

9th MEETING OF THE SCIENTIFIC COMMITTEE

Held virtually, 27 September to 2 October 2021

SC9-Doc06_rev1

2021 Interessional SC Web Meetings

(as of 27 September 2021)

Secretariat

Background

The SPRFMO SC continued the practice of holding web meetings in the months leading up to the main Scientific Committee meeting held in September-October. This year, due to the Member's diverse geography and the COVID 19 pandemic, multiple web meetings of both the Working Groups and of the SC were held during the leadup to SC9.

| Web Meeting | Dates (may be across dateline) | Invitation | Report |
|---|-----------------------------------|---------------------------|---------------------------|
| SC9 Annual meeting | 27 Sept – 2 Oct 2021 | G96-2021 | |
| Deepwater workshop | 21-23 /22-24 Sept | G114-2021 | SCW13 |
| 2nd Jack Mackerel WG Web meeting | 21/22 Sept | G131-2021 | |
| Habitat Monitoring workshop | 20/21 Sept | G110-2021 | SCW12 |
| 1st Jack Mackerel WG Web meeting | 15/16 Sept | G121-2021 | G144-2021 |
| 3rd Squid WG Web meeting | 14/15 Sept | G120-2021 | G144-2021 |
| 1st Deepwater WG Web meeting (Exploratory fisheries) | 07/08 Sept | G116-2021 | G139-2021 |
| 4th SC Web Meeting | 31 August/1 September | G109-2021 | G135-2021 |
| 3rd HMWG Meeting | 24/25 August | G110-2021 | G129-2021 |
| 2nd Squid WG Web meeting | 17/18 August | G103-2021 | G120-2021 |
| Jack mackerel Data workshop (SCW11) | 9,10 (& 11) August 2021 | G95-2021 | SCW11 |
| 3 rd SC Web Meeting | 27/28 July | G100-2021 | G109-2021 |
| 2nd Habitat Monitoring WG | 14/15 July | G97-2021 | G110-2021 |
| 1 st Squid WG Web meeting | 13/14 July | G87-2021 | G103-2021 |
| 2 nd SC Web Meeting | 29/30 June | G72-2021 | G100-2021 |
| 1 st SC Web Meeting | 25/26 May | G62-2021 | G72-2021 |
| 1 st Habitat Monitoring WG | 24/25 May | G67-2021 | |



This document reproduces the reports from the following meetings:

Scientific Committee

1. Report of the First 2021 SC9 Web Meeting 25/26 May 2021
2. Report of the Second 2021 SC9 Web Meeting 29/30 June 2021
3. Report of the Third 2021 SC9 Web Meeting 27/28 July 2021
4. Report of the Fourth 2021 SC9 Web Meeting 31 August/01 September 2021

Habitat Monitoring Working Group

5. Report of the Second 2021 HMWG Web Meeting 14/15 July 2021
6. Report of the Third 2021 HMWG Web Meeting 24/25 August 2021

Squid Working Group

7. Report of the First 2021 SQWG Web Meeting 13/14 July 2021
8. Report of the Second 2021 SQWG Web Meeting 17/18 August 2021
9. Report of the Third 2021 SQWG Web Meeting 14/15 September 2021

Jack Mackerel Working Group

10. Report of the First 2021 JMWG Web Meeting 15/16 September 2021
11. Report of the Second 2021 JMWG Web Meeting 21/22 September 2021

Deepwater Working Group

12. Report of the First 2021 DWWG Web Meeting 7/8 September 2021

REPORT OF THE FIRST 2021 SC WEB MEETING

1. Introductions

1. The SC Chairperson (Jim Ianelli) welcomed all participants. The meeting was attended by 34 delegates. A list of participants is provided in Annex 1.
1. Agenda (Annex 2) and topics were agreed as below.

2. SC Meeting Venue and Format

2. Jim presented information (Annex 3) that had been provided by Panama regarding the possibility of an in-person meeting. The presentation indicated that while it would still be possible for Panama to host SC-9, there were of course COVID restrictions in place, including a restriction of gatherings to 50 people, social distancing, and participants arriving at the meeting via the United Kingdom or South America would need to quarantine for 3 days on arrival. Panama also indicated that if an in-person meeting was not possible this year, they would renew their offer for a future year.
3. There was some discussion about the difficulties of an in-person meeting, for example China indicated that there were no flights available for them from China to Panama, and they would need to have a 2-3 week quarantine period going back into their country. Peru indicated that while they would like to be able to go to Panama, it would be impossible for Peru to attend in the present circumstances.
4. It was agreed that while it was a pity that we could not meet up in person, a virtual meeting was the only practical option. A hybrid meeting with only some participants there in person was not considered acceptable.
5. There was some discussion about the best format for a virtual meeting. It was agreed that the 3 two hour sessions per day format from last year was very tiring and that this year we would try for 2 three hour sessions with at least 6 hours breaks in between. It was agreed that we would try to keep roughly to the dates that had already been agreed, with more work done in pre-meetings if necessary, and a less ambitious work programme if at all possible. From a technical standpoint, the use of breakout rooms to allow multiple sub-groups to meet at the same time could be made available this year.

3. SC-9 WORK PLANNING

6. Martin Pastoors (EU), the chair of the Jack Mackerel Working Group, reported that they are quite delayed on the original schedule for pre-SC9 workshops (which originally included an Otolith Exchange, Data Workshop and a Benchmark workshop). Chile indicated that they would be able to deliver the ageing data by 5 July, and proposed that the data workshop be mid-July (with the otolith exchange occurring later). This was discussed and the need for a web meeting (or clear email exchanges) prior to the 5 July release would be important to clarify exactly what will be available and expected for the data workshop (noting that draft terms of reference for the data workshop are listed in para 127 of the [SC8-report](#)). This included more information on the new Chilean set-based CPUE index.



