are met. Although there is some quantitative information available, this has yet to be used in a quantitative analysis (especially looking at a longer-time series, as the analysis by Raczynski et al (2016) only covers one year of observations), therefore SG100 is not met.		
d	Management strategy implementation			

	Guidepost		There is some **evidence** that the measures/strategy is being implemented successfully.	There is **clear evidence** that the strategy/comprehensive strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) or (b).
	Met?		Y	Y
	Justification	There is good evidence from VMS monitoring of the fishery that the vessels operate far out at sea, as required, and the bycatch of non-target species is very small, based on observer data and logs. The clean catch and offshore location of the fishery is one of the measures thought to result in a low level of interaction with ETP species: At the site visit, the possibility of interactions with mammals and turtles was discussed with stakeholders and the consensus was that there are no interactions with mammals, as the fishery takes place too far away from the shore, nor are there interactions with turtles, as the fishery takes place too far south. There was no record of any ETP species in the catch composition, nor were bird mortalities observed over a period of several years (2015-2018). This provides clear evidence that the strategy is implemented successfully. SG80 and SG100 are met.		
e	Review of alternative measures to minimize mortality of ETP species			
	Guidepost	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species.	There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate.	There is a **biennial** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.
	Met?	Y	Y	N
	Justification	Due to the nature of the fishery as discussed under SId, no mortality of ETP species has been recorded in observer reports, nor were bird mortalities observed over the period of 2015-2018. Therefore, explicit reviews are not required. However, indirect mortality as a result of the heavy impact is possible. The observations on seabirds are part of the annual reports, and discussed in the SC, in light of CMM 09-2017. This scoring issue is given a score of 80 in recognition of the fact that ETP mortality is documented and monitored as part of catch composition records and observations. Though through the SC and the cooperation with ACAP the data is reviewed regularly (last in 2018, see SC6-doc29: The Development of ACAP Seabird Bycatch Indicators, Data Needs, Methodological Approaches and Reporting Requirements), this does not yet constitute a biennial review: SG80 is met, SG 100 is not met.		
References		Corten, A., 2015; Pastoors, M.A. and F. Quirijns, 2019; MSC, 2014; MARPOL; Raczynski, T. and Ad Corten, 2016; SPRFMO, 2017a; Wojcik, I., A. Corten, 2017; Wójcik I., Janusz J. 2018a		
OVERALL PERFORMANCE INDICATOR SCORE:				**85**

CONDITION NUMBER (if relevant):	**-**

Evaluation Table for PI 2.3.3 – ETP species information

PI 2.3.3		• **Relevant information is collected to support the management of UoA impacts on ETP species, including: Information for the development of the management strategy; Information to assess the effectiveness of the management strategy; and Information to determine the outcome status of ETP species.**		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts			
	Guidepost	Qualitative information is **adequate to estimate** the UoA related mortality on ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Qualitative information is **adequate to estimate productivity and susceptibility** attributes for ETP species.	Some quantitative information is **adequate to assess** the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for ETP species.	Quantitative information is available to assess with a high degree of certainty the **magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status** of ETP species.
	Met?	Y	Y	N
	Justification	Logbook data records all catch (mortalities) and CMM 02-2018 requires that all catches of birds, reptiles, mammals and other species of concern must be included, though in practice none have been reported as caught in this fishery in recent years (2015-2018) (which is most likely due to the nature of the fishery). This is verified by the observer reports, in which all other catches are noted, and no interactions with mammals have been reported, nor observed mortality of seabirds. The quantitative information provided by observer reports (catch composition) and on-board observations on bycatch (and no ETP bycatch was recorded in the catch composition and observations) is adequate to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. SG60 and SG80 are met. However, although a data time series is available from 2015-2018 and preliminary natural fluctuations and trends could be assessed, this has only happened in more detail for 2016. Injuries and their consequences have also only been recorded in 2016 (Raczynski et al). It cannot be stated with a high degree of certainty the magnitude of UoA related impacts on the status of ETPs. SG100 is not met.		
b	Information adequacy for management strategy			

	Guidepost	Information is adequate to support **measures** to manage the impacts on ETP species.	Information is adequate to measure trends and support a **strategy** to manage impacts on ETP species.	Information is adequate to support a **comprehensive strategy** to manage impacts, minimize mortality and injury of ETP species, and evaluate with a **high degree of certainty** whether a strategy is achieving its objectives.
	Met?	Y	Y	N
	Justification	As discussed under PI2.3.2a, the team considered that the international measures in the various CMMs and ACAP constitute a strategy. They do not deem this to be a 'comprehensive strategy'. The available bycatch information (logbooks, observer reports, and self-reporting through the self-sampling program) is adequate to measure trends and to support a strategy to manage impacts on ETP species. In particular, observer reports have become more detailed over time, covering a wider range of species where relevant in the catch composition. Furthermore, information is available from IUCN and ACAP on the status of, and any trends in, the abundance of ETP species. SG60 and SG80 are met. However, the information is not detailed enough to allow the assessment and evaluation of injury of ETPs. SG100 is therefore not met.		
References		Corten, A., 2015; Pastoors, M.A. and F. Quirijns, 2019; Raczynski, T. and Ad Corten, 2016; SPRFMO, 2017a; SPRFMO, 2018b; SPRFMO, 2019; Wojcik, I., A. Corten, 2017; Wójcik I., Janusz J. 2018a IUCN: https://www.iucnredlist.org/ ACAP: https://www.acap.aq/en/acap-species		
OVERALL PERFORMANCE INDICATOR SCORE:				**80**
CONDITION NUMBER (if relevant):				-

Evaluation Table for PI 2.4.1 – Habitats outcome

PI 2.4.1		The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area(s) covered by the governance body(s) responsible for fisheries management.		
Scoring Issue		SG 60	SG 80	SG 100
a	Commonly encountered habitat status			
	Guidepost	The UoA is **unlikely** to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is **highly unlikely** to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is **evidence** that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.
	Met?	Y	Y	Y
	Justification	As described in section 3.4.3, the jack mackerel fishery is confined to the "epipelagic habitat" – the uppermost 200 m of the water column, often called the "sunlit zone", where most of the ocean's primary production takes place. Therefore, for the purpose of this assessment the epipelagic habitat is considered to be the only commonly encountered habitat. The functions provided by pelagic habitats are determined by their physicochemical characteristics (such as salinity, light regimes, water temperature, nutrients and oxygen concentrations). These characteristics determine both the abundance of food for jack mackerel and other fish species. As discussed in section 3.4.4, these characteristics also determine the extent of pelagic habitat which is suitable for jack mackerel (i.e. the extent of the water column with an amenable water temperature and oxygen concentration for jack mackerel). The EU fishery with midwater otter trawl for jack mackerel does not fish near seamounts or reefs. Because fishing takes place in deep water (>200 m) and targeted species are caught near the ocean surface (between 20-100 m depth), the gear does not interact with bottom habitats. The UoA is highly unlikely to reduce structure and function of the commonly encountered habitats, and SG60 and SG80 are met. Gear loss has never occurred for this fishery (pers. comment client). Regulation prescribes the gear to be marked (with a tracker) (both through EU Regulation No 579/2011 (European Commission, 2011b) and SPRFMO CMM 17-2019) Due to the nature of the gear, which is used at the surface of deep oceanic areas, there is evidence that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats, and SG100 is also met.		
b	VME habitat status			

	Guidepost	The UoA is **unlikely** to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	The UoA is **highly unlikely** to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	There is **evidence** that the UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.
	Met?	Y	Y	Y
	Justification	As described in section 3.4.3, a number of Ecologically or Biologically Significant Marine Areas (EBSAs) have been identified within the SPRFMO Convention Area by the Secretariat of the United Nations' Convention on Biological Diversity (CBD), as ratified by the United Nations in 1992 (http://www.cbd.int/ebsa/ebsas). The areas that have been designated as EBSAs in the Eastern Tropical and Temperate Pacific, lay within the EEZs of e.g. Chile and Peru, e.g. around the seamounts of the Juan Fernández islands, and the Humboldt Current Upwelling System along the Chilean coast, and have no overlap with the fishery under assessment. Based on this, the SPRFMO SC notes the need for the Commission to implement appropriate and precautionary measures to protect vulnerable elements of the ecosystem. There are Vulnerable Marine Ecosystems (VMEs) identified in CMM 03-2019 and CMM 3a-2019 (SPRFMO, 2019d and SPRFMO, 2019e). These VMEs only apply to gear that can be in contact with the seafloor such as bottom trawl, midwater trawl (defined as fishing for bentho-pelagic species using a trawl net that is designed to be pulled through the water near the seabed), and bottom lines (fishing line using a hook or hooks). With regards to the fishery under assessment, outside the 200 nautical mile (nm) EEZs, there are no VMEs identified. The UoA is highly unlikely to reduce structure and function of the VME habitats ,and SG60 and SG80 are met. There are no VMEs established in the fishing areas for the European jack mackerel fishery on the high seas (source SPRFMO secretariat, 2019). Based on vessel compliance with regulations (fishing areas can be determined based on VMS data, and track records in e.g. self-sampling- and observer reports), and the nature of the gear, which is used at the surface in deep water, there is evidence that the UoA is highly unlikely to reduce structure and function of VME habitats to a point where there would be serous or irreversible harm. SG100 is met.		
c	**Minor habitat status**			
	Guidepost			There is **evidence** that the UoA is highly unlikely to reduce structure and function of the minor habitats to a point where there would be serious or irreversible harm.
	Met?			Y

	Justification	As described under SIa , the jack mackerel fishery is therefore confined to the “epipelagic habitat”, which for the purpose of this assessment is considered the commonly encountered habitat. There are no other habitats that the fishery takes place in, so no specific minor habitats can be identified. Fishing takes place in deep water using gear that operates at the ocean surface and does not contact the sea bottom. Based on vessel compliance with regulations and the nature of the gear, which is used at the surface in deep water, there is evidence that the UoA is highly unlikely to reduce structure and function of minor habitats to a point where there would be serous or irreversible harm. SG100 is met.
References		Pastoors, M.A. and F. Quirijns, 2019; SPRFMO, 2019d; SPRFMO, 2019e; Wójcik I., Janusz J. 2018a Convention on Biological Diversity: http://www.cbd.int/ebsa/ebsas Interview with SPRFMO secretariat at site visit
OVERALL PERFORMANCE INDICATOR SCORE:		**100**
CONDITION NUMBER (if relevant):		**-**

Evaluation Table for PI 2.4.2 – Habitats management strategy

PI 2.4.2		There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guidepost	There are **measures** in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a **partial strategy** in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a **strategy** in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.
	Met?	Y	Y	Y
	Justification	The terms “measures”, “partial strategy” and “strategy” used in this SI are defined in PI 2.2.2a, according to MSC FCR v2.0; Table SA8. Due to the nature of the gear, which is used at the surface of deep oceanic areas, there is evidence that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats, nor are there VMEs established in the fishing areas for the European jack mackerel fishery on the high seas (source SPRFMO secretariat, 2019). Based on vessel compliance with regulations (fishing areas can be determined based on VMS data, and track records in e.g. self-sampling- and observer reports), and the nature of the gear, which is used at the surface in deep water, there is evidence that the UoA is highly unlikely to reduce structure and function of VME or minor habitats as well. The information available about the nature of the epipelagic habitat and pelagic midwater trawl indicates that there is no evidence of an impact of the fishery on the habitat, nor any plausible mechanism for an impact. The gear type and operations of this fishery constitute an operational strategy for managing impacts on encountered habitats. Thus, SG60 and SG80 are met. FCR v2.0 SA3.14.2.1 states: In scoring issue (a) at the SG100 level, the “strategy” for a UoA that encounters VMEs shall include a comprehensive management plan that is supported by a comprehensive impact assessment that determines that all fishing activities will not cause serious or irreversible harm to VMEs. Article 20 of the SPRFMO Convention establishes the basis for Contracting Parties to protect marine habitats and ecosystems: “(d) protect the habitats and marine ecosystems in which fishery resources and non-target and associated or dependent species occur from the impacts of fishing, including measures to prevent significant adverse impacts on vulnerable marine ecosystems and precautionary measures where it cannot adequately be determined whether vulnerable marine ecosystems are present or whether fishing would cause significant adverse impacts on vulnerable marine ecosystems”. There are Vulnerable Marine Ecosystems (VMEs) identified in CMM 03-2019 and CMM 3a-2019 (SPRFMO, 2019d and SPRFMO, 2019e). These VMEs only apply to gear that can be in contact with the seafloor, such as bottom trawl, midwater trawl (defined as fishing for bentho-pelagic		

		species using a trawl net that is designed to be pulled through the water near the seabed), and bottom lines (fishing line using a hook or hooks). CMM 03-2019 requires SPRFMO Members and CNCPs to define their bottom fishing footprint; prohibits all bottom fishing that does not comply with the CMM; cap the catch from demersal fisheries at the average level for the Member or CNCP at the level seen between 2002-06; have 100% observer coverage for demersal trawlers and 10% coverage for other bottom fishing methods; establish thresholds for VME encounters; to cease fishing within 5 nautical miles of any VMEs; and to report information about the encounters with VMEs to SPRFMO. With regards to the fishery under assessment, outside the 200 nautical mile (nm) EEZs, there are no VMEs identified. On top of CMM 03-2019 and CMM 03a-2019, there are CMMs in place that deal with exploratory fisheries in the SPRFMO area (e.g. CMM 13-2019): "This CMM is intended to ensure that sufficient information is available to evaluate the long term potential of new and exploratory fisheries, to assist the formulation of management advice, to evaluate the possible impacts on target stocks and non-target and associated and dependent species, to ensure new and exploratory fishery resources are developed on a precautionary and gradual basis and to promote the sustainable management of new and exploratory fisheries." (SPRFMO, 2019k) The management systems in place for protecting marine habitats in the SPRFMO area clearly meet the SG 100 requirement for both a cohesive and strategic management framework with management measures in place which address the impacts of all MSC UOAs and non-MSC fisheries. SG 100 is therefore met.		
b	Management strategy evaluation			
	Guidepost	The measures are **considered likely** to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).	There is some **objective basis for confidence** that the measures/partial strategy will work, based on **information directly about the UoA and/or habitats** involved.	**Testing** supports **high confidence** that the partial strategy/strategy will work, based on **information directly about the UoA and/or habitats** involved.
	Met?	Y	Y	N
	Justification	The MSC has provided an interpretation on the Use of 'if necessary' in P2 management PIs (FCR v2.0 - Annex SA PI 2.1.2, 2.2.2, 2.4.2, 2.5.2), which states that the "if necessary" clause included in SIa above should also apply to SIb and SIc: If the fishery does not need to have measures or partial strategy because there is no or negligible impact on Primary, Secondary, Habitats or Ecosystem components, it would meet at least the SG80 level in scoring issues a-c. As discussed above (PI2.4.1), the information available about the nature of the epipelagic habitat and pelagic midwater trawl indicates that there is no evidence of an impact of the fishery on this habitat, nor any plausible mechanism for an impact. There is evidence that the UoA is highly unlikely to interact with VMEs or minor habitats, nor pose a risk to these habitats as well, since there are no there are no VMEs identified in the water column outside the 200 nautical mile (nm) zone. On this basis there is no need for management measures or a partial strategy. SG80 is therefore met.		