7. As previously indicated in the SC multi annual workplan, and due to prohibitive COVID19 travel restrictions, it was agreed that the originally envisioned in-person full “Benchmark assessment” workshop would have to be postponed. However, decisions would have to be made this year about what advice to give the Commission. The present management procedure (based on the old model using adjusted Annex K) would be utilised but a change to the data may affect past results and trends would add to the uncertainty in the advice.
8. It was noted that it is presently hard to predict what effect the new data will have, and that time would be needed to explore the impact, especially since the benchmark workshop has been postponed. It may be possible to do sensitivity runs using the new data. Hence, a 3-day virtual meeting in July/August for these explorations was suggested. Jim was asked to pursue the possibility of bringing External expert Lee Qi in to assist.
9. It was also noted that there was more money available from the EU for MSE work (applying the technical framework developed last year to specific harvest control rules), but that this would not begin until the benchmark workshop had occurred and axes of uncertainty within the conditioned operating model could be developed.
10. Gang Li (China), Chair of the Squid Working Group presented a proposed work plan (see Annex 4), and suggested that this year the group focus on three issues – genetics study results for the purpose of understanding population connectivity, data collection methodology, and fishery monitoring/CMM development, particularly looking at the possibilities of e-monitoring. The meeting concurred and expressed interest in making progress in these areas.
11. While the full in-person squid workshop to discuss fleet analysis to understand fishing effort did not seem to be possible this year, a one day virtual “workshop” with a focus on genetics and Fishery monitoring/CMM development was proposed. This workshop should have papers presented with data, so that the Scientific Committee can develop robust advice for the Commission.
12. Marco Milardi (New Zealand), on behalf of the Deepwater Working Group, updated the SC on work in this area. He indicated that workshops have been progressing well, with a particular focus on move-on distance analysis and designing an approach for VME review. VME abundance modelling (originally scheduled for next year) may need to be progressed to support this work. The work is progressing with input from four Members, but a pre-SC workshop, probably on protection scenarios, is envisaged.
13. Aquiles Sepúlveda (Chile), co-chair of the Habitat Monitoring Working Group, updated the SC on a meeting the previous day to work on Work Plan items. The result of this meeting is presented as Annex 5 below. Chile, Peru and EU identified pieces of work that they would be working on prior to the SC.
14. In particular Aquiles noted that they wish to move the planned Symposium to the last quarter of 2022, to maximise the chance that it can be held in person. The Steering Committee for this symposium will meet before SC-9, to develop Terms of Reference. It was noted that the [Small Pelagic Fish symposium](#) which has some overlap in topics has also been moved to November 2022, and it may be possible to have synergies between the two. The Secretariat notes that Commission permission would likely be needed to carry the allocated funds from this financial year to the next financial year.



4. Other matters

15. It is planned that the Scientific Committee will meet as a group at least every month from now on, with the next meeting possibly Wednesday 30 June at the same time. Meanwhile, work in each of the Working Groups should progress as planned intersessionally, but with all Members of the SC invited to meetings in order to maintain inclusivity. The Secretariat is available to provide administrative support for arranging these meetings if that would be helpful.
16. Action points:
 - a. Jack mackerel working group to meet before 5 July to ensure that all expected new and revised data can be delivered in time for planned Data workshop
 - b. Chile to provide required data by 5 July
 - c. As well as the data workshop, Jack mackerel working group to organise to meet to work on the implications of the new data (sensitivity runs, exploration) in July/August.
 - d. Squid working group to organise a virtual “workshop” focussing on genetics and science in support of CMM development
 - e. Deepwater working group to continue to progress work with expectation of a pre-SC workshop on protection scenarios (at least)
 - f. Habitat Monitoring Working Group to work on Work Plan items as agreed, and in particular Symposium Steering Committee to meet before SC-9 to develop terms of reference.



ANNEX 1. List of Participants

SC CHAIRPERSON

Jim Ianelli

CHILE

Karin Mundnich
Silvia Hernandez
Ignacio Payá
Víctor Espejo
Aquiles Sepúlveda
Marcos Troncoso

CHINA

Li Gang
Luoliang Xu
Ce Liu

ECUADOR

Manuel Peralta

EUROPEAN UNION

Niels Hintzen
Martin Pastoors
Jan Geert Hiddink

FAROE ISLANDS

Jan Arge

KOREA

Seok-Gwan Choi
Eunjung Kim

NEW ZEALAND

Marco Milardi

PERU

Jorge Csirke
Erich Diaz
Pablo Marin
Giovanna Sotil
Elmer Quispe
Daniel Grados
Juan Arguelles
Enrique Ramos

CHINESE TAIPEI

Han-ching Chuang
Ren-Fen Wu
Shih-Chin Chou
Tung-Hsieh Chiang

UNITED STATES OF AMERICA

John Syslo

SPRFMO SECRETARIAT

Craig Loveridge
Marianne Vignaux

Other

Vladimier Laptikhovsky



ANNEX 2. Agenda Items

- 1) OPENING OF THE MEETING
 - a. Identification of Participants
 - b. Confirmation of discussion topics
- 2) SC MEETING VENUE AND FORMAT
 - a. Information from Panama regarding the possibility of an in-person meeting
 - b. Practical considerations for all parties involved in having an in-person meeting in 2021 (travel, border closures, quarantine, vaccinations)
 - c. Discussion on the venue and format for SC9
- 3) SC-9 WORK PLANNING
 - a. Outline of significant and achievable work for SC9
 - b. Status of Jack mackerel Otolith exchange, Data and Benchmark workshops
 - c. Status of Pre-SC9 Squid workshop and update from working group
 - d. Update from Deepwater working group
 - e. Update from Habitat Monitoring working group
- 4) OTHER MATTERS
 - a. Work sessions and scheduling between now and SC9
 - b. Scientific Committee Chairperson and Vice-Chairperson

ANNEX 3. Presentation from Panama



Panama's as Host of SPRFMO 9th SC 2021

Current Covid-19 Situation

3rd Squid Workshop (SCW11), Panama City, Panama, 22-24 September 2021

9th SC 2021 (SC9), Panama City, Panama, 27 September-02 October 2021

Covid-19 Situation in Panama (Last 30 days)



General information:

- Total population of 4 million people.
- Total tests 2,528,006
- Positivity of 5% and lethality of 1.7%
- Confirmed cases 371,145
- Recovered 359,481
- 6,297 deaths



Covid-19 situation in Panama (Last 15 days)

Report, May 17, 2021:

- 5,358 New Tests
- 268 New cases
- Second day without deaths in the last 24 hours

Active Cases 5,367

- Home isolation 4,735
- Isolation in hospital hotels 269
- Hospitalized in ward 302
- Hospitalized in ICU 61

844,078 doses of vaccines administered



Protection measures in force

- Mandatory use of face masks in public spaces,
- Mandatory use of masks and face shields in public transport,
- 2 meters distance between people,
- Hand washing,
- Use of alcoholic gel.





Tocumen International Airport Report

Measures for travelers from May 3

Coming from the United Kingdom,
South Africa, India or South America

Must bring a negative PCR or antigen test, a maximum of 48 hours before arrival. Upon entering the country, you must perform a molecular Covid-19 test at your cost (US\$ 85.00).

Negative: you must comply with isolation at your home or in a Non-Covid-19 Hotel for travelers for 3 days; On the third day a test will be repeated, antigen test, and if the result is negative, the quarantine ends.

Positive: You will be carried out a genomic sequencing test to detect the Covid-19 variant, you will be directed to a Hotel hospital for Covid-19 patients, where you must complete a 14-day quarantine receiving the established treatment.

Travelers who do not come or have not passed through these regions or countries should only bring a negative PCR or antigen test with a maximum of 48 hours.



It resumed operations since October 2020, 108,223 tests have been carried out and a total of 1,337 positive

Flight Routes to Panama from SPRFMO Parties

| Australia | | |
|-----------------------------|------------------------|---------------------|
| Canberra Intl Airport (CBR) | Sydney (SDY), AUS | |
| Qantas Airways | Air Pacific | 3h 40min |
| Brisbane Airport (BNE), AUS | Nadi, Fiji (NAN) | |
| Qantas Airways | Air Pacific | 10h |
| Sydney (SDY), AUS | Los Angeles, USA (LAX) | |
| United Airlines | Copa Airlines | 6h 29min |
| Los Angeles, USA (LAX) | Panama City (PTY) | Tt Flight 32h 14min |
| United Airlines | | |
| Panama City (PTY) | | |

| New Zealand | | Republic of Vanuatu | |
|-------------------------------------|---------------------|-----------------------------|---------------------|
| Wellington, (WLG) / Auckland, (AKL) | | Bauerfield (VLI), Port Vila | |
| Air Pacific | 3h 50min | Air Pacific | 2h 15min |
| Nadi, Fiji (NAN) | | Nadi, Fiji (NAN) | |
| Air Pacific | 10h | Air Pacific | 10h |
| Los Angeles, USA (LAX) | | Los Angeles, USA (LAX) | |
| Copa Airlines | 6h 21min | Copa Airlines | 6h 29min |
| Panama City (PTY) | Tt Flight 36h 41min | Panama City (PTY) | Tt Flight 30h 14min |





Flight Routes to Panama from SPRFMO Parties

| Republic of Korea | | | |
|------------------------------|---------------------|------------------------------|---------------------|
| Incheon (ICN), KOR | | Gimhae (PUS), Busan | |
| American Airlines | 13h | Korean Air | 1h |
| Dallas-Fort Worth (DFW), USA | | Gimpo (GMP), KOR | |
| American Airlines | 2h 58min | Incheon (ICN), KOR | |
| Miami (MIA), USA | | American Airlines | 13h |
| American Airlines | 3h 07min | Dallas-Fort Worth (DFW), USA | |
| Panama City (PTY) | Tt Flight 31h 10min | American Airlines | 2h 58min |
| | | Miami (MIA), USA | |
| | | American Airlines | 3h 07min |
| | | Panama City (PTY) | Tt Flight 37h 01min |



| Chinese Taipei | |
|--------------------------------|---------------------|
| Taiwan Taoyuan (TPE) | |
| United Airlines | 11h 40min |
| San Francisco (SFO), USA | |
| United Airlines | 3h 50min |
| George Bush (IAH) Houston, USA | |
| United Airlines | 4h 05min |
| Panama City (PTY) | Tt Flight 22h 50min |

| People's Republic of China | | | |
|----------------------------------|-----------|-------------------------------------|-----------|
| Beijing (PEK) | | Hong Kong (HKG) | |
| Cathay Pacific Airways | 3h 55min | United Airlines New York, USA (EWR) | 15h 45min |
| Hong Kong Cathay Pacific Airways | 15h 55min | United Airlines | 5h 16min |
| New York, USA (JFK) | | Panama City (PTY) | 45min |
| Copa Airlines | 5h 19min | | |
| Panama City (PTY) | 34min | | |

Flight Routes to Panama from SPRFMO Parties

| The United States of America | |
|------------------------------|---------------------|
| New York (FJK) | |
| Copa Airlines | 5h 12min |
| Panama City (PTY) | |
| San Diego (SAN) | |
| American Airlines | 3h 04min |
| Dallas-Fort Worth (DFW), USA | |
| Copa Airlines | 3h 01min |
| Panama City (PTY) | Tt Flight 11h 54min |

| Republic of Cuba | |
|-------------------|--------------|
| American Airlines | 1h 15min |
| Miami (MIA), USA | |
| American Airlines | 3h 15min |
| Panama City (PTY) | Tt Flight 9h |

| Republic of Chile | |
|-------------------------|----------|
| Santiago de Chile (SCL) | |
| Copa Airlines | 7h 46min |
| Panama City (PTY) | |



| EU-Spain | |
|-------------------|-----------|
| Madrid (MAD) | |
| Iberia | 10h 45min |
| Panama City (PTY) | |

| Liberia | |
|--------------------------------|---------------------|
| Roberts (ROB) | |
| Air Cote d'Ivoire | 1h 50min |
| Felix H. Boigny (ABJ), Abidjan | |
| Air France | 6h 30min |
| Charles De Gaulle (CDG), Paris | |
| Copa Airlines | 3h 07min |
| Panama City (PTY) | Tt Flight 30h 55min |

| Republic of Peru | |
|-------------------|----------|
| Lima (LIM) | |
| Copa Airlines | 3h 36min |
| Panama City (PTY) | |



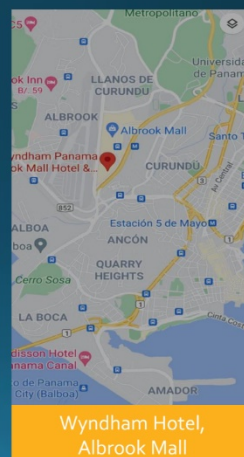
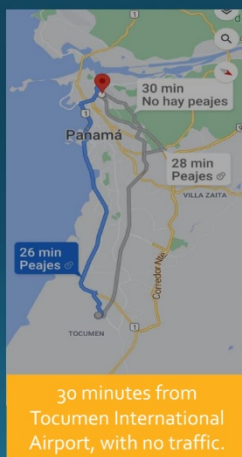
Flight Routes to Panama from SPRFMO Parties



| Russian Federation | |
|-----------------------|---------------------|
| Domodedovo (DME) | |
| British Airways | 4h 05min |
| London Heathrow (LHR) | |
| British Airways | 9h 20min |
| Miami (MIA), USA | |
| American Airlines | 3h 15min |
| Panama City (PTY) | Tt Flight 35h 15min |

| Faroe Islands | |
|--------------------------------|---------------------|
| Vagar (FAE) | |
| KLM | 1h 50min |
| Billund Airport (BLL), Denmark | |
| KLM | 1h 10min |
| Schiphol (AMS), Amsterdam | |
| KLM | 10h 50min |
| Panama City (PTY) | Tt Flight 32h 05min |

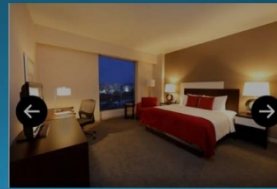
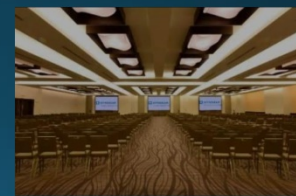
Event Location Wyndham Panama Albrook Mall





Wyndham Panama Albrook Mall

- Maximum capacity allowed, 50 people.
- Internet of high speed,
- Audiovisual equipment,
- Living rooms with natural light,
- Restaurant, rooms and other amenities,
- Inside a Shopping Mall and nearby of attractions.



Final Considerations

Feel free to contact us if you have additional questions.

In case it is decided not to physically hold the event in Panama, take into consideration that Panama maintains its offer for the future.