		Whilst it is clear that there is a strategy in place for managing the impacts of fisheries on marine habitats in the SPRFMO area, there is no evidence of any testing of this strategy for the UoA or the epipelagic habitat in which it takes place. As described in section 3.4.3, the Habitat Working Group has been established and will act as a management tool and provider of indicators obtained from the monitoring of the environment. The pieces of information required for such work come from diverse sources: the fishery, the acoustic surveys (scientific and from the fishery), oceanographic and biological surveys, remote sensing data etc. This may constitute 'testing' in the future, but SG 100 is considered to be not met at present.		
c	Management strategy implementation			
	Guidepost		There is **some quantitative evidence** that the measures/partial strategy is being implemented successfully.	There is **clear quantitative evidence** that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).
	Met?		Y	N
	Justification	The MSC has provided an interpretation on the Use of 'if necessary' in P2 management PIs (FCR v2.0 - Annex SA PI 2.1.2, 2.2.2, 2.4.2, 2.5.2), which states that the "if necessary" clause included in SIa above should also apply to SIb and SIc: If the fishery does not need to have measures or partial strategy because there is no or negligible impact on Primary, Secondary, Habitats or Ecosystem components, it would meet at least the SG80 level in scoring issues a-c. As discussed above (PI2.4), the information available about the nature of the epipelagic habitat and pelagic midwater trawl indicates that there is no evidence of an impact of the fishery on this habitat, nor any plausible mechanism for an impact. There is evidence that the UoA is highly unlikely to interact with VMEs or minor habitats, nor pose a risk to these habitats as well, since there are no there are no VMEs identified in the water column outside the 200 nautical mile (nm) zone. On this basis there is no need for management measures or a partial strategy. SG80 is therefore met. The management systems in place for protecting marine habitats in the SPRFMO area have only been established earlier in 2019 (CMM 03-2019 and CMM 3a-2019). It is therefore not yet possible to judge whether these are being implemented successfully or achieving its objectives. The CMM includes provisions for gathering data and defining the footprint of bottom fishing activity, so this information may be available in the future. Lacking clear quantitative evidence of successful implementation of management measures throughout the SPRFMO area, SG 100 is not considered to be met at present.		
d	**Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs**			

	Guidepost	There is **qualitative evidence** that the UoA complies with its management requirements to protect VMEs.	There is **some quantitative evidence** that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.	There is **clear quantitative evidence** that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.
	Met?	Y	Y	N
	Justification	There is some overlap between the UoA and the Chile Purse seine fishery UoAs. The only VME protection measures in place within the UoA are those established SPRFMO, as detailed in the PIs before and section 3.4.3., and these VMEs also apply to the Chile Purse seine fishery (which is active both inside the Chilean EEZ and on the high seas with pelagic purse seines). As discussed above (PI2.4.1), the information available about the nature of the epipelagic habitat and pelagic midwater trawl indicates that there is no evidence of an impact of the fishery on this habitat, nor any plausible mechanism for an impact. There is evidence that the UoA is highly unlikely to interact with VMEs or minor habitats, nor pose a risk to these habitats as well, since there are no there are no VMEs identified in the water column outside the 200 nautical mile (nm) zone, and from VMS data (provided to the SPRFMO secretariat, and included in observer- and self-sampling reports) it is evident that the UoA is not active near these VMEs. SG60 is met. By default the UoA also complies with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries. SG80 is met. A mentioned under SIc, the management systems in place for protecting marine habitats in the SPRFMO area have only been established earlier in 2019 (CMM 03-2019 and CMM 3a-2019). Whilst these CMMs are likely to produce clear quantitative information about the nature and extent of interactions with VMEs, the SG 100 requirements for this SI are not currently met.		
References		SPRFMO , 2015; SPRFMO, 2019c; SPRFMO, 2019d; SPRFMO, 2019e; SPRFMO, 2019k MSC interpretation log: https://mscportal.force.com/interpret/s/article/Use-of-if-necessary-in-P2-management-PIs-2-1-2-2-2-2-2-4-2-2-5-2-PI-2-1-2-1527262011402		
OVERALL PERFORMANCE INDICATOR SCORE:				**85**
CONDITION NUMBER (if relevant):				**-**

Evaluation Table for PI 2.4.3 – Habitats information

PI 2.4.3		Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat.		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guidepost	The types and distribution of the main habitats are **broadly understood**. OR If CSA is used to score PI 2.4.1 for the UoA: Qualitative information is adequate to estimate the types and distribution of the main habitats.	The nature, distribution and **vulnerability** of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA. OR If CSA is used to score PI 2.4.1 for the UoA: Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.	The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.
	Met?	Y	Y	N
	Justification	The fishery and gear are used at the surface of deep oceanic water, and fished areas have been identified through observer reports and self-sampling reports (see e.g. Figure 12). The main habitats in the UoA can be considered the pelagic layers of the Pacific Ocean adjacent to the coast of Chile and near the seamounts of the San Fernández islands. The jack mackerel fleet uses habitat information (water temperature from satellite images) to identify areas suitable for fishing; hence this information is available at a level of detail and scale that is relevant to the UoA (including real-time data available on the internet and through smartphone applications). SG60 and SG80 are met. Although the main habitats themselves are known and deemed not vulnerable, at SG100 the distribution of "all" habitats is known over their range, with particular attention to vulnerable habitats. This includes benthic habitats. This information is not available, SG100 is not met.		
b	Information adequacy for assessment of impacts			
	Guidepost	Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear. OR **If CSA is used to score PI 2.4.1 for the UoA:** Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.	Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear. OR **If CSA is used to score PI 2.4.1 for the UoA:** Some quantitative information is available and is	The physical impacts of the gear on all habitats have been quantified fully.

			adequate to estimate the consequence and spatial attributes of the main habitats.	
	Met?	Y	Y	N
	Justification	As discussed under PI 2.4.1, the EU fishery with midwater otter trawl for jack mackerel does not fish near seamounts or reefs. Because fishing takes place in deep water (>200 m) and targeted species are caught near the ocean surface (between 20-100 m depth), the gear does not interact with bottom habitats. Vessels are tracked using VMS, which enables the spatial extent of interaction and the timing and location of use of the fishing gear to be monitored. VMS data is submitted to the SPRFMO secretariat and used in observer- and self-sampling reports. The nature of the interaction of the midwater trawl fishery with the epipelagic habitat, coupled with monitoring of the UoA fleet by VMS is adequate to meet SG80. SG 100 refers to the need for the physical impacts of the gear on all habitats to have been quantified fully. There is no indication that this is the case, so SG 100 is not met.		
c	Monitoring			
	Guidepost		Adequate information continues to be collected to detect any increase in risk to the main habitats.	Changes in habitat distributions over time are measured.
	Met?		Y	N
	Justification	As per GSA3.15 (FCR v2.0): When scoring issue (c) at the SG80 level, the team should consider all potential increases in risk, such as changes in the scoring of the outcome PI, in the operation of the UoA, or in the effectiveness of the measures. An increase in risk to habitats could result from changes in the type of fishing gear used, or in the spatial extent of the fishery. Both of these aspects of the fishery are monitored: the former by fishery officers; the latter by VMS monitoring of the spatial extent of fishing activity. All SPRFMO Members including the EU report the extent of fishing activity annually to SPRFMO. The effectiveness of the measures taken by the SPRFMO as reviewed by the SC and discussed at annual meetings. This meets the SG 80 requirements. The SPRFMO has established the Habitat Working Group in 2018, and work has started in 2019. The HMWG will provide management tools and indicators obtained from the monitoring of the environment. The pieces of information required for such work come from diverse sources: the fishery, the acoustic surveys (scientific and from the fishery), oceanographic and biological surveys, remote sensing data etc. Some examples showed that this series of data allows to elaborate descriptive models on the dynamics of the CJM habitat. Some pieces of		

		equipment have been designed and are installed aboard European pelagic trawlers. A device has been developed (Oceanbox) to allow an automation of the different steps involved, from the calibration procedure until data analysis and calculation and results. While this will allow for changes in habitat distributions over time to be measured in the future, at the moment this is not the case and SG100 is not met.
References		Pastoors et al., 2019; SPRFMO, 2019c
OVERALL PERFORMANCE INDICATOR SCORE:		**80**
CONDITION NUMBER (if relevant):		**-**

Evaluation Table for PI 2.5.1 – Ecosystem outcome

PI 2.5.1		The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function.		
Scoring Issue		SG 60	SG 80	SG 100
a	Ecosystem status			
	Guidepost	The UoA is **unlikely** to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The UoA is **highly unlikely** to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is **evidence** that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
	Met?	Y	Y	N
	Justification	The key ecosystem with regards to the fishery under assessment is the Eastern South Pacific. The Humboldt Current System is the cold, low-salinity ocean current that flows north along the western coast of South America. It is an eastern boundary current flowing in the direction of the equator and extends 500–1,000 km (310–620 nm) offshore. The Humboldt Current is a highly productive ecosystem. It is the most productive eastern boundary current system (Penven et al, 2005). It accounts for roughly 18-20% of the total worldwide marine fish catch. The species are mostly pelagic: sardines, anchovies and jack mackerel. The system's high productivity supports other important fishery resources as well as marine mammals (eared seals and cetaceans) and seabirds. Periodically, the upwelling that drives the system's productivity is disrupted by the El Niño-Southern Oscillation (ENSO) event, often with large social and economic impacts. As part of the Huboldt Current system, the main feature of the eastern half of the South Pacific Ocean is the establishment of the Anticyclonic Subtropical Gyre, which involves the South-equatorial currents towards the West (north of 25º S), from the South Pacific towards the East (between 30-40º S) and the Chile-Peru Current that flows along the coast towards Ecuador. In the case of the northern Humboldt Current System some studies on its distribution, behaviour patterns and biology exist (SPRFMO, 2019c). The productivity of the Humboldt Current System and the ecosystem it supports are affected by Pacific Decadal Oscillation and ENSO events. During an El Niño event, the colder nutrient rich waters are replaced by warmer nutrient poor waters. In addition to changes in the abundance of fish, the ENSO and PDO can affect the distribution of fish. During warmer years, jack mackerel migrate into coastal waters to feed on anchovies; in colder years jack mackerel are found further offshore, and their range may extend considerably to the west, outside the Chilean EEZ.		

		Oceanographic conditions off the Chilean coast are monitored by Instituto de Fomento Pequero (Fisheries Development Institute) (IFOP) through research cruises and satellite data. Information on surface temperature (SST) and chlorophyll a concentrations in the Pacific Ocean is gathered continuously by satellites. Satellite data also provide real-time information on the status of the El Niño Southern Oscillation. Environmental conditions affecting jack mackerel habitat is reported on regularly with state-of-the-art oceanographic recordings and surveys, including remote sensing (pers. communication SPRFMO secretariat). As discussed in section 3.3.6, the trophic levels and food web in the South Pacific is generally well understood. Jack mackerel inhabits one of the most productive marine ecosystems, where other pelagic species have a fundamental role in transferring energy from lower to higher trophic levels. In the South Pacific upwelling system anchovy is the dominant LTL species, and as such transfer a very large proportion of the total primary production to higher trophic levels. Jack mackerel, by feeding on a large range of prey including zooplankton, transfers energy from primary producers to top predators. Moreover, jack mackerel can switch from zooplankton to pelagic fish depending on preys abundance (Cury et al., 2000) while a recent study have shown that jack mackerel has a predicted high trophic position of 4.2, being a top predator (Espinoza et al., 2017). Over 94% of the UoA catch consists of the target species, jack mackerel, and no ETP species are caught. In addition, habitat impacts from the fishing gear are minimal. Ecosystem impacts from the fishery therefore relate mostly to removals of the target species. In 2018, the total catch of *Trachurus murphyi* throughout the range of the stock was set to not more than 576,000 tonnes, with around 526,323 tonnes caught (preliminary data, SPRFMO, 2019f). In 2019, following the recommendations of the SPRFMO scientific committee, catches throughout the range of the stock were set not to exceed 531,061 tonnes (SPRFMO, 2019). The UoA has been allocated 6.1086 % of the catches (SPRFMO, 2019) and as such, the impact of the UoA itself is limited. As discussed in more detail in section 3.3.6, physicochemical characteristics (such as salinity, water temperature, nutrients and oxygen concentrations) play a large part in the structure and function of the ecosystem. Climate change may be a large anthropogenic influence on these characteristics. Based on the information above, it is highly unlikely that the UoA would disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm. SG60 and SG80 are met. Even though information is collected on key elements of the ecosystem, this does not come together to form clear evidence relating to the UoA and its impact on the ecosystem. SG100 is therefore not met.
References		Cury et al., 2000; Espinoza et al., 2017; Government of Chile, 2007 and references therein; Penven, P., V. Echevin, J. Pasapera, F. Colas, and J. Tam, 2005; SPRFMO, 2019; SPRFMO, 2019c pers.comment SPRFMO secretariat
OVERALL PERFORMANCE INDICATOR SCORE:		**80**

CONDITION NUMBER (if relevant):	**-**

Evaluation Table for PI 2.5.2 – Ecosystem management strategy

PI 2.5.2		There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guidepost	There are **measures** in place, if necessary which take into account the **potential impacts** of the fishery on key elements of the ecosystem.	There is a **partial strategy** in place, if necessary, which takes into account **available information and is expected to restrain impacts** of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	There is a **strategy** that consists of a **plan**, in place which contains measures to **address all main impacts of the UoA** on the ecosystem, and at least some of these measures are in place.
	Met?	Y	Y	N
	Justification	The terms "measures", "partial strategy" and "strategy" used in this SI are defined in PI 2.2.2a, according to MSC FCR v2.0; Table SA8. As discussed under PI2.5.1, Over 94% of the UoA catch consists of the target species, jack mackerel, and no ETP species are caught. In addition, habitat impacts from the fishing gear are minimal. Ecosystem impacts from the fishery therefore relate mostly to removals of the target species. There are measures in place to address these potential impacts in the SPRFMO area. The strategy for managing impacts of the fishery on the target species is described in section 3.3.5 of this report. Very briefly, fishery removals of jack mackerel throughout its range in the eastern Pacific are now set at a level determined by SPRFMO. SPRFMO sets an annual TAC, which is based on the most recent stock assessment and which is expected to maintain the jack mackerel stock at a level consistent with MSY. At the RFMO level, the SPRFMO Convention states that participants will be "Committed to ensuring the long-term conservation and sustainable use of fishery resources in the South Pacific Ocean and in so doing safeguarding the marine ecosystems in which the resources occur... Mindful that effective conservation and management measures must be based on the best scientific information available and the application of the precautionary approach and an ecosystem approach to fisheries management…" with the objective of the Convention thus being: "The objective of this Convention is, through the application of the precautionary approach and an ecosystem approach to fisheries management, to ensure the long-term conservation and sustainable use of fishery resources and, in so doing, to safeguard the marine ecosystems in which these resources occur." (SPRFMO, 2015). Therefore, fishery impacts on ecosystems are considered, and the RFMO goal of managing stocks to MSY levels implicitly relates to ecosystem maintenance to some extent. This can be regarded as partial strategy in place, if necessary, which takes into account available information and is expected to restrain impacts of the UoA on the ecosystem, SG60 and SG80 are met.		

		However, an ecosystem-based management strategy has not yet been implemented. In the first performance review of the SPRFMO (Ridings, et al., 2018), it is recognised that in the longer term SPRFMO could look towards adopting a more comprehensive ecosystem approach to fisheries management. The panel "notes that although SPRFMO has generally taken into account an ecosystem approach to fisheries management in the individual management of Jack mackerel and bottom fishing, additional actions could be taken by the Commission and Scientific Committee to better integrate ecosystem elements into the assessment of target species. This could include, for example, consideration of deep water chondrichthyans, seabird mitigation measures for all fisheries, habitat mapping, and examination of climate change impacts". Therefore, there is not yet a strategy that consists of a plan, in place which contains measures to address all main impacts of the UoA on the ecosystem and SG100 is not met.		
b	Management strategy evaluation			
	Guidepost	The **measures** are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ ecosystems).	There is **some objective basis for confidence** that the measures/partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved	**Testing** supports **high confidence** that the partial strategy/strategy will work, based on information directly about the UoA and/or ecosystem involved
	Met?	Y	Y	N
	Justification	The terms "measures", "partial strategy" and "strategy" used in this SI are defined in PI 2.2.2a, according to MSC FCR v2.0; Table SA8. As noted above under SIa, over 94% of the UoA catch consists of the target species, jack mackerel, and no ETP species are caught. In addition, habitat impacts from the fishing gear are minimal. Ecosystem impacts from the fishery therefore relate mostly to removals of the target species. There are measures in place to address these potential impacts in the SPRFMO area. With regards to the UoA, the only aspect where measures are necessary to reduce/manage fishery impacts is the removal of the target species. As discussed in section 3.3.3. the results of the assessment performed by the SWG shows that the biomass of jack mackerel in the eastern and central South Pacific is increasing, from its lowest historical level in 2010, although have not yet reached B_{MSY} (SSB_{2018} = 4 777 000 tonnes). Recruitment is also increasing since 2011, reaching the long-term average mean. Fishing mortality has decreased since its second historical peak in 2009, and is below F_{MSY} since 2012 (Figure 6 and Figure 7). The recovery of this stock from a depleted state provides an objective basis for confidence that the strategy established by SRFMO and implemented by its Members has worked. As for other (potential) impacts of the UoA, there is no evidence that a management strategy is currently necessary to address impacts of the fishery on non-target species or ETP species, given observer records which show a very low level of interaction with these species (see also PI 2.2, PI 2.3), nor on habitats (see also PI 2.4). At the SPRFMO level it is clear that action has been taken where necessary to address impacts on ETP species (CMM 09-2017), or impacts on habitats in other fisheries (CMM 03-2019 and CMM 03a-2019).		