Thank for you attention





ANNEX 4. Squid Topics for the 9th SC Meeting

1 Basic biology

- 1.1 Age, growth and maturity
- 1.2 Spawning, reproduction and migration mode
- 1.3 Foraging behavior and diet composition, diet data analysis

2 Squid connectivity

- 2.1 Updated agreement on consistent approaches to genetic analyses
- 2.2 Genetic sequencing data analysis and exchange (Convention area and adjacent EEZs)

3 Stock assessment & Data collection

- 3.1 Identify data type, data quantity, data quality and data gap. Identify the differences of data collection protocols among members e.g. type of sampling, areas and timing of sampling, ageing
- 3.2 Spatial-temporal biological information
- 3.3 Abundance indices, including CPUE and acoustic surveys data
- 3.4 Stock assessment methods

4 Fishery monitoring & CMM development

- 4.1 Fishing effort definition and recommendation of input control measurement
- 4.2 E-monitoring development
- 4.3 Observer program

5 Other items

- 5.1 Review on characteristics of jumbo flying squid habitat

5.2 Habitat suitability model development



ANNEX 5. Habitat Monitoring Working Group Preparatory Coordination Meeting: May 24th

Attendees: Mariano Gutierrez, Aquiles Sepulveda, Marco Milardi, Eunjung Kim, Daniel Grados, Nicolas Alegria, Marianne Vignaux

| Task | Objective | Timeline | Coordinator | Funding |
|---|---|--|-------------|---------|
| Evaluate the applicability of data collected from fishing vessels targeting pelagic species | Mapping spatial-temporal population density distribution of jack mackerel using a combination of the existing acoustic survey data and acoustic information as obtained from industry vessels | <i>Permanent</i> • Perú • Chile (3 last years) | Peru/Chile | In-kind |
| | Subgroup of specialists to evaluate advantages and biases of analysis methods | 2023 <i>M.Pastors</i> <i>A.Sepulveda</i> <i>M.Gutierrez</i> | Peru/Chile | In-kind |
| | Subgroup of specialists to organise classification of fishing fleets. Develop an inventory of technologies available aboard fishing vessels in order to identify the potential to collect data using the technologies currently being deployed | 2022 <i>M.Gutierrez</i> <i>N. Alegria</i> <i>J. Oliva</i> | Peru/Chile | In-kind |
| Further developments of standardised oceanographic data products and modelling | Characterise jack mackerel habitat (e.g., past studies done in Peru and Chile) | 2023 • Chile | Peru/Chile | In-kind |
| | Provide ecosystem status overview for SC at seasonal to decadal scale | 2024 | Peru/Chile | In-kind |
| | Explore the concept of jack mackerel habitat under an interdisciplinary ontogeny approach for jack mackerel and other species (by life history stages and regions). Workshop virtually conducted during 2021. | 2021+ • EU | Peru/Chile | In-kind |
| | Define a list of existing environmental data: satellite, acoustic surveys, acoustic fisheries surveys, fishing data, fishing vessel data (VMS, Observers) in time and space that already exist inside the SPRFMO area | 2021+ • Chile | Peru/Chile | In-kind |
| | Integration of databases provided by different members of the HMWG and other working groups of the SC with linkage to a metadata repository | 2022 <i>(in progress in Chile and Peru)</i> | Peru/Chile | In-kind |
| | Develop an inventory of research programmes currently being developed by industry and scientific institutions regarding data collection and monitoring of marine habitats | 2022 | Peru/Chile | In-kind |
| Species behaviour and preferences | Analyse the habitat preferences of jumbo squid and Jack mackerel, noting the useful data and analyses provided by Peru and Chile | 2023 | Peru/Chile | In-kind |
| | Habitat suitability modelling of Jack Mackerel | 2022/23 • Peru | Peru/Chile | In-kind |



| Task | Objective | Timeline | Coordinator | Funding |
|-------------------|---|---|-------------|---------|
| | Incorporate behaviour, distribution, and abundance information about mesopelagic, euphausiids and other key species of the Humboldt Current System | 2022/23 <i>(in progress in Peru)</i> | Peru/Chile | In-kind |
| Use of new Tools | Develop new approaches based on different tools such as GAM, GLM, INLA, ROMS, Biogeochemical, Geostatistics, big data and machine learning (e.g. for acoustic classification of targets). Utilization of different platforms: Scientific surveys, fishing vessels, satellite oceanography, gliders, buoys, AUV | Permanent • Peru: coupled model on JM, also INLA <i>(in progress Chile),</i> | Peru/Chile | In-kind |
| 2021-22 Symposium | Symposium on Habitat Monitoring is organised prior to the 2022 meeting of the Commission Review the state of the art of habitat research in order to recommend specific lines of investigation in this topic within the framework of the SPRFMO. <ol style="list-style-type: none"><i>In person: Last quarter of 2022</i><i>Steering Committee prep meeting before SC9</i><i>Proposal of Terms of References at SC9</i> | 2022 <i>Steering Committee:</i> <i>A. Sepulveda,</i> <i>M. Gutierrez,</i> <i>Eunjum Kim,</i> <i>M. Milardi,</i> <i>F. Stephenson,</i> <i>C. Lang.</i> <i>Terms of Reference being drafted</i> | Chile/Peru | NZ\$63k |

REPORT OF THE SECOND 2021 SC WEB MEETING

29/30 June 2021

1. Introductions

1. The SC Chairperson (Jim Ianelli) welcomed all participants. The 2-hour web meeting was attended by 33 delegates. A list of participants is provided in Annex 1.
2. The Agenda (Annex 2) and topics were agreed as below.

2. Jack Mackerel Working Group

3. Martin Pastoors (EU), the chair of the Jack Mackerel Working Group, reported progress on two aspects of the Jack mackerel working group work. Firstly, with regards to the normal stock assessment process the [Age Length Key and survey templates](#) will shortly be available on the website, unchanged except for some colours and fonts (to match SPRFMO branding). Martin will advise the deadlines that these templates need to be completed for the stock assessment (**27 August**). The normal request for offshore fleet fishing activity for the CPUE analysis will also go ahead as usual, although noting that there was only one Member in the offshore fleet in 2020.
4. Secondly, with regards to the planned Data Workshop, we are awaiting documents and data **to be provided by July 5** to inform the [Data Workshop to be held over 2 days on 9-10 August](#) (with 11 August a possible extra 3rd day if needed). Considering when the documents would be available, it was suggested that a smaller group of volunteers closely evaluate the information, and possibly meet in the second week of July to make a start on a full scrutiny of the details. This group may be supplemented by some external reviewers (who will be needed for the Benchmark Workshop anyway) depending on their availability on the Workshop dates. Money is available for these external reviewers if necessary, and **Members are invited** to email nominations of possible names to Martin Pastoors.
5. There was some discussion about the purpose of the Data Workshop, and it was clarified that it will be to focus on evaluating the new data that was presented at SC8, particularly the revised ageing/growth data, and that while these data would not be used in this year's stock assessment, it may be that the evaluation adds uncertainty to the assessment of fishery status and this will affect catch advice to the Commission.
6. It was noted that the Jack mackerel species profile on the SPRFMO website requires updating (in addition to the other SPRFMO species profiles). Since the Data Workshop will be dealing with revised estimates of age and growth, developing appropriate revised wording is required. The preliminary draft [Species profiles](#) are available on Teams, and Members are strongly encouraged to update and contribute to the species profiles. **The working group chairs shall coordinate these revisions for the relevant resources.**

3. Squid Working Group

7. The Chair of the Squid Working Group Gang Li (China) reported that there is to be a pre-SC [meeting](#) of the Squid Working Group on 13/14 July to start substantive discussions on two important elements of the SC Workplan: Connectivity/Genetics of Jumbo flying squid, and approaches to fishery monitoring and CMM development.