		Based on the above, there is some objective basis for confidence that the partial strategy will work, based on some information directly about the UoA and the ecosystem involved. SG60 and SG80 are met. There is, however, nothing that constitutes 'testing' so SG100 is not met.		
c	**Management strategy implementation**			
	Guidepost		There is **some evidence** that the measures/partial strategy is being **implemented successfully**.	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a).
	Met?		Y	N
	Justification	The analysis of stock status and UoA impacts as described above under SIa and SIb, provide evidence that that the partial strategy is being implemented successfully. SG80 is met. In relation to SG100, there is not clear evidence in all cases; for the other ecosystem components, there is only a management strategy in place at present for marine habitats (CMM 03-2019) and seabirds (CMM 09-2017). There is no evidence as yet that either the habitat management strategy or the measures on avoidance of seabird mortality are meeting their objectives at the SPRFMO-level, so SG 100 is not met.		
References		Ridings, et al., 2018; SPRFMO, 2015; SPRFMO, 2017a; SPRFMO, 2018; SPRFMO, 2019d; SPRFMO, 2019e; SPRFMO, 2019		
OVERALL PERFORMANCE INDICATOR SCORE:				**80**
CONDITION NUMBER (if relevant):				**-**

Evaluation Table for PI 2.5.3 – Ecosystem information

PI 2.5.3		There is adequate knowledge of the impacts of the UoA on the ecosystem.		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guidepost	Information is adequate to **identify** the key elements of the ecosystem.	Information is adequate to **broadly understand** the key elements of the ecosystem.	
	Met?	Y	Y	
	Justification	Following GSA3.18.1 (FCR v2.0): Key ecosystem elements may include trophic structure and function (in particular key prey, predators, and competitors), community composition, productivity pattern (e.g. upwelling or spring bloom, abyssal, etc.), and characteristics of biodiversity. As described in PI 2.5.1, the key ecosystem with regards to the fishery under assessment is the Eastern South Pacific. The Humboldt Current System is the cold, low-salinity ocean current that flows north along the western coast of South America. In the case of the northern Humboldt Current System some studies on its distribution, behaviour patterns and biology exist (SPRFMO, 2019c). The productivity of the Humboldt Current System and the ecosystem it supports are affected by Pacific Decadal Oscillation and ENSO events. Oceanographic conditions off the Chilean coast are monitored by Instituto de Fomento Pequero (Fisheries Development Institute) (IFOP) through research cruises and satellite data. Information on surface temperature (SST) and chlorophyll a concentrations in the Pacific Ocean is gathered continuously by satellites. Satellite data also provide real-time information on the status of the El Niño Southern Oscillation. Environmental conditions affecting jack mackerel habitat is reported on regularly with state-of-the-art oceanographic recordings and surveys, including remote sensing (pers. comment SPRFMO secretariat). As described in PI 2.5.1 and as discussed in section 3.3.6, the trophic levels and food web in the South Pacific is generally well understood. Jack mackerel inhabits one of the most productive marine ecosystems, where other pelagic species have a fundamental role in transferring energy from lower to higher trophic levels. The information available and the level of understanding is adequate to broadly understand the key elements of the ecosystem and SG60 and SG80 are met.		
b	Investigation of UoA impacts			

	Guidepost	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but **have not been investigated** in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and **some have been investigated in detail**.	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and **have been investigated in detail**.
	Met?	Y	Y	N
	Justification	Over 94% of the UoA catch consists of the target species, jack mackerel, and no ETP species are caught. In addition, habitat impacts from the fishing gear are minimal. Ecosystem impacts from the fishery therefore relate mostly to removals of the target species. In 2018, the total catch of *Trachurus murphyi* throughout the range of the stock was set to not more than 576,000 tonnes, with around 526,323 tonnes caught (preliminary data, SPRFMO, 2019f). In 2019, following the recommendations of the SPRFMO scientific committee, catches throughout the range of the stock were set not to exceed 531,061 tonnes (SPRFMO, 2019). The UoA has been allocated 6.1086 % of the catches (SPRFMO, 2019) and as such, the impact of the UoA itself is limited. As discussed in more detail in section 3.3.6, physicochemical characteristics (such as salinity, water temperature, nutrients and oxygen concentrations) play a large part in the structure and function of the ecosystem. Climate change may be a large anthropogenic influence on these characteristics. Based on this, the main impacts on key elements can be inferred and some have been investigated in detail. SG60 and SG80 are met. SG 100 is not considered to be met because the investigations do not extend to all interactions throughout the UoA.		
c	Understanding of component functions			
	Guidepost		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are **known**.	The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the ecosystem are **understood**.
	Met?		Y	Y
	Justification	Main functions of the target species, primary and secondary species, and habitats in the ecosystem are understood. As discussed in section 3.3.6, the trophic levels and food web in the South Pacific, especially with regards to the Humboldt Current System, is generally well understood. Jack mackerel inhabits one of the most productive marine ecosystems, where other pelagic species have a fundamental role in transferring energy from lower to higher trophic levels. Jack mackerel, by feeding on a large range of prey including zooplankton, transfers energy from primary producers to top predators. Moreover, jack mackerel can switch from zooplankton to pelagic fish depending on prey abundance (Cury et al., 2000).		

		The impacts of the UoA on the target species have been identified (see section 3.3 of this report). Impacts on non-target species have been documented and quantified through the observer and self-sampling programme and are considered to be negligible (see section 3.3.7, and discussed under PI 2.2); likewise impacts on ETP species have been studied recently and are also considered to be negligible (see section 3.4.2, and PI 2.3). The fishery is pelagic and does not have any appreciable habitat impacts (see section 3.4.3 and PI 2.4). SG80 and SG100 are met.		
d	Information relevance			
	Guidepost		Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.	Adequate information is available on the impacts of the UoA on the components **and elements** to allow the main consequences for the ecosystem to be inferred.
	Met?		Y	Y
	Justification	Sufficient information is available on UoA impacts on the components and ecosystem elements (in particular target species and by-catch in relation to the trophic function, and habitats in the ecosystem) to allow for inference of main consequences on the relevant ecosystems, such as information about target stock removals; the extent and magnitude of interactions with non-target and ETP species; and the spatial location of fishing activity (and hence the risk of impacts on marine habitats). SG80 and SG100 are met.		
e	Monitoring			
	Guidepost		Adequate data continue to be collected to detect any increase in risk level.	Information is adequate to support the development of strategies to manage ecosystem impacts.
	Met?		Y	N
	Justification	These ecosystems are of high ecological and economical importance, and they continue to be actively studied and monitored. Data continue to be gathered about target species removals at the stock level, which informs the management strategy for the jack mackerel stock. This management strategy is based on the objectives of the SPRFMO convention, which requires that fishery removals are consistent with the ecosystem approach to fisheries management (Article 2 of the SPRFMO Convention). The evidence available also indicates that evidence is being gathered on fishery interactions with non-target, and ETP species (through the observer program and self-sampling) as well as with marine habitats. SG 80 is therefore met.		

		The information available has enabled strategies to be developed for managing impacts of the fishery on the target species throughout the UoA, and also a strategy for protecting habitats throughout the UoA. However, this information is not (yet) adequate to support the development of strategies to manage ecosystem impacts of the fishery, therefore SG100 is not met.
References		Cury et al., 2000; SPRFMO, 2019; SPRFMO, 2019c; SPRFMO, 2019f; Espinoza et al., 2017; Government of Chile, 2007 and references therein; Penven, P., V. Echevin, J. Pasapera, F. Colas, and J. Tam, 2005; pers. comment SPRFMO secretariat
OVERALL PERFORMANCE INDICATOR SCORE:		**90**
CONDITION NUMBER (if relevant):		**-**

Appendix 1.3 Principle 3

Evaluation Table for PI 3.1.1 – Legal and/or customary framework

PI 3.1.1		• **The management system exists within an appropriate legal and/or customary framework which ensures that it: Is capable of delivering sustainability in the UoA(s); and Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and Incorporates an appropriate dispute resolution framework.**		
Scoring Issue		SG 60	SG 80	SG 100
a	Compatibility of laws or standards with effective management			
	Guidepost	There is an effective national legal system **and a framework for cooperation** with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and **organised and effective cooperation** with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and **binding procedures governing cooperation with other parties** which delivers management outcomes consistent with MSC Principles 1 and 2.
	Met?	Y	Y	Y
	Justification	The fishery takes place in the SPRFMO Convention area by EU vessels from The Netherlands, Germany, Poland and Lithuania. The vessels fish on a quota given to the EU following the agreement with the SPRFMO. Hence, the management systems of both SPRFMO and the EU must be taken into account in the assessment of the fishery, whilst also national requirement need to be looked at, but all to varying extent. Catch permits and vessel quotas, among other things, are the responsibility of national authorities, while technical regulations of the fishery are set by the EU. Monitoring, control and surveillance (MCS) is taken care of in light of the SPRFMO Conservation and Management Measures (CMM) (see section 3.5.5 and PI 3.2.3 below), and mainly carried out by the Chilean Navy (controls at sea) and Sernepesca (controls at landing), though the EU national MCS competent authorities also monitor the vessels at all times (through VMS and e-logbook updates). The SPRFMO Convention (SPRFMO, 2009) applies to waters of the Pacific Ocean beyond areas of national jurisdiction in accordance with international law (as defined by Article 5 of the Convention), as shown in Figure 1. The organisation consists of a Commission and a number of subsidiary bodies. There are currently 15 members of the Commission: Australia, Chile, China, The Cook Islands, Cuba, Ecuador, The European Union, Denmark (in respect of the Faroes Islands), Korea, New Zealand, Peru, Russia, Chinese Taipei, The United States and Vanuatu. There are also Cooperating non-Contracting Parties (CNCP): Colombia, Curaçao, Liberia and Panama (SPRFMO, 2019b). The objective of the 'Convention on the Conservation and Management of High Sea Fishery Resources in the South Pacific Ocean' is, through the application of the precautionary approach and an ecosystem approach to fisheries management, to ensure the long-term conservation and sustainable use of fishery resources and, in so doing, to safeguard the marine ecosystems in which these resources occur (SPRFMO, 2015). In accordance with the United Nations Law of the Sea (United Nations, 1995), SPRFMO ensures binding procedures that, at least deliver cooperation between its members on the collection and sharing of scientific data, the scientific assessment of stock status and the development of scientific		

		advice. Article 31 of the Convention specially refers to, "Cooperation with other organisations" and states: "The Commission shall cooperate, as appropriate, with other regional fisheries management organisations, the FAO, with other specialised agencies of the United Nations, and with other relevant organisations on matters of mutual interest." The SPRFMO Conservation and Management Measures (CMMs) define the regulatory framework for the SPRFMO fisheries in the high seas areas of the South Pacific Ocean. Each year, the Commission may revise existing, or adopt new, CMMs (SPRFMO, 2019b). Currently, there are 20 CMMs in place detailing various provisions such as the application of technical measures or output and input controls, requirements for data collection and reporting, as well as regulations for monitoring, control and surveillance and enforcement. One CMM relates directly to the *Trachurus murphyi* fishery (CMM 01-2019), although others are applicable as well (e.g. CMM 11-2015 on Boarding and Inspection Procedures and 12-2018 on transhipment). The provisions set out by SPRFMO for the *T. murphyi* fishery in CMM 01-2019 cover effort management (setting Gross Tonnage limits), catch management (setting TAC, enforcing communication between member states, quota transfers), data collection and reporting (liaising with the secretariat, VMS implementation, evidencing that the CMM has been applied and enforced), cooperation of fisheries in adjacent areas under national jurisdiction, and special requirements of developing states. SPRFMO has signed memoranda of understanding with the Secretariat for the Agreement on the Conservation of Albatrosses and Petrels (ACAP) (SPRFMO, 2014b) and the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) (SPRFMO, 2016) to facilitate cooperation on efforts to minimise the incidental bycatch of albatrosses and petrels and advance shared objectives with respect to stocks and species with in the South Pacific and Antarctic regions (SPRFMO, 2016), respectively. The fishery is also managed within the context of EU's Common Fisheries Policy (CFP: EU Regulation 1380/2013), whose provisions are transposed into national fisheries legislation in the member states. CFP applies to all fishing activities in EU waters, including the exclusive economic zone (EEZ), and to the activities of EU vessels outside EU's marine jurisdiction. The objectives of the CFP are (Article 2 of the Regulation): "to ensure that fishing and aquaculture activities are environmentally sustainable in the long-term and are managed in a way that is consistent with the objectives of achieving economic, social and employment benefits, and of contributing to the availability of food supplies. The CFP shall apply the precautionary approach to fisheries management and shall aim to ensure that exploitation of living marine biological resources restores and maintains populations of harvested species above levels which can produce the maximum sustainable yield (MSY)." In the case of SPRFMO, the MSY-criterion does not apply: the EU takes part in the management of the fishery as a party to SPRFMO, and the international policy aspects of the CFP come into play to split the quota share between member states. The basic legal acts implementing the CFP at a national level are the Lithuanian Law on Fisheries, adopted on 27 June 2000, Dutch Fisheries Act 1963, and the German 1984 Seefischereigesetz – Sea Fisheries Act (modified in 2016). In Poland the legislation from the CFP has a 'direct effect' (meaning they regard EU Regulations as 'directly binding' and have transposed EU legislation into Polish Law to a limited extend), and their resource management policies are harmonised with the CFP. Hence, there is an effective national legal system in place and a framework for cooperation with other parties to deliver management outcomes consistent with MSC Principles 1 and 2. SG 60 is met. The cooperation between the national authorities, EU and SPRFMO is organized and effective. SG 80 is met. It also contains binding procedures insofar as agreements between states are by definition binding. **SG 100 is met**.

b	Resolution of disputes			
	Guidepost	The management system incorporates or is subject by law to a **mechanism** for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a **transparent mechanism** for the resolution of legal disputes which is **considered to be effective** in dealing with most issues and that is appropriate to the context of the UoA.	The management system incorporates or is subject by law to a **transparent mechanism** for the resolution of legal disputes that is appropriate to the context of the fishery and has been **tested and proven to be effective**.
	Met?	Y	Y	Y
	Justification	Article 34 of the SPRFMO Convention establishes the guidelines and procedure to "Settlement of Disputes" (SPRFMO, 2015): "1. Contracting Parties shall cooperate in order to prevent disputes and shall use their best endeavours to resolve any disputes by amicable means which may include, where a dispute is of a technical nature, referring the dispute to an ad hoc expert panel. 2. In any case where a dispute is not resolved through the means set out in paragraph 1, the provisions relating to the settlement of disputes set out in Part VIII of the 1995 Agreement shall apply, mutatis mutandis, to any dispute between the Contracting Parties." Part VIII of the 1995 UN Fish Stocks Agreement (United Nations, 1995), refers to conciliation and arbitration, and the use of courts or tribunals to rule on disputes. Article 17 of the SPRFMO Convention (Implementation of Commission Decisions) also provides an opportunity for contracting parties to object to a Commission decision and, in so doing, initiate a process of review by a Commission established review panel. The panel provides their findings and recommendations to the Commission. These are presented to the contracting parties and, if a resolution cannot be achieved, then Article 34 is initiated. According to the SPFRMO website, the objection process has been tested twice, and proven to be effective. It includes a recent objection (2018) involving Ecuador and its request for a catch entitlement of jack mackerel, and another jack mackerel entitlement request, from Russia in 2013. The PCA provided assistance in the proceedings conducted by a Review Panel with regards to the objection by Russia, and served as registry to the proceedings conducted by a Review Panel with regards to the objection by Ecuador. Dispute resolution within SPRFMO has been reviewed as part of the performance review of the SPRFMO. The outcome of this review underpins the effectiveness of the Article 17 review panel process in resolving disagreement between Members and in progressing the long-term resolution of disputes. Dispute resolution in the EU is mostly dealt with at a national level. In some cases, individuals, companies, organisations or Member States can make their case for the Court of Justice of the European Union (CJEU), in the case of individuals or organisation often after an extensive journey through their national justice system. The role of the CJEU is to ensure EU law is interpreted and applied the same in every EU country, thus ensuring countries and EU institutions abide by EU law. At the national level both in The Netherlands, Germany, Poland, Lithuania, and in Chile there is an effective, transparent dispute resolution mechanism in place, as fishers can take their case to court if they do not accept the rationale behind an infringement accusation by enforcement		

		authorities or the fees levied against them. Verdicts at the lower court levels can be appealed to higher levels. Most issues are, however, resolved before they reach the court system, e.g. in discussions between authorities and actors in the fishing industry. Hence, the management system incorporates or is subject by law to a mechanism for the resolution of legal disputes. SG 60 is met. These mechanisms are transparent and considered to be effective in dealing with most issues and is appropriate to the context of the UoA. SG 80 is met. It has been tested and proven to be effective since all disputes between the two parties have indeed been resolved within the management regime. SG 100 is met.		
c	Respect for rights			
	Guidepost	The management system has a mechanism to **generally respect** the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to **observe** the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to **formally commit** to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
	Met?	Y	Y	Y
	Justification	The SPRFMO Convention starts with “recognising economic and geographical considerations and the special requirements of developing States, in particular the least developed among them, and small island developing States, and territories and possessions, and their coastal communities, in relation to the conservation, management and sustainable development of fishery resources and equitable benefit from those resources.” This is further embedded in the Convention in Article 19: Recognition of the Special Requirements of Developing States, and explicitly considers: the specific requirements of developing states, vulnerability especially in the context of nutritional requirements and to avoid adverse impacts on, and ensure access to fisheries by, subsistence, small-scale and artisanal fishers and women fish workers, as well as indigenous people in developing States. Article 21 (Participation in Fishing for Fishery Resources) considers “the needs of coastal States and of territories and possessions whose economies are dependent mainly on the exploitation of and fishing for a fishery resource that straddles areas of national jurisdiction of such States, territories and possessions and the Convention Area”. At EU level, member states are obliged, according to the 2013 CFP, to include social and economic dimensions in their criteria for allocation of quota rights, among them the contribution to the local economy and historic catch levels (Art. 17). Protection of the interests of coastal communities dependent on fisheries is also one of the rationales for the principle of relative stability in fishing rights between the member states (Recital (35)). Among the objectives of the CFP (which are not legally binding, but an aid to interpretation) is to foster job creation and economic development in coastal areas (Recital (12)) and to contribute to a fair standard of living for those who depend on fishing activities, bearing in mind coastal fisheries and socio-economic aspects (Art. 2f). Marine biological resources in the outermost parts of the Union shall be secured special protection due their importance to the local economy, and certain types of fishing activities shall be limited to fishing vessels registered in the ports of those territories (Recital (21)). Hence, the management system has a mechanism to generally respect the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2. SG 60 is met. The system has a		

		mechanism to observe such rights, so SG 80 is also met. Since it is founded in law, the mechanism formally commits to these rights, and SG 100 is met.
References		European Commission, 2013; Germany, 1984 (2016); Republic of Lithuania, 2000; Ridings, P. (Chair), A. Cole, L. Goldsworthy, S. Kaye, 2018; SPRFMO, 2009; SPRFMO, 2014b; SPRFMO, 2015; SPRFMO, 2016; SPRFMO, 2019b; The Netherlands, 1963; United Nations, 1995
OVERALL PERFORMANCE INDICATOR SCORE:		**100**
CONDITION NUMBER (if relevant):		-

Evaluation Table for PI 3.1.2 – Consultation, roles and responsibilities

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties		
Scoring Issue		SG 60	SG 80	SG 100
a	Roles and responsibilities			
	Guidepost	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **generally understood**.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **explicitly defined and well understood for key areas** of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **explicitly defined and well understood for all areas** of responsibility and interaction.
	Met?	Y	Y	Y
	Justification	Organisations and individuals involved in the management process both at SPRFMO level, EU-level and on a national level have been identified (see section 3.5.3 and also PI 3.1.1 above), and according to interviews at the site visit their functions, roles and responsibilities are generally understood. SG 60 is met. The functions, roles and responsibilities are explicitly defined in legislation and long-standing practice and well understood for key areas of responsibility and interaction. SG 80 is met. It is a principal challenge to claim that 'all' areas of responsibility and interaction are well understood, but from an opposite point of view, we have not been given reason to believe that there are issues that are not properly understood for all areas. Hence, SG 100 is met.		
b	Consultation processes			
	Guidepost	The management system includes consultation processes that **obtain relevant information** from the main affected parties, including local knowledge, to inform the management system.	The management system includes consultation processes that **regularly seek and accept** relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.	The management system includes consultation processes that **regularly seek and accept** relevant information, including local knowledge. The management system demonstrates consideration of the information and **explains how it is used or not used**.
	Met?	Y	Y	N
	Justification	As detailed in section 3.5.4, the management systems at both the SPRFMO, EU and national level include consultation processes: Article 18 of the SPRFMO Convention (Transparency) and Article 31 (Cooperation with other organisations) are clear on the need to promote transparency in decision making processes and the Commission "shall seek to make suitable arrangements for consultation, cooperation and		

		collaboration with such other organisations. In particular it shall seek to cooperate with other relevant organisations with the aim of reducing and eventually eliminating IUU fishing." Each year, scientists from the Contracting Parties are invited to present their latest results to the appropriate working groups/committees. The SPRFMO website includes minutes of the Commission meetings and minutes and reports from the Commissions advisory bodies (SPRFMO, 2019b). As for consultation within the EU, the Council has noted that "In the framework of the SPRFMO, the Union shall… work towards an appropriate involvement of stakeholders in the preparation phase for SPRFMO measures and ensure that measures adopted within the SPRFMO are in accordance with the objectives of the SPRFMO Convention." The CFP includes rules on stakeholder involvement, through the Advisory Councils (ACs). The ACs are stakeholder-led organisations that provide the Commission and EU countries with recommendations on fisheries management matters. This may include advice on conservation and socio-economic aspects of management, and on simplification of rules. Advisory Councils are consulted in the context of regionalisation. Advisory Councils should also contribute to data for fisheries management and conservation measures. With regards to the fisheries under assessment, the Long Distance Advisory Council (LDAC). Within the LDAC, working groups and focus groups deal with specific issues. At a national level, administrations operate both formal and informal consultation procedures, in which they combine mailings on current issues and proposed changes to management systems, and schedule regular face-to-face meetings with key stakeholders. From interviews with stakeholders at the site visit, the team understood these forms of consulting to work well. Both the fishing industry and NGOs (WWF, Oceana, PEW) have regular contact with the respective national authorities, and there is also regular contact between the industry and authorities with scientists participating in the scientific committee. The client groups also noted that the contact with the NGOs is good. Based on the information above, the team considers the management system to include consultation processes that obtain relevant information from the main affected parties, including local knowledge, to inform the management system. SG 60 is met. The processes regularly seek and accept relevant information, and the management system demonstrates consideration of the information obtained. SG 80 is met. However, it is not clear that within the management system it is explained how information is used or not used, and SG 100 is not met.		
c	Participation			
	Guidepost		The consultation process **provides opportunity** for all interested and affected parties to be involved.	The consultation process provides **opportunity and encouragement** for all interested and affected parties to be involved, and **facilitates** their effective engagement.
	Met?		Y	Y

	Justification	As follows from SI 3.1.2b above, the consultation process provides opportunity for all interested and affected parties to be involved. SG 80 is met. The performance review by Ridings et al (2018) also considers that SPRFMO has an open and transparent approach to the participation of observers, especially NGO observers. All stakeholders consulted during the assessment report that management authorities actively facilitate their involvement, for instance through invitations to take part in meetings. SG 100 is met.
References		European Commission, 2018; European Council, 2019; Ridings, P. (Chair), A. Cole, L. Goldsworthy, S. Kaye, 2018; SPRFMO, 2015; https://ec.europa.eu/fisheries/partners/advisory-councils; https://ldac.eu/en/publications
OVERALL PERFORMANCE INDICATOR SCORE:		**95**
CONDITION NUMBER (if relevant):		**-**

Evaluation Table for PI 3.1.3 – Long term objectives

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC fisheries standard, and incorporates the precautionary approach.		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guidepost	Long-term objectives to guide decision-making, consistent with the MSC fisheries standard and the precautionary approach, are **implicit** within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC fisheries standard and the precautionary approach are **explicit** within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC fisheries standard and the precautionary approach, are **explicit** within **and required by** management policy.
	Met?	Y	Y	Y
	Justification	The objective of the SPRFMO 'Convention on the Conservation and Management of High Sea Fishery Resources in the South Pacific Ocean' is, through the application of the precautionary approach and an ecosystem approach to fisheries management, to ensure the long-term conservation and sustainable use of fishery resources and, in so doing, to safeguard the marine ecosystems in which these resources occur (SPRFMO, 2015). This is further evidenced by CMM 01-2019 (Conservation and Management Measure for *Trachurus Murphyi*) where "the commitment to apply the precautionary approach and take decisions based on the best scientific and technical information available and affirming its commitment to rebuilding the stock of *Trachurus murphyi* and ensuring its long-term conservation and sustainable management in accordance with the objective of the Convention" form the basis of measures applying to the jack mackerel fishery. The current EU Common Fisheries Policy (CFP) regulation requires that member states, in accordance with international treaties such as the 1982 Law of the Sea Convention, the 1993 FAO Compliance Agreement and the 1995 Fish Stocks Agreement, apply the precautionary approach to fisheries management, and aim to ensure that exploitation of living marine biological resources restores and maintains populations of harvested species above levels which can produce the maximum sustainable yield (Recital (6), Art. 2). Hence, long-term objectives to guide decision-making, consistent with the MSC fisheries standard and the precautionary approach are in place. SG 60 is met. These objectives are clear and explicit within the management policy, so SG 80 is met. Since they are required by law, SG 100 is also met.		
References		European Commission, 2013; SPRFMO, 2015; SPRFMO, 2019		
OVERALL PERFORMANCE INDICATOR SCORE:				**100**
CONDITION NUMBER (if relevant):				**-**

Evaluation Table for PI 3.2.1 - Fishery-specific objectives

PI 3.2.1		The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2.		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guidepost	**Objectives**, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are **implicit** within the fishery-specific management system.	**Short and long-term objectives**, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are **explicit** within the fishery-specific management system.	**Well defined and measurable short and long-term objectives**, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery-specific management system.
	Met?	Y	Y	Y
	Justification	The SPRFMO Conservation and Management Measures (CMMs) define the regulatory framework for the SPRFMO fisheries in the high seas areas of the South Pacific Ocean. Each year, the Commission may revise existing, or adopt new, CMMs (SPRFMO, 2019b). Currently, there are 20 CMMs in place detailing various provisions such as the application of technical measures or output and input controls, requirements for data collection and reporting, as well as regulations for monitoring, control and surveillance and enforcement. One CMM relates directly to the *Trachurus murphyi* fishery (CMM 01-2019). The preamble of CMM 01-2018 includes reference to the commitment to apply the precautionary approach and take decisions based on the best scientific and technical information available as set out in Article 3 of the Convention; recognition that a primary function of the Commission is to adopt CMMs to achieve the objective of the Convention; and, affirmation of the Commission's commitment to rebuilding the jack mackerel stock and ensuring its long-term conservation and sustainable management in accordance with the objective of the Convention. Furthermore, CMM 09-2017 deals with minimising bycatch of Seabirds, and CMM 03-2019 and CMM 03a-2019 relate to habitat protecting within the SPRFMO area. Within the EU context, objectives which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2 are in place in the fishery-specific management system. This includes objectives to maintain fish stocks at sustainable levels (here: both target stocks and other retained species) and protect other parts of the ecosystem: The CFP shall implement the ecosystem-based approach to fisheries management so as to ensure that negative impacts of fishing activities on the marine ecosystem are minimised and shall endeavour to ensure that aquaculture and fisheries activities avoid the degradation of the marine environment (Art. 2). Based on the above, both the SPRFMO and EU regulations combined set well defined and measurable short and long-term objectives, in the sense that performance against them can be measured through the enforcement bodies' recording and inspection routines (see PI 3.2.3). Thus, SG60 and SG 80 are met.		

		Both the SPRFMO and EU regulations objectives are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery-specific management system. SG100 is met.
References		European Commission, 2013; SPRFMO, 2017a; SPRFMO, 2019; SPRFMO, 2019d; SPRFMO, 2019e
OVERALL PERFORMANCE INDICATOR SCORE:		**100**
CONDITION NUMBER (if relevant):		**-**

Evaluation Table for PI 3.2.2 – Decision-making processes

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery.		
Scoring Issue		SG 60	SG 80	SG 100
a	Decision-making processes			
	Guidepost	There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are **established** decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	
	Met?	Y	Y	
	Justification	The SPRFMO Convention prescribes the method of decision making within the Commission (Article 16) and the implementation of Commission decisions (Article 17): decisions of the Commission will be taken by consensus (absence of formal objection made at the time the decision was taken). If a consensus cannot be reached on decisions related to questions of procedure, a majority vote is taken. If a consensus cannot be reached on decisions on questions of substance, a vote with a requirement of a ¾ majority is taken. Decisions are binding on questions of substance, although a member of the Commission can object within 60 days. Fishery specific decision making with regard to the jack mackerel fishery is evidenced in the full record of the 6th Meeting of the Commission in relation to CMM 01-2018 - Conservation and Management Measures for *Trachurus murphyi*. In the EU, both at EU and national level, established decision-making processes include the allocation of national quotas to different fleet groups following the setting of a TAC. Technical regulations are defined by the management bodies, after consultations with user groups and other stakeholders (see SI 3.1.2b above). Hence, there are decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives. This applies to the UoA fishery as it does to SPRFMO- and EU regulated fisheries in general (see PIs 3.1.1 and 3.1.2 above). SG 60 is met. These processes are established – evolved over time and codified in the Convention text, CFP and secondary legislation and measures (CMMs) – so SG 80 is also met.		
b	Responsiveness of decision-making processes			
	Guidepost	Decision-making processes respond to **serious issues** identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and	Decision-making processes respond to **serious and other important issues** identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and	Decision-making processes respond to **all issues** identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and

		take some account of the wider implications of decisions.	adaptive manner and take account of the wider implications of decisions.	take account of the wider implications of decisions.
	Met?	Y	Y	Y
	Justification	Since the establishment of SPRFMO, there appears to have been timely decision-making responses to serious and important issues associated with the jack mackerel fishery and these have been reflected in annual amendments to CMM 01-2019 - Conservation and Management Measures for *Trachurus murphyi* (SPRFMO, 2019) - these include setting the TAC, including percentage allocations for the contracting and non-contracting parties; the data collection requirements and system for reporting monthly catches; and effort limitation and management. Similarly, issue brought forward in the meetings are dealt with, and new information is used to and take account of the wider implications of decisions. Example of this are CMM 09-2017 that addresses the issue of seabird bycatch as brought forward in working with ACAP, and the standardisation of CPUE in the jack mackerel fishery. The team therefore concludes that decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions, thereby meeting SG60 and SG80. The well-established decision-making procedures in the EU system for fisheries management respond to serious issues identified in research, monitoring, evaluation or by groups with an interest in the fishery through the arenas for regular consultations between governmental agencies and the public. This happens through the established meeting arenas between the authorities and the fishing industry, and further through ad hoc consultation with the industry and other stakeholders (see PI 3.1.2 above). In addition, there is close contact between authorities and scientific research institutes. From interviews with stakeholders at the site visit, the team understood these forms of consulting to work well. Both scientists and user-group representatives noted during interviews at the site visit, that the relevant governmental agencies are open to any kind of input at any time. They feel that the authorities' response is transparent and timely and that the ensuing policy options take adequate account of their advice. SG60 is met. Issues beyond the serious issues affecting this fishery are responded to, so SG80 is also met. It is a principal challenge to claim that absolutely 'all' issues are responded to, which is required to achieve a 100 score on this SI, but from an opposite point of view, we cannot see that there are issues that are not responded to in this fishery. Hence, SG 100 is met.		
c	Use of precautionary approach			
	Guidepost		Decision-making processes use the precautionary approach and are based on best available information.	
	Met?		Y	
	Justification	The objective of the 'Convention on the Conservation and Management of High Sea Fishery Resources in the South Pacific Ocean' is, through the application of the precautionary approach and an ecosystem approach to fisheries management, to ensure the long-term conservation and sustainable use of fishery resources and, in so doing, to safeguard the marine ecosystems in which these resources occur (SPRFMO, 2015).		