8. Dr Li presented a [template](#) for the comparison of genetics methods from different Members with active squid genetics programmes and asked that this template **be completed to the extent possible** before the July meeting, so that the Squid Working Group could start to evaluate how the data from the different programmes could be compared. It was agreed that the sampling date be added as a column to the first table of the template, because samples taken at different times (relative for example to El Niño events) could affect the results. The new template will be distributed shortly, and will also be available on Teams in the Files within the Squid channel in the SC9 Team.
9. The second topic for the meeting of 13/14 July is to identify possible approaches to fishery monitoring and CMM development. All Members are invited to prepare a short presentation on possible ways forward. In later meetings the Squid Working Group can then discuss the advantages and disadvantages of the different approaches, with the aim of developing an agreement or an agreed summary from this group to the SC9.
10. China also noted that their government has announced closed areas in the squid fishery, which will be detailed to the SC at a later date.

4. Deepwater Working Group

11. Marco Milardi (NZ) presented progress in the SPACWG (South PACific Working Group); the Science Working Group coordinated by Fisheries New Zealand to consider SPRFMO Deepwater science. In a brief update he noted that work on appropriate distances for "move on" rules is being evaluated. Also, he noted that work on abundance modelling will be brought forward this year. Work is also progressing on protection scenarios, and on otolith reading for next year's Orange roughy stock assessment.
12. Marco noted that a process for assessing VME encounters is needed and will be on the agenda for this year's SC. Since there has been a VME encounter (late in 2020), it was unclear how it will be evaluated without an agreed process.

5. Habitat Monitoring Working Group

13. Aquiles Sepúlveda (Chile) noted progress on Habitat Monitoring, with a number of papers being prepared for presentation to the Scientific Committee in 2021. They plan a [meeting 14/15 July](#) to coordinate this work. In addition, the HMWG Symposium Steering Committee is planning to meet in mid-July to develop terms of reference for the Symposium, now envisaged for Oct/Nov 2022.

6. SC9 Schedule Development

14. A first draft of the SC9 Schedule was presented, based on the feedback from the first 2021 SC web meeting, which asked for two 3 hour sessions per day over the advertised dates of SC9 (27 September to 2 October 2021). An Excel version of this [draft Schedule](#) is available informally for comment on Teams, and it will be circulated formally on 29 July.
15. It is clear that there will be little time during SC9 for discussion, and all presentations will have to be done beforehand (with recorded presentations a recommended option where possible). Substantive discussions should occur in the planned preparatory meetings. In particular the exploratory fisheries were identified as one area where more discussion may be needed than can be fit into the SC9 schedule slot.



16. In the [SC Work Plan](#) the Secretariat was requested to coordinate work on the development of a Fisheries Operations Plan template and to revise the existing checklist. Marianne Vignaux from the Secretariat will shortly be initiating this process, and would like to hear from anyone interested in being involved in working on this task. A [first draft](#) of the structure based on the guidance from the CMM is available in Teams, but needs to be populated with advice from Member experts on the kinds of information the Scientific Committee would expect to see in each area of FOP development.
17. The next meeting of the Scientific Committee is planned for [27/28 July](#). Meanwhile, work in each of the Working Groups should progress as planned intersessionally, but with all Members of the SC invited to meetings in order to maintain inclusivity. The Secretariat is available to provide administrative support for arranging these meetings if that would be helpful.
18. Action points:
 - a. Martin Pastoors and Secretariat to distribute [Age Length Key and Survey templates](#) for provision of data required for status quo stock assessment, along with due date for submission (27 August);
 - b. Secretariat to provide fishing activity data for offshore CPUE analysis as usual;
 - c. Chile to provide required data and documents for review at Data Workshop by 5 July;
 - d. Volunteers to act as Internal Reviewers to scrutinise this in detail prior to the Data Workshop (9,10, & 11 August);
 - e. Martin Pastoors to investigate possibility of an external expert being available for the Data Workshop (nominations for possible experts to Martin as soon as possible);
 - f. As well as the Data Workshop, Jack mackerel working group to organise to meet to work on the implications of the new data (sensitivity runs, exploration) later in August;
 - g. Members with active squid genetics programmes to complete as far as possible the [template](#) so that the comparability of the results can be assessed;
 - h. Interested Members to prepare short presentation on possible ways forward in the area of fishery monitoring and CMM development for squid;
 - i. Squid Working Group to meet 13/14 July to discuss squid genetics and possible ways forward for fishery monitoring and CMM development;
 - j. Deepwater working group to continue to progress work and plan meetings to present results to the full SC prior to SC9;
 - k. Habitat Monitoring Working Group to work on Work Plan items as agreed, and in particular Symposium Steering Committee to meet in mid-July to develop terms of reference;
 - l. Members interested in contributing to the development of a Fisheries Operation Plan template to contact Marianne Vignaux at the Secretariat.



ANNEX 1. List of Participants

SC CHAIRPERSON

Jim Ianelli

AUSTRALIA

James Larcombe

CHILE

Karin Mundnich

Ignacio Payá

Víctor Espejo

Aquiles Sepúlveda

CHINA

Li Gang

Lin Dongming

Luoliang Xu

Bilin Liu

Cong Cong Wang

ECUADOR

Manuel Peralta

Jorge Costain

Rebeca Espinoza

Viviana Jurado

EUROPEAN UNION

Niels Hintzen

Martin Pastoors

KOREA

Eunjung Kim

NEW ZEALAND

Marco Milardi

Tiffany Bock

PERU

Jorge Csirke

Erich Diaz

Pablo Marin

Giovanna Sotil

Jimena Mendoza

Ricardo Tafur

Juan Arguelles

Ana Alegre

CHINESE TAIPEI

Han-Ching Chuang

Ren-Fen Wu

Shih-Chin Chou

Tung-Hsieh Chiang

UNITED STATES OF AMERICA

John Syslo

SPRFMO SECRETARIAT

Marianne Vignaux



ANNEX 2. Agenda Items

- 1) OPENING OF THE MEETING
 - c. Identification of Participants
 - d. Confirmation of discussion topics
- 2) UPDATES FROM WORKING GROUPS AND REPORT BACK ON ACTION POINTS
 - f. Jack mackerel Working Group
 - g. Squid Working Group
 - h. Deepwater working group
 - i. Habitat Monitoring working group
- 3) OTHER MATTERS
 - a. Work sessions and scheduling between now and SC9
 - b. Draft SC-9 Schedule