		Article 2 of the CFP states: "The CFP shall apply the precautionary approach to fisheries management and shall aim to ensure that exploitation of living marine biological resources restores and maintains populations of harvested species above levels which can produce the maximum sustainable yield (MSY)." Though in the case of SPRFMO, the MSY-criterion does not apply: the EU takes part in the management of the fishery as a party to SPRFMO, and the international policy aspects of the CFP come into play to split the quota share between member states. Each year, scientists from the Contracting Parties are invited to present their latest results to the appropriate working groups/committees. Hence, decision-making processes are based on scientific recommendations and the relevant fisheries regulations require fisheries management to be based on the precautionary approach (see also PI 3.1.3 above). SG80 is met.		
d	Accountability and transparency of management system and decision-making process			
	Guidepost	Some information on the fishery's performance and management action is generally available on request to stakeholders.	**Information on the fishery's performance and management action is available on request**, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Formal reporting to all interested stakeholders **provides comprehensive information on the fishery's performance and management actions** and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?	Y	Y	N
	Justification	SPRMO Convention Article 18, "Transparency", states that the Commission shall promote transparency in decision-making, in so doing, all meetings of the Commission and its subsidiary bodies are open to all participants and registered observers and so explanations can be heard or sought for actions or lack of actions. To this end, meeting reports and CMMs are published on the Commission website, consultations are open to all interested bodies and the rules of procedure allow for timely access to all relevant and non-commercially sensitive information. In the EU, both at a Commission and national level, management authorities and scientific research institutes publish annual reports and other information on the fishery's performance and management action on their websites. SG 60 is met. Further information is available on request, and according to interviews at the site visit explanations are provided for any actions or lack of action associated with findings from research, monitoring, evaluation and review activity (see SI 3.1.2b). SG 80 is met. Since information on inspections and infringements is not publicly available (see SI 3.2.3c below), this stops short of comprehensive information being available, and SG 100 is not met.		
e	Approach to disputes			
	Guidepost	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.

		regulation necessary for the sustainability for the fishery.		
	Met?	Y	Y	Y
	Justification	It was confirmed by the SPRFMO secretariat, representatives from national authorities, and the fishing industry that the fishery management system is not subject to any court challenges or judicial decisions arising from any legal challenges. The ways of dealing with disputes as detailed in section 3.5.6 and through the various ways they interact with each other, the authorities and the fishery both work proactively to avoid legal disputes. It is concluded that the management system and the fishery act proactively to avoid legal disputes. SG100 is met.		
References		European Commission, 2013; SPRFMO, 2017a; SPRFMO, 2019 Interviews at site visit		
OVERALL PERFORMANCE INDICATOR SCORE:				**90**
CONDITION NUMBER (if relevant):				**-**

Evaluation Table for PI 3.2.3 – Compliance and enforcement

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with.		
Scoring Issue		SG 60	SG 80	SG 100
a	MCS implementation			
	Guidepost	Monitoring, control and surveillance **mechanisms** exist, and are implemented in the fishery and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance **system** has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A **comprehensive** monitoring, control and surveillance system has been implemented in the fishery and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	Met?	Y	Y	N
	Justification	The Convention does not explicitly provide SPRFMO with competence related to fisheries monitoring, control and surveillance (MCS) and so has no enforcement capacity. As with other RFMOs, SPRFMO relies on its Contracting Parties to implement management measures. Article 27 of the Convention requires the Commission to establish appropriate cooperative procedures for effective monitoring, control and surveillance of fishing and to ensure compliance with this Convention and the conservation and management measures adopted by the Commission. These include *i.e*. the establishment and maintenance of a record of vessels authorised to fish in the Convention Area, the marking of vessels and fishing gear, the recording of fishing activities, and the reporting of vessel movements and activities by a satellite vessel monitoring system, at-sea and in-port inspection, the regulation and supervision of transhipment, monitoring transhipment, landings, and trade to prevent, deter and eliminate IUU, reporting on violations detected, progress and outcomes of investigations, and enforcement actions taken; and, addressing IUU fishing activities. Article 27 also allows the Commission to adopt measures against those entities that engage in fishing activities that diminish the effectiveness of, or otherwise fail to comply with, the conservation and management measures. These measures are e.g. CMM 06-2018 (Establishment of the Vessel Monitoring System in the SPRFMO Convention Area), CMM 05-2019 (Establishment of the Commission Record of Vessels Authorised to Fish in the SPRFMO Convention Area), CMM 11-2015 (Boarding and Inspection Procedures in the SPRFMO Convention Area (effective from 24 August 2015)), and CMM 12-2018 (Regulation of Transhipment and Other Transfer Activities). The Commission publishes a Compliance Report based on the Members' and CNCP's Implementation Reports (in accordance with Article 24, “Obligations of Members of the Commission”) and on information available to the Secretariat (SPRFMO, 2019h). With CMM 11-2015, the SPRFMO has adopted at sea inspection procedures Articles 21 and 22 of the 1995 Agreement (UN Fish Stocks Agreement), and Contracting Parties may conduct at sea inspections following the procedures contained in Articles 21 and 22 of the 1995 Agreement in respect of a vessel flying the flag of a Cooperating non-Contracting Party.		

		Through CMM 07-2019 (Minimum Standards of Inspection in Port) is the SPRFMO implementation of Port state measures, together with CMM 04-2019 (Establishing a List of Vessels Presumed to Have Carried Out Illegal, Unreported and Unregulated Fishing activities in the SPRFMO Convention Area), SPRFMO has implemented Port State Measures with the objective to prevent, deter and eliminate IUU fishing by preventing vessels engaged in IUU fishing from using ports and landing their catches. The community control system for ensuring compliance with the rules of the CFP are laid down in Council Regulation (EC) No 1224/2009, which is subsequently implemented through Commission Implementing Regulation (EU) No 404/2011. The Control regulation (1224/2009) lays out provisions, and provides for the adoption of detailed rules and measures to implement these provisions. It e.g. demands that a fishing license is obtained, that logbooks are maintained, that the engine power of fishing vessels is not exceeded, and that vessels are equipped with a vessel monitoring system (VMS). As with the SPRFMO, the EU is largely dependent on authorities in the region to carry out controls. The daily submissions through the e log-books go to national authorities, who will inform the EC of the quota uptake, and in turn the EC will keep the SPRFMO Secretariat updated. The licenses needed are also provided by the National Competent Authorities. As described in Section 3.5.3.3, Sernapesca is responsible for enforcing regulations with respect to monitoring, surveillance and control, including landing controls. The control of landings falls mainly on private enterprise companies contracted according to Sernapesca's requirements. 100% of vessels offloading in Chile will be inspected. The vessels cannot commence landing until given permission. All landings are observed, monitored and certified by a 3rd party dockside monitoring company and Sernapesca are often present to monitor the landing and the dockside monitors. At landing, a copy of the logbook is submitted to the authorities in paper form, since the signature of the captain is needed. The whole catch gets weighed (though EU law only prescribes a sample). Sernapesca will produce port inspection forms for EU vessels in Chile, and all reports are submitted to the Compliance and Technical Committee (CTC) of the SPRFMO. Controls at sea are carried out by the Chilean Navy. The navy is increasingly involved in control of IUU fishing, not just coast guard vessels, but also frigates, and submarines. They operate in the high seas, for KAMLAR, and to a lesser extent the SPRFMO. Navy exercises are combined with the controls of fishing activities. IUU is a high priority in Chile. Currently, boarding of the vessel to carry out inspections is not an option in the SPRFMO area. There are not enough provisions yet to make boarding safe. If a vessel is encountered, the vessel will be issued a questionnaire to get relevant information from the master or the captain. So far, there have not been issues with the EU vessels. The Navy can cross-check the information with information already provided to the national authorities. The EU vessels always answer the questions, and the information given by the vessel matches the info from the authorities. Based on the information above and in section 3.5.5, monitoring, control and surveillance mechanisms exist and are implemented in the fishery, and there is a reasonable expectation that they are effective. SG 60 is met. These measures qualify as a system and have demonstrated an ability to enforce relevant management measures, strategies and rules; see SI 3.2.3c below on compliance. SG80 is met. However, since there the focus of the

		inspections is on control at landing, and control at sea is more rare, it cannot be conclude that the enforcement system is sufficiently comprehensive. SG 100 is not met.		
b	Sanctions			
	Guidepost	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, **are consistently applied** and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and **demonstrably** provide effective deterrence.
	Met?	Y	Y	N
	Justification	As said above, the Convention does not explicitly provide SPRFMO with competence related to fisheries monitoring, control and surveillance (MCS) and so has no enforcement capacity. SPRFMO relies on its Contracting Parties to implement effective sanctions over their flagged vessels. However, Article 27 allows the Commission to adopt measures against those entities that engage in fishing activities that diminish the effectiveness of, or otherwise fail to comply with, the conservation and management measures. This could include trade related measures/sanctions in relation to fishery resources, to be applied by members of the Commission to any state, member of the Commission, or entity whose fishing vessels engage in fishing activities that are counter to, or fail to comply with the conservation and management measures adopted by the Commission. To date, no measures/sanctions have been applied. The ability of the Commission to act at an international level is considered to provide an effective deterrent for ensuring contracting parties meet their obligations. Information on monitoring and compliance while the vessels are in the SPRFMO Area is not public but it can be requested by the vessels from their respective competent authorities and communicated to auditors. On such basis, full compliance would illustrate that the possibility of sanctions is an effective deterrent. During the stakeholder interviews, both the SPRFMO secretariat, Chilean authorities, Polish authorities and fishing industry mentioned that the fishery under assessment complies with the regulations in the SPRFMO area, and no sanctions have been applied. They provided the team with possible sanctions, ranging from a warning, to a fine, the fishing license can be revoked, and the fishery is subject to the EU 'point-system', whereby fishers are given a specified number of points for different kinds of violations. When a specific number of points is reached, the fishing licence shall be automatically suspended for a period, increasing with repeated violations. Hence, sanctions to deal with non-compliance exist and SG 60 is met. There is evidence that they are thought to be an effective deterrence; see SI 3.2.3c below on compliance. Stakeholders interviewed during the site visit confirm that it is indeed the case. SG 80 is therefore met. Since information on compliance in the fishery cannot be characterized as comprehensive, it cannot be concluded that sanctions demonstrably provide effective deterrence. SG 100 is not met.		
c	Compliance			
	Guidepost	Fishers are **generally thought** to comply with the management system for the fishery under assessment, including, when required, providing information of	**Some evidence exists** to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.	There is a **high degree of confidence** that fishers comply with the management system under assessment, including, providing

		importance to the effective management of the fishery.		information of importance to the effective management of the fishery.
	Met?	Y	Y	N
	Justification	At the site visit, interviews were held with representatives of Sernepesca and the Chilean Navy. In both interviews, no major issues with control and enforcement were brought to the attention of the team. The vessels are collaborative and give the dockside monitoring company and Sernapesca access to everything needed, included all licenses. As indicated under SIb, both the SPRFMO secretariat, Chilean authorities, Polish authorities and fishing industry mentioned that the fishery under assessment complies with the regulations in the SPRFMO area, and no sanctions have been applied. The only 'non-compliance' found in the Final Compliance reports for the Commission, is that the EU sometimes submits the monthly catch reports a few days late (SPRFMO, 2019h). The SPRFMO secretariat highlighted that the EU vessels follow the stock assessment and advise very closely. There is no reason why this would change in the foreseeable future. There is an automated system for quota distribution for the next 5 years, and the industry does not want to disrupt the system. This provides relative stability, and is up for re-negotiation in 2022. The landing inspections appear to be thorough (see SI 3.2.3a above), and no infringements were found. Hence, fishers are generally thought to comply with the requirements of the management system, including, when required, providing information of importance to the effective management of the fishery. SG 60 is met. Some evidence exists that this is the case; cf. statements by enforcement authorities and inspection forms provided by the client. SG 80 is met. However, since inspections and infringement statistics are not provided, it cannot be concluded with a high degree of confidence that fishers comply with the regulations. SG 100 is not met.		
d	Systematic non-compliance			
	Guidepost		There is no evidence of systematic non-compliance.	
	Met?		Y	
	Justification	The intent behind the phrase 'no evidence of systematic non-compliance' is that there is simultaneously adequate evidence to assess the compliance of the fishery and no evidence of infringements that occur regularly (MSC interpretations log). As demonstrated under PI 3.2.3 c) above, there is no evidence of systematic non-compliance in the fishery. SG 80 is met.		
References		European Commission. 2009; European Commission, 2011c; European Commission, 2013; SPRFMO, 2017a; SPRFMO, 2019; SPRFMO, 2019h; United Nations, 1995; Interviews at site visit		
OVERALL PERFORMANCE INDICATOR SCORE:				**80**
CONDITION NUMBER (if relevant):				**-**

Evaluation Table for PI 3.2.4 – Monitoring and management performance evaluation

PI 3.2.4		There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives. There is effective and timely review of the fishery-specific management system.		
Scoring Issue		SG 60	SG 80	SG 100
a	Evaluation coverage			
	Guidepost	There are mechanisms in place to evaluate **some** parts of the fishery-specific management system.	There are mechanisms in place to evaluate **key** parts of the fishery-specific management system	There are mechanisms in place to evaluate **all** parts of the fishery-specific management system.
	Met?	Y	Y	N
	Justification	At the SPRFMO level, article 30 (Reviews), of the Convention states the Commission shall: "review the effectiveness of the conservation and management measures and examine the effectiveness of the Convention itself at least every five years; determine the terms of reference and methodology of such reviews which shall be carried out by an independent person or persons of recognised competence who is independent of the Commission; take account of the recommendations with the appropriate amendment of its conservation and management measures and the mechanisms for their implementation." SPRFMO has just completed the first review in 2018 (Ridings et al, 2018). The review looked at the effectiveness of the conservation and management measures adopted by the Commission in meeting the objectives of the convention. At EU level, the CFP is reviewed in connection with the major revisions of its basic regulations every tenth year. In addition to internal review processes, an independent evaluation was commissioned by the European Commission ahead of the 2013 reform to assess the CFP from both a natural and social sciences point of view. At the national level, fisheries management is regularly evaluated by the Ministries, with input from stakeholders (e.g. fishing industry, environmental NGOs, national research institutes). In the case of CFP reviews, or proposed changes to the management of the fishery at EU level, the Ministries will consult with stakeholders as discussed in section 3.5.4.3. Based on this, the fishery has in place mechanisms to evaluate some parts of the management system, so SG 60 is met. Several of these components, such as enforcement, can be considered as key parts of the management system, so SG 80 is met as well. There was no evidence to show that mechanisms are in place to evaluate all parts of the fishery specific management system and so SG 100 is not met.		
b	Internal and/or external review			

	Guidepost	The fishery-specific management system is subject to **occasional internal** review.	The fishery-specific management system is subject to **regular internal** and **occasional external** review.	The fishery-specific management system is subject to **regular internal** and **external** review.
	Met?	Y	Y	N
	Justification	As discussed under Sia and in section 3.5.7, the SPRFMO has just completed its first external review in 2018 (Ridings et al, 2018). The Review Panel was made up of four international independent experts, two of which are nationals of SPRFMO Members with experience in the SPRFMO context and a thorough understanding of the SPRFMO Convention, and two external experts, among whom there is experience in relevant areas of science, fisheries and marine ecosystems management and legal matters, including compliance and enforcement issues. Furthermore, SPRFMO undertakes regular reviews of its CMM at its annual meetings, e.g. CMM 01-2019 is reviewed every year. The main national management bodies, such as the ministries of fisheries and subordinate bodies, review their achievements the preceding year when they produce plans and targets for the coming year. At EU level, the management system is occasionally evaluated by the European Court of Auditors (ECA). The ECA's role as the EU's independent external auditor is to check that EU funds are correctly accounted for, are raised and spent in accordance with the relevant rules and regulations and have achieved value for money. The fishery-specific management system is subject to various forms of internal self-evaluation within the national bodies of governance and within the SPRFMO (also see SI 3.2.4a above). SG 60 is met. These take place on a regular basis, and the system is also subject to external review, such as by the ECA, and recently for the SPRFMO. SG 80 is met. Since external reviews are not yet carried out on a regular basis (for the SPRFMO this is planned to take place every five years, which would constitute a regular external review, were it not for the fact that this was only the first), SG 100 is not met.		
References		Ridings, P. (Chair), A. Cole, L. Goldsworthy, S. Kaye, 2018; SPRFMO, 2015		
OVERALL PERFORMANCE INDICATOR SCORE:				**80**
CONDITION NUMBER (if relevant):				**-**

Appendix 2 Outcome RBF

Appendix 2.1 Productivity-Susceptibility Analysis (PSA)

Table 1.2.2.a. PSA Rationale Table

PI number	2.2.1	
Productivity		
Scoring element (species)	Chub mackerel (*Scomber japonicus*)	
Attribute	Rationale	Score
Average age at maturity.	Age at maturity <5 years FAO (2000) cites the species to reach maturity around the 2nd summer or 3rd year of life. This is corroborated by the known information on growth: Growth of the species is characterised as very fast in the first two years, manifested in a high growth rate (k). Fishes can reach 50% of the asymptotic length in this period, considering that L∞ are reported in the literature to be approximately 45 cm and longevity between 9 to 10 years (SPRFMO, 2007; Fishbase)	1
Average maximum age	< 10 years SPRFMO (2007) gives longevity between 9 to 10 years, which is similar to FAO (2000) (oldest fish found range between 8-11 years)	1
Fecundity	Spawn in several batches with 250 to 300 eggs per g of fish with the total number of eggs per female ranging from 100,000 to 400,000 (> 20,000 eggs per year) (Fishbase; FAO, 2000)	1
Average maximum size	Maximum length is about 50 cm (with Fishbase even citing 64 cm), while the most common lengths are around 30 cm (SPRFMO, 2007, Fishbase) (average maximum < 100 cm)	1
Average size at maturity	Maturity: L_m 26.1 (Fishbase) (average size at maturity < 40 cm)	1
Reproductive strategy	Spawn in several batches, broadcast spawner	1
Trophic level	Low, trophic level of around 3 (FAO, 2000), though 4.2 in a more recent study by Espinoza et al (2017)	3
Susceptibility		
Fishery only where the scoring element is scored cumulatively	[Insert list of all the fisheries impacting the given scoring element, as required in PF4.4.3].	
Attribute	Rationale	Score
Areal Overlap	There must be overlap, since the species gets caught. It is hard to estimate how high the overlap is. There is no distinct pattern in the catches: they	1

	can be caught throughout the whole area, throughout all seasons. However, the overlap is not deemed high, because in that case a higher %% of the catch would be chub mackerel. Given that the general distribution of chub mackerel seems to be more coastal (less oceanic) than jack mackerel, and given that by-catch is low and occurs only sometimes, the stakeholders agreed that areal overlap is expected to be 'low' (<10%)	
Encounterability	Encounterability: High, both jack mackerel and chub mackerel swim at the same depth	3
Selectivity of gear type <table><tr><td>a Individual < size at maturity are rarely caught</td><td>a Individuals < size at maturity are regularly caught</td><td>a Individuals < size at maturity are frequently caught</td></tr><tr><td>b Individuals < size at maturity can escape or avoid gear</td><td>b Individuals < half the size at maturity can escape or avoid gear</td><td>b Individuals < half the size at maturity are retained by gear</td></tr></table>	Selectivity: smaller fish are caught above the San Fernandez islands, but most catch is larger, so a. is not deemed to be frequently, possibly regularly (medium). As for size: Nothing smaller than 15-16 cm is landed (size derived from observer data). Size of the fish landed is determined by mesh size used. All vessels under certification use the same gear, with a mesh size of around 45-65 mm, though there are no technical regulations dictating mesh size for this fishery. All fish caught is landed. Given that the average size at maturity is around 30 cm, half the size at maturity would just be able to escape (medium)	2
Post capture mortality	All catches are retained: default score (high)	3
Catch (weight) only where the scoring element is scored cumulatively	UoA does not have catches at 10% or more of the total catch by weight of the UoA for this species, and there are no other MSC fisheries in the same area where chub mackerel is main.	

					Productivity Scores [1-3]								Susceptibility Scores [1-3]								
Family name	**Scientific name**	**Common name**	**Species type**	**Fishery descriptor**	Average age at maturity	Average max age	Fecundity	Average max size	Average size at Maturity	Reproductive strategy	Trophic level	Density Dependance	Total Productivity (average)	Availability	Encounterability	Selectivity	Post-capture mortality	Total (multiplicative)	PSA Score	**MSC PSA-derived score**	Risk Category Name	MSC scoring guidepost
Scombridae	Scomber japonicus	Chub mackerel	Non-invertebrate	mid-water ottertrawl	1	1	1	1	1	1	3		1.29	1	3	2	3	1.43	1.92	97	Low	≥80

Appendix 3 Conditions

Table 19. Condition 1

Performance Indicator	**PI 1.2.2** **There are well defined and effective harvest control rules (HCRs) in place**
Score	75
Rationale	SIa: *Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.* Generally understood HCRs are in place. SPRFMO is committed to recover the jack mackerel stock to MSY levels, through an adopted rebuilding plan with a specific **well-defined** HCRs to set the TAC. SG60 is met. Furthermore, the TAC has followed scientific advice provided by the SWG, which uses the rebuilding plan HCR to provide advice, and thus the HCR **is in place**. However, the HCR does not necessarily reduce the exploitation rate when PRI is approached. Exploitation rate is reduced when the stock is below 80% of B_{MSY} but only when the catch of current fishing mortality is below projected catch with the same stock biomass, if not current F is maintained. Furthermore, because stock size could be maintained at below 80% of B_{MSY} indefinitely, the HCR is not expected to keep the stock fluctuating at or above a target level consistent with MSY and both SG80 and SG100 are not met.
Condition	The client shall ensure by the fourth surveillance audit there are well defined HCRs in place that ensure that the exploitation rate is reduced as the PRI is approached and they are expected to keep the stock fluctuating around a target level consistent with (or above) MSY.
Milestones	*It is recognised the Client has limited ability directly to ensure the SG80 are met. The Client will need to work with the EU delegation to the SPRFMO Committee and through SPRFMO working groups on jack mackerel (e.g. through the Scientific Committee)* Year 1 (2021): At the first surveillance audit the client shall provide evidence to show they have advocated that the EU delegation to SPRFMO encourages SPRFMO to agree and adopt well defined HCRs that ensure that the exploitation rate is reduced as the PRI is approached and they are expected to keep the stock fluctuating around a target level consistent with (or above) MSY (score: 75) Year 2 (2022): At the second surveillance audit the client shall provide evidence to show that the EU delegation to SPRFMO has advocated and encouraged SPRFMO to agree and adopt well defined HCRs that ensure that the exploitation rate is reduced as the PRI is approached and they are expected to keep the stock fluctuating around a target level consistent with (or above) MSY. (Score: 75) Year 3 (2023): At the third surveillance audit the client shall provide evidence that SPRFMO Scientific Committee has developed and provided scientific advice to the Commission on well-defined HCRs that ensure that the exploitation rate is reduced as the PRI is approached and they are expected to keep the stock fluctuating around a target level consistent with (or above) MSY. (Score: 75) Year 4 (2024): At the fourth surveillance audit the client shall provide evidence to show that well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached and they are expected to keep the stock fluctuating around a target level consistent with (or above) MSY. (Score: 80)

Client action plan	During the annual surveillance audits we will provide evidence in relation to our activities to encourage the EU delegation to SPRFMO to adopt well-defined HCRs that ensure that the exploitation rate is reduced as the PRI is approached and which are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, taken into consideration the following quote from SPRFMO SC7-Report (point 226): *Following the decision from the SPRFMO Commission in 2019 (COMM7), the SC has initiated a process for the revision of the Harvest Control Rule. It is anticipated that preliminary results of an evaluation of an updated management strategy will be available at the 2021 Commission meeting.* We will liaise for that with the scientists of WMR, the Chief Scientific Officer of the Pelagic Freezer-trawler Association, who has been elected this year as the Jack mackerel Working Group Chairperson and our colleagues of the Chilean industry. At the **first annual audit** we will present the auditors with evidence of the relevant communications between us and the EU Member States, between us and the European Commission and between us and the Jack mackerel Working Group Chairperson. At the **second annual audit** we will present the auditors with evidence of the relevant communications between us and the EU Member States, between us and the European Commission and between us and the Jack mackerel Working Group Chairperson. At the **third annual audit** we will present evidence to the auditors that the work of the Jack mackerel Working Group has led the SC to make recommendations to the Commission on adopting well defined HCRs that ensure that the exploitation rate is reduced as the PRI is approached and which are expected to keep the stock fluctuating around a target level consistent with (or above) MSY. At the **fourth annual audit** we will present evidence to the auditors that the Commission of the SPRFMO has approved a resolution on the application of well-defined HCRs that ensure that the exploitation rate is reduced as the PRI is approached and which are expected to keep the stock fluctuating around a target level consistent with (or above) MSY.
Consultation on condition	*Consultation with SPRFMO through proper channels is required.* Following consultation with Niels Hintzen from Wageningen Marine Research, and vice-chairman of the Scientific Committee of the SPRFMO, he confirmed the following (also noting the independent position of WMR as research institute): **From:** Hintzen, Niels <niels.hintzen@wur.nl> **Sent:** Monday, 27 January 2020 09:07 **To:** Cora Seip <cseip@controlunion.com>; Martin Pastoors <mpastoors@pelagicfish.eu> **Cc:** rba@pp-group.eu **Subject:** RE: client action plan Hallo Cora, WMR werkt altijd mee als kennisleverancier aan MSC trajecten. Maar wij nemen daar een strikt onafhankelijke positie in, het onderschrijven van een Client action plan past daar dan ook niet in.

	Uiteraard heb ik er geen problemen mee om aan te geven dat WMR actief werkt aan de HCR van Jack mackerel. In my role as scientist of the European delegation to SPRFMO, I am committed to participate in the assessment of Jack mackerel, provide the knowledgebase to sustainable manage Jack mackerel through management plan development and addressing annual requests for catch advice. This requires an active collaboration with all relevant stakeholders such as industry and NGOs on e.g data sharing. Met vriendelijke groet, Niels And following consultation with Martin Pastoors from the Pelagic Freezer-trawler Association and chairman of the SPRFMO Jack mackerel working group, he confirmed the following: **From:** Martin Pastoors <mpastoors@pelagicfish.eu> **Sent:** Monday, 27 January 2020 09:20 **To:** Cora Seip <cseip@controlunion.com>; Hintzen, Niels <niels.hintzen@wur.nl> **Cc:** rba@pp-group.eu **Subject:** RE: client action plan In my role as chair of the SPRFMO Jack Mackerel Working Group, I am committed to participate in the assessment of Jack mackerel, provide the knowledgebase to sustainable manage Jack mackerel through management plan development and addressing annual requests for catch advice. This requires an active collaboration with all relevant stakeholders such as industry and NGOs on e.g data sharing. Groet, Martin

Appendix 4 Peer Review Reports

Peer reviewer 1

Summary of Peer Reviewer Opinion

Is the scoring of the fishery consistent with the MSC standard, and clearly based on the evidence presented in the assessment report?	Yes	The assessment report seems to be adequate and in general, it provides the information necessary to justify the scores assigned to the PIs. However, referencing needs to be improved through the text. This is a pelagic fishery with little to no impact on primary and secondary species, habitat and ecosystem. The target stock has increased in recent years and the managing of the fishery seems to be improving. Therefore, I agree that the fishery meets the criteria for MSC certification. However, I think that the MSC standards and criteria has been incorrectly applied in some P.Is (see my comment in 2.1.2 and 2.1.3). I also have concerns about some of the scores given by the assessment team in P1, P2 and P3 (please, see my comment in the correspondent sections). I consider that a new condition is necessary for 1.2.1(f).	Thank you. The specific comments will be addressed under the appropriate PIs.
Are the condition(s) raised appropriately written to achieve the SG80 outcome within the specified timeframe? [Reference: FCP v2.1, 7.18.1 and sub-clauses]	Yes	The condition set seems to be adequate, in line with the outcomes expected	Thank you.
Is the client action plan clear and sufficient to close the conditions raised?	Yes	As recognised in the report, the Client has limited ability to ensure that the SG80 is met, apart of putting pressure on the EU delegation to the SPRFMO Committee, which makes difficult to fulfill this condition in the specified timeframe. It is good that the SC has initiated a process for the revision of the Harvest Control Rule. However, FCR V2.0 7.11.3 indicates:	Thank you. In relation to FCP 7.11.3.1, there is no additional time (not money) investment asked of research agencies and authorities. The CAP lies more along the lines of cooperation on the issue of the HCRs. Through emails between the client and the research institutes, we had taken note of the willingness to cooperate with the client,

[Reference FCR v2.0, 7.11.2-7.11.3 and sub-clauses]		"The CAB shall not accept a client action plan if the client is relying upon the involvement, funding and/or resources of other entities (fisheries management or research agencies, authorities or regulating bodies that might have authority, power or control over management arrangements, research budgets and/or priorities) without: 7.11.3.1 Consulting with those entities when setting conditions, if those conditions are likely to require any or all of the following: a. Investment of time or money by these entities. b. Changes to management arrangements or regulations. c. Re-arrangement of research priorities by these entities.". It is unclear to me if the CAB has consulted with these agencies.	and thus not consulted separately on the issue. Following this comment, we have asked for explicit confirmation of cooperation. The responses (all positive) are included in the condition-table.
Optional: General Comments on the Peer Review Draft Report (including comments on the adequacy of the background information if necessary)	N/A	Page 7. In the summary section, the sentence "*There are indications that the stock is rebuilding with stock biomass increasing since 2010 and in 2018 to be near BMSY* " is maybe a bit repetitive as this information is already provided at the beginning of the paragraph. Page 16. I have not found Reference SPRFMO 2018a anywhere. Page 24 and 43. In the KLTL section the team explains: *'In the South Pacific upwelling system anchovy is the dominant LTL species, and as such transfer a very large proportion of the total primary production to higher trophic level*s' but this statement is not referenced. It is not completely true that anchovy is 'always' the dominant LTL species in the Humboldt ecosystem, it depends on the environmental conditions and some other species such as sardine, lantern fish (Vinciguerria sp.) and Munida sp. may play a similar role as KLTL. Page 26. It is good that observer coverage in this fishery seems to be adequate. Many fisheries in the world have a much lower coverage. Page 27. There are a couple of reference errors in this page. I find interesting that no catch of jumbo flying squid is reported in this fishery. Page 41. The statement: "It *(Humboldt current)* accounts for roughly 18-20% of the total worldwide marine fish catch" is not referenced.	p.7: double sentence is removed; p.16: SPRFMO 2018a was included in reference list as SPRFMO, 2018. This has been amended; p. 24, 43: this has been changed to indicate anchovies is one of the main LTL species, together with together with *i.a*. lantern fish (*Vinciguerria sp*.) and squat lobsters (*Munida sp.)* with reference to the figure shown (Espinoza et al., 2017); p. 26?: no response required; p27: references fixed p.41: this was found in the project data from One Shared Ocean (Open Ocean and LMEs assessment, supported by UNESCO and UNEP, but not further referenced. Sentence has been removed; p. 42: 'Considering the species has no major predators' is from the reference as stated: Hintzen et al, 2013. The study

		Page 42. "*Considering that the species has no major predators in the bulk of its distribution area, the main limiting factor to its distribution and abundance is prey availability*". This statement is not referenced either. Later in the report is stated: "*Other factors possibly influencing the habitat limits are probably biotic parameters (predation/competition)*". I am not sure if these two statements are a bit contradictory. Page 46. In this section the team states: "*there is no undersized fish in this fishery, because there is no minimum conservation reference size. All fish is therefore used*.". Is this statement true? There is not a minimum marketable size for this fish?. Page 62. Again a series of missing references/errors. Please correct them. Page 66. I think it is very interesting that this fish is mainly sold in Nigeria and Angola for smoking it. Which I find strange is that the clients there are interested in MSC certified fish. Page 68. I do not understand this sentence: "*All boxes are labelled indicating MSC or non-MSC. Under normal circumstances, the whole container would contain MSC-catch, but even if MSC and non-MSC catch would be places in container, there would be no risk of mixing because of the labelling*". It is the first time that this fishery seeks certification, isn't it? So, which MSC-catches do they currently have?. Page 69. "*There are no separate holds on the ship, but there are separate regions per holds, and separation nets to keep MSC and non-MSC separate, and alert the crew at offloading that different product is being handled*". I worked some time aboard fishing vessels and I have always found 'amazing' (Sorry, I cannot find the right word) that just a net is considered adequate to separate MSC and non-MSC products. Page 157 The RBF table is cut and it cannot be checked.	states that though Jack mackerel encounters no major predators in the bulk of its distribution area, and the main limiting factor is prey availability, the habitat limits could still be influenced by predation in areas where they do encounter e.g. tuna, giant squid an cetaceans. We do not see these as contradictory. p.46: yes. There is no legal minimum size, and the fishery sells its fish to an African market where all sizes have value; p. 62: broken reference links restored; p.66: clients certify for MSC for a variety of reasons, not just selling MSC product e.g. public image, or improving their sustainability. p. 68: The sentence has been amended to reflect the client intent on future practices (though the methods are based on other fisheries already certified by the same client); p. 69: since all boxes are labelled, there is no need for physical dividers, although these do make offloading and sorting easier; p.157: RBF table amended and should be legible.