REPORT OF THE THIRD 2021 SC WEB MEETING

27/28 July 2021

1. Introductions

1. The SC Chairperson (Jim Ianelli) welcomed all participants. The 1.75-hour web meeting was attended by 43 delegates. A list of participants is provided in Annex 1.
2. The Agenda (Annex 2) and topics were agreed as below, with Deepwater topics covered early in consideration to Australia, and time was allocated for two statements from Peru and Chile.
3. Firstly, the SC paused for a moment's silence in respect for the passing of Miguel Ñiquen Carranza of Peru, a longtime member of the Scientific Committee. He was remembered as a colleague, a friend and for his huge impact on the Scientific Committee's work.
4. Secondly, Waldemar Coutts and Mauricio Galvez from Chile asked to speak to the Scientific Committee regarding their government's proposal for a Marine Protected Area to cover the high seas area of the Nazca and Gomez Ridge areas in the Eastern South Pacific. They asked the Scientific Committee for permission to present a paper to the Scientific Committee for their consideration, hoping that the SC might make a recommendation of support of this proposal to the Commission (Statement attached as Annex 3, [Presentation](#) available on Teams). It was agreed that this topic be put on the Agenda under "Other Matters".

2. Deepwater and Exploratory fishing

5. Note that for convenience at this meeting the "Exploratory fishing" activity was pooled into Deepwater for this agenda item.
6. Marco Milardi of New Zealand reported on positive progress at the fourth SPACWG meeting, and that several papers were already ready for submission for SC9. With regards to protection scenarios, the calculations have already been done, so the SC would be in a position to make recommendations to the Commission on this topic. The VME Move on rule has been tested and indications are that increasing the move on distance would give minimal protection gains. A VME encounter process has been developed. There has also been a potential VME encounter which needs to be discussed (under Paragraph 32 of [CMM 03-2021](#)). This should provide an opportunity to test how the SC can best provide the required feedback on such events.
7. It has become clear that the Westpac Bank area (location of an Orange roughy straddling stock with the New Zealand EEZ) was inadvertently not included in the BFIA that was presented last year. Therefore, an addendum to the BFIA will be presented at SC9, which will be available for consideration from 29 July (as required in Paragraph 21a of [CMM 03-2021](#)). This area has been included in the protection scenario calculations.
8. It was noted that while SPACWG has mainly involved the main deepwater fishing Members, New Zealand and Australia, the EU and USA have been kept informed and have joined some meetings.
9. The Chairperson nominated John Syslo to act as an interim Chair to help coordinate the Deepwater and Exploratory work areas in the run up to SC9. The Scientific Committee agreed to this nomination.



10. With regards to Exploratory work, New Zealand noted that the New Zealand toothfish Fisheries Operation Plan will be submitted prior to SC9. The European Union have informed the Secretariat that they will not be progressing their “succinct description” to a Fisheries Operation Plan so there will only be one Fisheries Operation Plan for the SC to assess at SC9.
11. However, Members interested in contributing to the development of a Fisheries Operation Plan template as requested by Paragraph 212 of the [SC8-report](#) should contact Marianne Vignaux at the Secretariat.

3. Jack mackerel

12. In an update on Action Points from the second 2020 SC Web Meeting (Letter G100-2021):
13. On July 12 Martin Pastoors and Secretariat distributed [Age Length Key and Survey templates](#) for the provision of data required for the status quo stock assessment (letter G101-2021, also available on the [Science](#) page of the website) and ask that these be submitted as soon as possible so that they can be considered by the Data workshop if necessary.
14. The Secretariat provided (9 July) fishing activity data for offshore CPUE analysis as usual.
15. Chile provided required age data (9 July) but documents describing how the data was produced are still pending. It was noted that the ageing technique was presented last year (e.g. [SC8-JM07](#), [SC8-JM09](#)) but that the method for developing the early part of the time series may need further documentation. This is critical for the Data Workshop, so Chile were asked to present a list of historical references to inform the Data Workshop as well as the most recent documentation.
16. Chile noted that they were missing the 2020 age data from their early July submission and are working to correct this omission.
17. Volunteers have started to examine data in preparation for the data workshop (9,10, & 11 August). To this end, a folder has been added to the main Jack mackerel github site (labeled “data”) where some explorations have begun. Chile inquired about how data from other fleets will be processed to be consistent with the main revisions in age and growth that Chile provided. This was **noted as a priority action item to address at the data workshop**.
18. The group agreed that steps to contact suggested external experts (Dr. Maite Pons and Lee Qi) for the data workshop proceed. However, it was noted much of the work would focus on data processing aspects (i.e., how actual measurements from length, weight, and otolith sample collections feed into the summarizations of these data for application within the statistical age structured model).
19. It was noted that an otolith exchange remains an SC priority. This is important to ensure ageing methods from different Members is consistent. The sample exchange process being introduced for squid was suggested as a possible model. It was also suggested that images rather than actual otoliths could be sent around given limited sample material (only 2 otoliths per fish). There was some discussion about whether an expert in ageing techniques should also be available for the data workshop, as there were decisions about criteria to apply when ageing otoliths that still had not been discussed in detail. It was agreed that there would be a review of the methodology of Chile’s ageing technique within the data workshop (possibly with an external expert).
20. After the data workshop some provisional new input files are anticipated to be available for evaluation within the stock assessment model. These will be discussed and evaluated at a 14 September meeting of the working group. It was reiterated that advice specifically using new reference points and assessment results would only be forthcoming after a full benchmark review is conducted.



21. Ecuador raised the issue of small quantities of Jack mackerel taken as bycatch in the tuna fishery in the SPRFMO Convention area but managed by IATTC. The Scientific Committee agreed that, if possible, a historical time series of these catches should be obtained from IATTC for consideration by the Jack mackerel Working Group.

4. Squid

22. Squid Working Group met 13/14 July to discuss squid genetics and possible ways forward for fishery monitoring and CMM development. It was noted that while there was critique of the range of possible effort measures, these critiques should not be allowed to delay CMM development.
23. The Squid working group meeting also discussed comparison of genetics programmes, and decided that although it was easier to share data than to share samples, at this point a sample exchange programme was required, because it looks as though the different programmes are not all doing the same thing (for example using different enzymes). A suggested [form for sample exchange](#) is now available in Teams. A paper comparing the different squid genetics programmes, is being developed, which will end up as a paper for SC9 ([SQ9-SC02](#)), draft available on Teams.
24. The Squid Working Group also discussed different ways of measuring effort, and feedback from the meeting would be incorporated into a new version of the EU paper. The next meeting is planned for 17/18 August and will work on a comparison of different possible ways forward. E-monitoring should also be considered.
25. The Secretariat will also develop a list of “squid vessels” from the active vessel list, separating out squid-jigging and fish carrier vessels. Some further scrutiny of the historical active vessel lists might be required by Members.