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	CAB Response Code
1.1.1	Yes	Yes	NA	SIb. Overall PI score 70 agreed. The stock is clearly not at or fluctuating a level consistent with MSY. Therefore, SI 1.1.1.1b does not meet the SG80.	No comments needed	

1.1.2	Yes	No (non-material score reduction expected)	NA	SIb. I understand the team rationale but I would suggest a more precautionary score in this P.I. The SC indicates :" *Short term projections were carried out using the updated 2018 assessment outcomes, evaluating, among others, a status-quo fishing mortality scenario for 2019 as well as a 15% increase in TAC. Both show high probability of reaching BMSY by 2020*". However, at some point in the stock assessment section of the report it is stated: "*Projections using recruitment levels from 2000-2015 (a period of lower productivity compared to that prior to 2000; Model 1.5) indicate that the biomass is expected to increase over the next 5 years but then stabilize at a point below the provisional BMSY of 5.5 million tonnes (Figure 7; SPRFMO, 2018a)*". If we consider that 'rebuilding the stock' means reaching BMSY, it is not totally clear (or at least there are some uncertainties) that the current rebuilding strategies will be enough to rebuild the stock to this MSY level. Therefore, I would suggest a score of 80 here.	The SI can be scored based on strong evidence of recovery or modelling results. The assessment team consider that there are already strong evidence of stock rebuilding and F is highly likely to be below FMSY meeting SA2.3.4.2 – *Current F shall be "highly likely" to be less than FMSY to justify a 100 score*. Although simulations under precautionary scenarios of recruitment indeed show recovery to a point below Bmsy, considering that the TAC is set following advice but it is not used while F is decreasing, it is also likely that the predictions are underestimation of stock recovery level. Therefore the assessment team relies on the strong evidence of recovery shown and continues to score this SI at SG100.	Not accepted (no score change)
1.2.1	Yes	No (non-material score reduction expected)	NA	SIa. I do not agree with this score. The mackerel biomass is recovering from its previous collapse, but there is not fully known whether the recovery has been solely due to the adequateness of the harvest strategy (which has not been fully evaluated), or to some other factors (favourable environmental conditions which improved recruitment), or a combination of both. The stock has not been fully characterized, which I consider it is a weakness that prevents an adequate management. Moreover, through the text, the team indicates	The reviewer is correct. The assessment teams agrees there is inconsistency between the score given in this SIa and the scores regarding the HCR. The assessment teams therefore has lowered the score for this SI to SG80 only, as suggested by the reviewer, and amended the rationale.	Accepted (non-material score reduction)

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	CAB Response Code
				that the current HCR could maintain the stock at below 80% of BMSY indefinitely. Therefore, I do not agree that the current harvest strategy is designed to achieve stock management objectives reflected in PI 1.1.1 (which makes reference to BMSY).		

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification **Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.** **Note: Justification to support your answers is only required where answers given are 'No'.**	CAB Response	CAB Response Code
1.2.1	Yes	No (material score reduction expected to <80)	NA	SIf. I am a bit worried about the statement made by the team: "*Slippage also does not occur, or very rarely*". Is it based on the information provided by the observers? What does it mean very rarely? In page 46 the team indicates: ""*there is no undersized fish in this fishery, because there is no minimum conservation reference size. All fish is therefore used*.". Is this statement true? There is not a minimum marketable size for this fish? In the Chilean assessment is indicated that: "*The UoA has a monitoring system that assists the captain to avoid areas with high concentration of juvenile (www.fishtrack.com), which is the main reason for discarding due to* ***the lack of market value for smaller fish***" and a score of 75 is given. What is different in this fishery? The rationale used by the team does not justify the"*regular review* of *alternative measures to minimise UoA-related mortality*". Therefore, I consider that SG80 is not met.	Slippage does not occur in the fishery as such, but it may very rarely occur due to safety (large catch with bad weather). The information is based on observers reports, the characteristics of the vessels and the knowledge of the fishery gathered during the site visit. The safety reason has been added to the scoring table text. Regarding minimum size, there is no legal length requirements. The fishery sells its fish to an African market where all sizes have value. Therefore the Chilean fishery justification is not applicable. Nevertheless, note that this SI was reconsidered by the assessment team following PR and reassessed as not applicable. (this is a change following peer review).	Not accepted (no score change)

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification **Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.** **Note: Justification to support your answers is only required where answers given are 'No'.**	CAB Response	CAB Response Code
1.2.2	Yes	Yes	Yes	SIa. Score agreed but I find the rationale used by the team unclear: "*Generally understood HCRs are in place. SPRFMO is committed to recover the jack mackerel stock to MSY levels, through an adopted rebuilding plan with a specific* ***well-defined HCRs*** *to set the TAC.* ***SG60 is met***". Well-defined refers to SG80. So, I understand that you are meaning that this well-defined HCRs are not in place yet. Is that correct? Please, clarify that.	Text clarified: The HCR is also well-defined, while furthermore, the TAC has followed scientific advice provided by the SWG. Rationale has been amended.	Accepted (no score change)
1.2.2	Yes	No (non-material score reduction expected)	Yes	SIb. I consider that the score given by the team is too high. The SC states: ""*The SC recommended* ***a revision of the Harvest Control Rule*** *and requests the Secretariat seek funds for reevaluating the current management strategy* ***and develop an alternative that is robust to assessment uncertainties***". So, it seems that the SC consider that the HCR are not so robust to the main uncertainties. Therefore, a score of 80 here would be enough.	The reviewer is correct. The assessment teams agrees that uncertainties still remain in the HCR and thus the score and rationale for this SI was changed to SG80 only.	Accepted (non-material score reduction)

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	CAB Response Code
1.2.3	Yes	Yes	NA	Score agreed. No further comments.	No comments needed	
1.2.4	Yes	No (non-material score reduction expected)	NA	I find difficult to justify a 100 score in this P.I. taking into consideration that the structure of the stock is unknown and up to five separate stocks have been suggested. I consider that it is a quite important point which should be investigated further to improve management. In my opinion, a score of 80 in 1.2.4a would be enough.	The reviewer concerns regarding stock structure are understandable and indeed should be further investigated. However, considering that the stock assessment takes into account all possible stock structures and produces similar results, the assessment team believes the scoring of 100 for this PI is indeed justified. The issue of uncertainty regarding stock structure was considered at the previous score PI1.2.3. which the reviewer agreed.	Not accepted (no score change)

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	CAB Response Code
2.1.1	Yes	No (non-material score reduction expected)	NA	No primary species identified. However, FCR v2.0 SA3.2.1 indicates: *'If a team determines that a UoA has no impact on a particular component, it shall receive a score of 100 under the Outcome PI*'. Therefore, I Think that the NA 'score' given by the team is incorrect.	This has been amended following SA 3.2.1, and the automatic score of SG100 has been given.	Accepted (non-material score reduction)
2.1.2	No (non-material score reduction expected)	No (non-material score reduction expected)	NA	No primary species identified. Are you sure that when no primary species exists in the fishery, the management and information section does not need to be assessed? FCR v2.0 SA3.3.1 indicates: '*If a team determines that the UoA has no impact on a particular component and has therefore scored 100 under the Outcome PI, the Information PI shall still be scored*'. In the Chilean fishery, for example both issues were assessed. Please, check that.	This has been amended and the SG100 level has been considered. Rationale has been added.	Accepted (non-material score reduction)

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	CAB Response Code
2.1.3	No (non-material score reduction expected)	No (non-material score reduction expected)	NA	No primary species identified. Are you sure that when no primary species exists in the fishery, the management and information section does not need to be assessed? FCR v2.0 SA3.3.1 indicates: 'If a team determines that the UoA has no impact on a particular component and has therefore scored 100 under the Outcome PI, the Information PI shall still be scored'. In the Chilean fishery, for example both issues were assessed. Please, check that.	This has been amended. Rationale has been added.	Accepted (non-material score reduction)
2.2.1	Yes	Yes	NA	SIa. Score agreed, see my comments in the RBF section. I consider a bit worrying the statement of the team indicating that "*participation in the RBF workshop was limited*". A limited participation is maybe not the best scenario for conducting an adequate RBF but with no other available information, I understand that the scores given there are correct.	We do find it a pity we did not get more participants, but do believe that the level of expertise of the people involved in the RBF (and later consulted on details for e.g. Chub mackerel) was more than suffucient to come to a conclusion.	

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	CAB Response Code
2.2.1	No (non-material score reduction expected)	Yes	NA	SIb. Rationale agreed. However, you should not use 'second hand' references such as fishsource.org for your rationale. Original articles/reports should be used to reference the information adequately. That information shown in fishsource is probably extracted from an IFOP report. Error reference.	reference amended	
2.2.2	Yes	Yes	NA	SIa. In my opinion the MSC definitions of 'measures', 'partial strategy', etc can be found in the MSC Fisheries Certification Requirements (FCR) v 2.0 standard and it is not necessary to reproduce them here.	This is where some peer reviewers and other readers opinions differ, and definitions have been added for legibility.	Not accepted (no score change)
2.2.2	Yes	Yes	NA	SIb. There is a problem with the formatting of the text which makes very difficult to read it. Please correct that. Score agreed.	text amended	Accepted (no score change)

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	CAB Response Code
2.2.2	Yes	Yes	NA	SIe. In this case, I would include what you mean for '*second part of definition in FCR v2.0 SA3.1.6*'. I understand that there is not '*unwanted bycatch*' because the fishermen use the caught chub mackerel. Is that correct? But the text as it is written is unclear.	text clarified to reflect that the caught chub mackerel is used and therefore not 'unwanted bycatch'.	Accepted (no score change)
2.2.3	Yes	Yes	NA	Score agreed. No further comments.	no response required	

2.3.1	Yes	Yes	NA	Score agreed. I find interesting that with so many birds (albatrosses, petrels, etc) around the vessels, very few interactions have been reported by the fishery. I think that the explanation given by the stakeholders recognizing the risk of missing interactions since the observers are not always on deck can be a plausible explanation for this.	yes, but we account for this as well in the rationale: 'there is the risk of missing interactions since the observer is not always on deck, but below deck measuring the catch. The Scientific Committee also recognized that the level of observer coverage influences the robustness of the data collected. The SC has advised the Commission that coverage of 20% or more may be required to robustly estimate the incidental mortality of Seabirds, Marine Mammals, and Other Species of Concern in some fisheries. The fishery under assessment currently has an observer coverage of 24% of fishing days. In 2018, at the time of writing the annual report (July 2018; Wójcik et al., 2018) two out of three trips were covered by observers (see section 3.4.2.1). Over the years 2015-2017 analysis showed that around 35% of the catch was covered. The fishery under assessment therefore meets the advised 20% observer coverage already.	Not accepted (no score change)
2.3.2	Yes	Yes	NA	Score agreed. What means "*such as deep-water trawls targeting bathymetric **features***"?	this is wording in the CMM (09-2017) and isn't specified, but since this references the deep-water fishery (targeting orange roughy), we can assume this means e.g. seamounts.	
2.3.2	Yes	Yes	NA	SIb. The team states: "*nor was mortality of seabirds observed as a result of 'contact' with the vessel and/or the fishing gear*". In the	The reports state that though the impact was classified as 'heavy impact', the birds sat on the water afterwards	Not accepted (no score change)

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	CAB Response Code
				introduction of the report, you reported some "heavy" interactions of seabirds with the gear and the bafflers. I think that it should be considerered as seabird mortality.	(did not fly away directly). No direct mortality was observed (though the observers note that in one case damage to a wing might have occured after impact on the baffler. This could have led to the bird's death afterwards).	

2.3.2	No (non-material score reduction expected)	Yes	NA	SId. I do not agree with the justification given by the team here: "*offshore location of the fishery is one of the measures thought to result in a low level of interaction with ETP bird species*". It would be maybe valid for more coastal species but as indicated in the report, thousands of albatrosses and petrels move around the vessels at the time of the catch. And again : "*There was no record of any ETP species in the catch composition, nor were bird mortalities observed over a period of several years (2015-2018)*.". Is this statement correct? What about the "heavy" interactions?	The sentence about the offshore location it ETP species is amended, this was meant to refer to ETP species other than birds: At the site visit, the possibility of interactions with mammals and turtles was discussed with stakeholders and the consensus was that there are no interactions with mammals, as the fishery takes place too far away from the shore, nor are there interactions with turtles, as the fishery takes place too far south. The conclusions about no observed mortality come directly from the reports referenced (Raczynski, T. and Ad Corten, 2016; Wojcik, I., A. Corten, 2017; Wójcik I., Janusz J. 2018a). The distinction they make between 'light' and 'heavy' impact is whether the birds continues flying after impact (light) or sits on the water/the vessel. Mortality after the fact is not accounted for in the reports, some observations of birds recovering after impact and flying away are detailed.	Accepted (no score change)
2.3.2	No (non-material score reduction expected)	No (non-material score reduction expected)	NA	SIe Mortality of seabirds, although low, has been observed in the fishery. Moreover, in Rackzynsi & Corten 2016 is indicated: "*In the opinion of the authors, bird bafflers on pelagic trawlers might increase bird mortality rather than reduce it*.". Therefore, " *the potential effectiveness and practicality of alternative measures*" has been really tested in this fishery?	The rationale has been amended. CMM 09-2017 prescribes the implementation of seabird mitigation measures, and though it the use of the bird bafflers to minimize the bycatch of seabirds in the SPRFMO Convention Area. The bird bafflers are therefore part of the strategy as scored under 2.3.2a. Though no direct mortality has been observed,	Accepted (non-material score reduction)

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	CAB Response Code
					indirect mortality as a result of the impact is possible.	
2.3.3	Yes	Yes	NA	Score agreed. No further comments.	no response required	
2.4.1	Yes	Yes	NA	The impact of this pelagic fishery on the habitat seems to be null. Score agreed.	no response required	
2.4.2	Yes	Yes	NA	Overall PI score agreed. No further comments.	no response required	
2.4.3	Yes	Yes	NA	Score agreed. There is a typo there, SG100 is not met but Y has been selected in the guidepost. Please, correct that.	amended	
2.5.1	Yes	Yes	NA	Overall PI score agreed. No further comments.	no response required	

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	CAB Response Code
2.5.2	Yes	Yes	NA	Score agreed. The impact of the fishery on the ecosystem seems to be low although more information is necessary about the impact of removing all these volume of the target species from the ecosystem. An ecosystem-based management strategy has not yet been implemented.	no response required	
2.5.3	Yes	Yes	NA	Score agreed. The justification given in 2.5.3d could be maybe developed a bit further explaining to which components and elemenst it refers.	amended to note target species and bycatch irt trophic structure, and habitat impacts.	Accepted (no score change)
3.1.1	Yes	Yes	NA	Overall PI score agreed. No further comments.	no response required	
3.1.2	Yes	Yes	NA	Overall PI score agreed. As in many other management systems in the world, it is unclear how the information collected is used by the management authority.	no response required	

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	CAB Response Code
3.1.3	Yes	Yes	NA	Overall PI score agreed. No further comments.	no response required	
3.2.1	Yes	Yes	NA	Overall PI score agreed. No further comments.	no response required	
3.2.2	Yes	Yes	NA	Well, it is difficult to justify that "*Decision-making processes respond to **all issues***" but it seems that by the information given that the authorities' response is transparent and timely. Therefore, score agreed.	no response required	