5. Habitat Monitoring

26. The Subgroup of specialists to evaluate advantages and biases of analysis based on fishery dependent data methods has had limited progress, because of the small number of people involved, and is pending further action.
27. Other identified papers to be prepared and submitted by 28 August. (9 confirmed as of July 27).
28. There will be a Pre-SC workshop 20 September 2021 with a series of 10 minute presentations and short discussion. Presentations to be recorded (either in the workshop or previously) for any SC member who finds it difficult to attend the workshop – the workshop invitation has been drafted, and will be sent shortly.
29. It was suggested that the HMWG agreement for short presentations (10 minutes, with 5 minutes for discussion) be made a general recommendation for all presentations at pre-SC workshops, with longer presentations possible if recorded for Members to watch at a convenient time.
30. A Draft Terms of Reference for the Habitat Symposium to be circulated for comment, and there will be a meeting in mid-August to discuss the agenda.

6. Next steps

31. There will be a [Jack Mackerel Data Workshop](#) on 9,10,11 August and a Jack mackerel Working Group meeting on 14 September.
32. There will be a [Squid Working Group meeting](#) on 17/18 August.
33. There will be another [SC Plenary session](#) on 31 August.
34. Feedback on how to make the preparatory and SC meetings run most efficiently is welcomed.



35. Action points:

- a. Chile's request to address SC9 regarding an MPA in the area of the Salas y Gómez and Nazca ridges be added to the SC9 Agenda under the Agenda item "Other Matters".
- b. John Syslo to be asked to act as interim Chairperson of the Deepwater Working Group and also to cover Exploratory work until SC9.
- c. Members interested in contributing to the development of a Fisheries Operation Plan template to contact Marianne Vignaux at the Secretariat.
- d. Jack mackerel ALK data to be provided as soon as possible, so that it is available for consideration at the Data Workshop.
- e. Chile to provide full documentation of new ageing technique, including references to historical documentation if required.
- f. Dr Maite Pons and Ms Lee Qi to be brought in as external experts for the Data Workshop.
- g. Agenda for Data Workshop to include review of new Ageing method and how data from other fleets will be processed to be consistent with the main revisions in age and growth that Chile provided.
- h. Consideration to be given to the need for an expert on ageing for the Data Workshop.
- i. Members encouraged to progress the Otolith Exchange, so that Ageing methodology can be agreed.
- j. Secretariat to contact IATTC to ask about the possibility of obtaining an historical time series of Jack mackerel bycatch in the tuna fisheries that occur in the SPRFMO Convention Area.
- k. Squid Working Group to continue to progress CMM developments and effort measures at a [meeting](#) on the 17/18 August.
- l. The Secretariat will also develop a list of "squid vessels" from the active vessel list, separating out squid-jigging and fish carrier vessels. Some further scrutiny of the historical active vessel lists might be required by Members.
- m. Habitat Monitoring Working Group to progress Terms of Reference for Habitat Symposium at a [meeting](#) on the 24/25 August.
- n. A 10 minute cap on presentations at pre-SC workshops (as agreed by the Habitat Monitoring Working Group) to be a general SC recommendation. Pre-recorded presentations may be longer, for Members to watch at a convenient time, but still should not be too long.



ANNEX 1. List of Participants

SC CHAIRPERSON

Jim Ianelli

AUSTRALIA

James Larcombe

CHILE

Waldemar Coutts

Mauricio Galvez

Mauro Urbina

Ignacio Payá

Katherine Bernal

Víctor Espejo

Silvia Hernandez

Salvador Vega

CHINA

LI Gang

Lin Dongming

Luoliang Xu

Bilin Liu

ECUADOR

Manuel Peralta

Jorge Costain

Rebeca Espinoza

Guillermo Moran

Isidro Andrade

KOREA

Eunjung Kim

Sanggyu Shin

NEW ZEALAND

Marco Milardi

PERU

Jorge Csirke

Mariano Gutierrez

Erich Diaz

Pablo Marin

Giovanna Sotil

Jimena Mendoza

Ricardo Tafur

Juan Arguelles

Ana Alegre

Rosa Zavala

Daniel Grados

Carlos Valdez

Jorge Mostacero Koc

Javier Quiñones Davila

CHINESE TAIPEI

Han-Ching Chuang

Ren-Fen Wu

Shih-Chin Chou

Tung-Hsieh Chiang

SPRFMO SECRETARIAT

Marianne Vignaux



ANNEX 2. Agenda for the 3rd SC web meeting

- 1) OPENING OF THE MEETING
 - e. Identification of Participants
 - f. Confirmation of discussion topics
 - g. Statement from Peru regarding passing of Miguel Ñiquen
 - h. Statement from Chile regarding proposed MPA
- 2) UPDATES FROM WORKING GROUPS AND REPORT BACK ON ACTION POINTS
 - j. Deepwater working group – progress report from SPACWG meeting 14 July
 - k. Jack mackerel Working Group – update on planning for Data workshop and assessment
 - l. Squid Working Group - report back from Squid Working Group meeting 13/14 July
 - m. Habitat Monitoring working group – report back from meeting 14/15 July
- 3) OTHER MATTERS



ANNEX 3. Statement from Chile

INTRODUCING A REQUEST INTO THE SP-RFMO SCIENTIFIC COMMITTEE

Scientific Committee Preparatory Meeting July 27, 2021

Dr. Jim Ianelli,

Chairman of the Scientific Committee of SPRFMO

First of all, our gratitude for allowing us to introduce into this Scientific Committee the following request.

The benefits the ocean brings to humanity - including the stabilization of climate and trillions of USD for the global economy and culture - are fundamental to life on earth. However, ocean health is declining due to human activity, threatened by pollution, overfishing and habitat loss. And one of the greatest threats is climate change, which is already causing the ocean to become warmer, putting pressure on marine life from the base of the ocean food web to the top.

In this connection, Chile has long maintained the need to safeguard the ocean and advance marine protected areas (MPAs) as a key measure to address the climate crisis, including during its tenure as President of the UN Framework Convention on Climate Change (UNFCCC) COP25, or “Blue COP”. We have secured 43% of our jurisdictional waters under some form of protection, including several large fully and highly protected MPAs, and have made important commitments to increase protection of underrepresented coastal and marine ecosystems.

During President Biden’s Leader’s Summit on Climate (April, 2021), Chilean President Sebastian Piñera expressed our desire to be more ambitious and invited the international community to go further and start what we call the “second phase” of our efforts to secure MPAs. President Piñera’s proposal matches up with President Biden’s final statement, which reinforced that this decade is one of decisions, implementation and of collaborative work.