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	CAB Response Code
3.2.3	Yes	Yes	NA	Overall PI score agreed. It seems that monitoring and enforcement at sea needs to be improved in this fishery. Maybe Ridings et al., 2018 conclusion is relevant here: "*SPRFMO has a robust suite of measures and is working diligently to implement its monitoring, control and surveillance (MCS) measures. While some improvements could be made to the existing MCS measures, the Commission should focus on fully implementing the MCS measures it has adopted. The one exception to this is the need for a SPRFMO-specific high sea boarding and inspection scheme. Most pressing, however, in order to fully implement the SPRFMO Observer Programme and make use of the MCS data that is collected, a dedicated Secretariat staff member in the professional category to undertake the compliance function is needed.*"	this was discussed at the site visit. The Chilean Navy is responsible for controls at sea. Currently, boarding of the vessel to carry out inspections is not an option in the SPRFMO area. There are not enough provisions yet to make boarding safe. This is part of the ongoing discussions with SPRFMO, and noted in the rationale. However, the stakeholders interviewed with regards to control and enforcement also noted that so far, there have not been issues with the EU vessels.	Not accepted (no score change)
3.2.4	Yes	Yes	NA	Overall PI score agreed. No further comments.	no response required	

RBF Comments

PI	RBF Scoring	RBF Information	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
2.2.1 (RBF)	Yes	No (no score change expected)	I consider a bit worrying the statement of the team indicating that *"participation in the RBF workshop was limited*". A limited participation is maybe not the best scenario for conducting an adequate RBF but with no other available information, I understand that the scores given there are correct but information about the individuals/organizations who/which where present/consulted during the RBF should be included. FCR v2.0 GPF2.3.3.1 indicates: "*Stakeholder consultation with a suitably broad stakeholder group with a good balance of knowledge about the fishery is critical in a risk assessment, particularly at the qualitative (CA/SICA) level of an assessment. Stakeholders provide expert judgement, local knowledge, hands-on experience, fishery-specific and ecological knowledge and raise issues that may not be covered in material provided to the team. The group should include at least fishers, scientists, conservationists, indigenous representatives, managers, local residents, fish processors and others as necessary.*"	We did invite a range of stakeholders to the RBF, covering the range of expertise as indicated by GPF2.3.3.1. We do find it a pity we did not get more participants, but also believe that the level of expertise of the people involved in the RBF (and later consulted on details for e.g. Chub mackerel) was more than sufficient to come to a conclusion. The people involved were scientists from WMR and PFA, and conclusions reached at RBF were later checked with the client and an expert on chub mackerel. The expertise of the people involved has been added to the RBF-process, and Table 15 provides names and organizations of individuals involved in the RBF.	Accepted (no score change)

PI	RBF Scoring	RBF Information	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
2.2.1 (RBF)	No (no score change expected)	No (no score change expected)	As indicated by the team, a recent study have shown that jack mackerel has a predicted high trophic position of 4.2, being a top predator (Espinoza et al., 2017). Therefore, trophic level could be scored as 3 (low productivity). In my opinion, some of the justifications (areal overlap, selectivity) given in the susceptibility analysis should be improved. The team indicates: "Nothing smaller than 15-16 cm is landed". Is that because it is not caught or because it is discarded and not landed?	Trophic level has been changed, to be precautionary. This changes the RBF score to 97. Size of the fish landed is determined by mesh size used. All vessels under certification use the same gear, with a mesh size of around 45-65 mm, though there are no technical regulations dictating mesh size for this fishery. All fish caught is landed.	Accepted (no score change)

Peer reviewer 2

Summary of Peer Reviewer Opinion

Is the scoring of the fishery consistent with the MSC standard, and clearly based on the evidence presented in the assessment report?	No	Importantly, I find that the differences of P1 scores (1.1.1/1.1.2 and 1.2.1) with the now-certified Chilean fishery need to be resolved for PIs1.1.1/1.1.2 according to the requirements in Annex PB and explained in a bit more detail for PI1.2.1. Details for these and other PIs next page.	The harmonization has been further elaborated on.
Are the condition(s) raised appropriately written to achieve the SG80 outcome within the specified timeframe? [Reference: FCP v2.1, 7.18.1 and sub-clauses]	Yes	Only one condition is raised, regarding a single SI (PI 1.2.2 SIa). The condition milestones are clear.	Thank you. No response required
Is the client action plan clear and sufficient to close the conditions raised? [Reference FCR v2.0, 7.11.2-7.11.3 and sub-clauses]	Yes	The client action plan matches the milestones and appears realistic in the timeframe proposed.	thank you. No response required.
Enhanced fisheries only: Does the report clearly evaluate any additional impacts that might arise from enhancement activities?		N/A	
Optional: General Comments on the Peer Review Draft Report (including comments on the adequacy of the background information if necessary)	N/A	A map illustrating the distribution of the stock and activity or catches of the vessels in the UoA would be useful in section 3.2 Overview. Minor edits needed in addition to some indicated for the scoring rationales: A) References SPRFM0, 2018**a** (pages 16 to 22) is missing from the list of refs.; table 5 caption p.23, reference to SPRFMO, 2013 not in the list; SPRFMO, 2014b does not correspond to that indicated in the list. All refs would need to be double-checked.	Thank you. Minor edits are made: A) SPRFMO 2018a was included in reference list as SPRFMO, 2018. This has been amended; p.23 SPRFMO, 2013 added to reference list;

		B) Formatting pbs: page 102 and pages 27, 62, 69, 100 and 107 ref. links are broken; page 61 Table 13: the Chilean fishery (Lloyd's Register) was certified in April 2019 but Table 14 does not provide the final scores. C) Additional spellcheck needed: for ex p82 bottom line: TACs "greed"... have "reduced"; p156 bottom right "gets" instead of "gest" and next page "chub" instead of "cub"	SPRFMO, 2014b checked. B) broken links have been restored; p.61, table 14 has been updated to reflect certification and final scores. C) spellcheck has been carried out.

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	CAB Response Code
1.1.1	Yes	Yes	NA	Clear rationale, score agreed. However, the lack of harmonisation with the Chilean fishery needs to be explained in more detail than just "a "different perception of the stock between years".	More text added to the harmonization summary.	Accepted (no score change)
1.1.2	Yes	Yes	NA	Clear rationale, score agreed.	no response required	
1.2.1	No (non-material score reduction expected)	No (non-material score reduction expected)	NA	Regarding SI(f), the case is not clearly made that there are no discards/ slippage from the UoA at all, and therefore the SI(f) is scored, which is logical. But no information is provided regarding a "**biannual"** review, therefore SG100 cannot be met.	On review of PR1 and PR2 comments the team reevaluated the scoring of this issue and determined that the definition in SA3.1.6 is not met. Therefore this SI is not applicable as there are no discards: N/A score changed in scoring table.	Accepted (non-material score reduction)

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	CAB Response Code
1.2.2	Yes	No (non-material score reduction expected)	Yes	Clearly explained, score agreed for all SI except for SI(b) SG100: the fact that "the TACs set have not been exhausted" could also be an indication that the HCRs are unrealistic and there are fewer fish than expected. Therefore that does not constitute a clear indication. Only SG80 would be met Please note the condition number is not indicated.	Correct although it refers to SI(c). Text reworded to make the point that indeed the TAC is realistic because it follows a precautionary advice (following the justification provided in SI(b)).	Accepted (non-material score reduction)
1.2.3	Yes	Yes	NA	Score agreed.	no response required	
1.2.4	Yes	No (non-material score reduction expected)	NA	SI(e) No reference provided for an external peer review of the stock assessment, in the scoring table or the background section. SG100 may not be met.	Reference of the invited expert name and report added.	Accepted (no score change)

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	CAB Response Code
2.1.1	Yes	Yes	NA	Reference MSC Guidance to justify Not Applicable?	This has been amended following SA 3.2.1, and the automatic score of SG100 has been given.	Accepted (non-material score reduction)
2.1.2	Yes	Yes	NA	Reference MSC Guidance to justify Not Applicable?	This has been amended and the SG100 level has been considered. Rationale has been added.	Accepted (non-material score reduction)
2.1.3	Yes	Yes	NA	Reference MSC Guidance to justify Not Applicable?	This has been amended. Rationale has been added.	Accepted (non-material score reduction)
2.2.1	No (no score change expected)	Yes	NA	SI(a) Justification from the PSA result is missing to justify SG60 and SG80. What main species? what is the PSA score? also formatting pbs. page 99 and page 158.	details and PSA score added, formatting amended	Accepted (no score change)

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	CAB Response Code
2.2.1	No (no score change expected)	Yes	NA	SI(b) Elements of information regarding the state of minor species (if known) would have been more pertinent than just on their spatial distribution. see remark for 2.2.3 below	agreed, but due to the fact that the catches of slender tuna, pomfret and yellowtail amberjack are very incidental and do not occur each year (none of these species have been caught in the last two years) and the uncertainty in the available information as evidenced by the information on rays bream, the team chose to only include 'main' species in the PSA and thereby use the default score of SG80 for PI 2.2.1. Due to the uncertainties in information as presented above, the team opted to only consider 'main' species in the PSA analysis.	Not accepted (no score change)

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	CAB Response Code
2.2.2	Yes	Yes	NA	SI(a) there is no need to repeat all MSC definitions. SI(b) formatting pb.	this is where some peer reviewers differ, and definitions have been added for legibility. Formatting amended	Accepted (no score change)

2.2.3	No (scoring implications unknown)	Yes	NA	No information is given in the background section or scoring tables about the magnitude of the Pacific Chub mackerel (*Scomber japonicus*) biomass or other landings. A clear statement on the quantities taken by this fishery compared to the total landings will help justify the scores for this only main sp. From the SPRFMO, see Fig 3.1: https://www.sprfmo.int/assets/2019-Annual-Meeting/COMM-7/Info/COMM7-Inf01-rev3-Data-Submitted-to-the-Secretariat-16July19.pdf	background on total catches of chub mackerel was included in the rationale for 2.2.2: Since the SPRFMO members do not have to report on their chub mackerel catches, it is difficult to obtain a full view of landings. From the countries that do report their catches in similar fishing areas off the coast of Chile (Chile, Russia, Korea and the EU), the EU catches are between 0.2 % and 2.6 % of the total catches of chub mackerel in the SPRFMO area (2015-2018, based on observer reports submitted to the SPRFMO). The reference provided shows that over the last 10 years the (reported) catches of chub mackerel in the SPRFMO area made up around 3.4% of the total catches in the jack mackerel fisheries (SPRFMO, 2019l).	Accepted (no score change)
2.3.1	No (no score change expected)	Yes	NA	The paragraph "As discussed.. With a broken ref. link for SI(b) relates more to the information PI2.3.3 Information on the status of potentially impacted ETP species (some given in section 3.4.3) need to be invoked to justify the scores on likely impacts, however small they may be.	broken link repaired. Information on status has been added to the rationale.	Accepted (no score change)
2.3.1	No (no score change expected)	Yes	NA	A table of the scores, by ETP sp./scoring element presented after the scoring table would make for a clearer rationale.	as stated under 2.3.1b: In this evaluation ETP species have not been treated as individual elements, as the issues considered	Not accepted (no score change)

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	CAB Response Code
					apply to all those listed in section 3.4.3 equally.	
2.3.2	No (no score change expected)	Yes	NA	SI(a) there is no need to repeat all MSC definitions. Please note the EU is party to ACAP, as fishing is on the High Seas, this is a key 'national' level. Given that the present bird scaring devices are suspected of causing more harm than good for this fishery, a recommendation could be that this is investigated at fishery level with an objective to adapt the SPRFMO CMM accordingly within the certification period.	noted and included. Review of the measures to prevent impact on seabirds is already included in CMM 09-2017, which notes: The Scientific Committee will annually review any new information on new or existing mitigation measures and on seabird interactions from observer programmes or other research and provide advice to the Commission on the need to implement particular measures for specific gear types or fisheries, or make other amendments to this Measure.	Accepted (no score change)

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	CAB Response Code
2.3.2	No (no score change expected)	Yes	NA	SI(d) the "offshore location" of the fishery would minimise potential interactions with sea lions, not with albatrosses.	this has been clarified	Accepted (no score change)
2.3.3	No (scoring implications unknown)	No (scoring implications unknown)	NA	References to information on the status of potentially impacted bird species are missing from the rationale.	references included	Accepted (no score change)
2.4.1	Yes	Yes	NA		no response required	
2.4.2	Yes	Yes	NA		no response required	
2.4.3	Yes	Yes	NA	SI(c) SG100 is not met agreed, so the Y below the SG needs to be changed to N	amended	Accepted (no score change)

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	CAB Response Code
2.5.1	Yes	Yes	NA		no response required	
2.5.2	Yes	Yes	NA		no response required	
2.5.3	Yes	Yes	NA		no response required	

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	CAB Response Code
3.1.1	No (no score change expected)	Yes	NA	Scored agreed, but some omissions/ errors regarding the EU institutional background in the rationale: For ex. SI(a): MCS is first of all "carried out" by the EU national MCS competent authorities, that monitor the vessels at all times. This is a flag state obligation. The CFP MSY commitment does not apply; the EU takes part in the management of the fishery as a party to SPRFMO, the international policy aspects of the CFP come into play to split the quota share between member states; STECF is not involved in "scientific assistance" (p50) for this fishery and is not the database manager (as per Table 12 page 52), DG MARE is.	amended to make roles with regards to MCS more clear. As for STECF, we were surprised by this as well, but publications by STECF (e.g. STECF-14-24, 2014) outline advice on harmonisation of data requirements under the DCF, and includes the 'request that the STECF take into account the following suggestion: The reporting requirements for Regional Fisheries (Management) Organisations, EUROSTAT and other catch reporting systems should be harmonised with DCF requirements.' We took this to mean that STECF does have a (albeit small) scientific assistance role. Removed to avoid further confusion.	Accepted (no score change)

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	CAB Response Code
3.1.2	Yes	Yes	NA		no response required	
3.1.3	Yes	Yes	NA		no response required	
3.2.1	Yes	Yes	NA		no response required	
3.2.2	Yes	Yes	NA	SI(b) 'and SG80' is missing at the end of 1st paragraph.	amended	Accepted (no score change)
3.2.3	No (no score change expected)	Yes	NA	Score agreed. Please note the obligations of the flag states to check their vessels at all times, it needs to be also stated clearly in the rationale and some elements in the background section (EFCA, vessels <10m, AIS, the EU landing obligation) are not relevant to this fishery at all. Also there is no mention of the Port State Measures Agreement (PSMA) (also in section 3.5.2.3 on Chilean Regulations) with respect to IUU activities.	amended, details on PSMA have been added to the background. The limited relevance of e.g. EFCA and AIS to this fishery has been pointed out in the background.	Accepted (no score change)

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	CAB Response Code
3.2.3	No (scoring implications unknown)	Yes	NA	SI(b) last paragraph: "Hence, sanctions to deal with non-compliance exist and there is evidence that they are applied." The last part contradicts the statement that "no sanction have been applied" made in each of the two previous paragraphs of the rationale. Information on monitoring and compliance while the vessels are in the SPRFMO Area is not public but it can be requested by the vessels from their respective competent authorities and communicated to auditors. On such basis, full compliance would illustrate that the possibility of sanctions is an effective deterrent and SG100 could be met. Interviews with the Chilean MCS competent authorities should provide a similar confirmation.	this has been amended	Accepted (no score change)
3.2.4	Yes	Yes	NA		no response required	

RBF Comments

PI	RBF Scoring	RBF Information	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
2.2.1 (RBF)	Yes	Yes	Scoring agreed, but please format page 158 so that the entire table is visible and indicate the PSA score in scoring rationale.	this has been amended	Accepted (no score change)

Appendix 5 Stakeholder submissions

No formal stakeholder submissions were received prior to publication of the PCDR.

Appendix 6 Surveillance Frequency

Table 20. Surveillance level rationale

Level	Rationale	Level	Rationale
6	N/A: Default level	6	N/A: Default level

Table 21 Timing of surveillance audit

Year	Anniversary date of certificate	Proposed date of surveillance audit	Rationale
1	March 2020	March 2021	N/A as it is proposed that the first surveillance is conducted on the certificate anniversary date.

Table 22. Fishery Surveillance Program

Surveillance Level	Year 1	Year 2	Year 3	Year 4
Level 6	On-site surveillance audit	On-site surveillance audit	On-site surveillance audit	On-site surveillance audit & re-certification site visit

Appendix 7 Objections Process

(REQUIRED FOR THE PCR IN ASSESSMENTS WHERE AN OBJECTION WAS RAISED AND ACCEPTED BY AN INDEPENDENT ADJUDICATOR) The report shall include all written decisions arising from an objection. *(Reference: FCR 7.19.1)*