Bearing this in mind, we have adopted a comprehensive vision to combat climate change. We believe that current processes discussed within the United Nations, such as climate change, biodiversity and the high seas are interconnected. To tackle climate change, we need to implement an integral approach and break the silo mentality that prevails in many negotiations. It is about creating a common vision that underscores the inescapable link that exists amongst these issues.



We believe that SPRFMO should start the process of evaluating and analyzing options for the conservation of the resources and ecosystems in specific biological or ecological hotspots in the area, as well as to explore further recommendations at a later stage, and in this case, we will be addressing the Nazca and Salas-y-Gomez Ridges.

Moreover, and at the Committee's convenience, we wish to submit a scientific report on the subject with the view to highlight the need to consolidate the notion that our Organization (SP-RFMO), is always at the forefront of bringing sustainability into its sector, in line with SDG 14, ensuring that science-based, precautionary conservation measures are put in place to protect biodiversity hotspots.

Finally, I wish to highlight the Final Declaration of the 5th France-Oceania Summit, subscribed on July 19 this year by many countries of our Organization (Australia, Cook Islands, New Zealand, and Vanuatu).

The Declaration emphasizes, amongst others : a) the importance of addressing climate change with a heightened sense of urgency and ambition, b) the critical role played by the ocean in combating climate change, preserving biodiversity, and supporting sustainable development, c) the relevance of achieving the protection objective of 30% of the global ocean by 2030 under the CBD, covered by effectively managed MPAs, and d) the promotion of a new high seas treaty under UNCLOS to protect biodiversity beyond national jurisdictions and recognize these areas as a global common to be preserved for the benefit of present and future generations.

We are convinced this Declaration clearly reflects the strong commitment of many nations of the South Pacific to build a sustainable ocean economy, expressing thereby their support to the fundamental assumptions of our request, based on facts, evidence and science.

Now, if you allow me, I would like to give the floor to Mauricio Galvez, lead-scientist of this project.

Thank you for your attention.

Waldemar Coutts
Director of Environment and Maritime Affairs
Chile

REPORT OF THE FOURTH 2021 SC WEB MEETING

31 Aug/ 1 Sept 2021

1. Introductions

1. The SC Chairperson (Jim Ianelli) welcomed all participants. The 1.75-hour web meeting was attended by 25 delegates. A list of participants is provided in Annex 1. Chile noted that with Juan Carlos Quiroz still unwell, Ignacio Payá and Aquiles Sepulveda would lead Chile's science representation.
2. The Agenda (Annex 2) and topics were agreed as below. A [Powerpoint](#) with details from the meeting is available on SPRFMO Teams. A list of upcoming meetings for the SC and its subsidiary Working Groups ([2021 Meeting List](#)) is also available (Annex 3).

2. Action points since last meeting

3. Action points from the last meeting were briefly covered, and had been largely fulfilled at Working Group meetings and the Data Workshop.
4. Of particular note there was a report back regarding Ecuador's question from the third SC meeting on bycatch of Jack mackerel in the tuna fisheries of the IATTC. IATTC report a total of less than 116 tonnes since 1993 (including all epipelagic forage fishes over the whole IATTC area). This data is included in paper [SC9-JM01](#).

3. Jack mackerel Working Group

5. The status of data submissions for this year's stock assessment were reviewed. Currently 2020 catch data, Age Length Key data from Chile (2020 and 2021, using the old ageing criterion), Chile Acoustics data and CPUE data for the offshore fleet are all available. Chile CPUE data, Peru Length Frequency data and Russian Federation ALK data are still pending.
6. Predictions of 2021 catches will also be needed for the modelling (from EU, Russian Federation, Chile and Peru) and Members are asked to provide these figures by 9 September (noting the initial secretariat estimates are in SC9-JM01 [Annex 1](#) (tab 2)).
7. The Data Workshop report has been circulated for comment amongst participants, and will now be finalised.
8. There will be a Jack mackerel Working Group meeting (letter [G121-2021](#)) on 15/16 September to start the stock assessment process.

4. Squid Working Group

9. The Squid Working Group has scheduled three meetings to cover squid topics before the SC meeting. The first meeting covered genetics and proposals for CMM discussions, the second focussed on CMM development and the third (September 14/15) will mainly discuss the Annual Reports and stock assessments that have been presented to SC9.



10. At the second 2021 meeting of the Squid Working Group Members agreed on a recommendation to limit fishing effort in the squid fishery by both the number and the Gross Tonnage of squid jigging vessels Authorised as at 31 December 2020.
11. EU asked for clarification of the difference between Authorised and Active vessels, and why Authorised vessels were specified in the recommendation. It was clarified that Authorised vessels are vessels that Members/CNCPs have given permission to fish within the SPRFMO area, whereas Active vessels are vessels that actually have fished. Since not all vessels that get permission to fish in the area ever do so, there are more vessels (745) on the Authorised list than on the Active list (587).
12. A spreadsheet in the SPRFMO SC9 Teams site ([Vessels 31 December 2020 extract](#)) shows how the figure of 745 was derived.
13. However, there is nothing in the SPRFMO Record of Vessels that specifies that a vessel is engaged in the squid fishery, with squid jiggers variously identified in the Record as “Liners – Pole and line vessels”, “Liners – Pole and line vessels - Japanese type”, “Liners - Handliners” or “Liners – Liners nei”. Before this data can be used for a CMM, Members will need to formally confirm which of the vessels that were Authorised in the SPRFMO Record of Vessels at that date should be considered part of the squid fishery for this purpose.
14. Chile indicated that although their vessels have been inactive in the SPRFMO area in recent years, they do wish to have the option to expand into this region in the future. To accommodate this, they wished the wording of the last sentence to read “Coastal States should still be able to develop their fisheries, in a way for the Commission to decide.” As such, this avoids precluding the expansion of existing fisheries as well as the development of new ones.

5. Deepwater Working Group

15. John Syslo has taken on the role of interim Chair of the Deepwater Working Group. He noted that two meetings have been scheduled before SC9. The first on 7/8 September is mainly to discuss Exploratory fisheries topics, but also the EU paper on alfonso (SC9-DW15) and Species Profiles. The second three session Deepwater workshop is to discuss all of the other Deepwater papers that have been presented to the SC. The plan is to come out of the Workshop with a set of recommendations to the SC, so that these papers do not have to be revisited in the Annual Meeting itself.
16. Marco Milardi briefly introduced the SC to the 15 papers (including two joint Australia/New Zealand papers) that will be discussed at these meetings. These represent a large amount of work addressing a wide range of questions raised by the Commission, and in the SC workplan.

6. Habitat Monitoring Working Group

17. The Habitat Monitoring Group met to discuss the Terms of Reference for the Symposium. A draft has been presented as a paper to the SC ([SC9-HM10](#)) but it is still being worked on and a revised version will be finalised at the Annual Meeting of the SC.
18. A Habitat Monitoring Workshop has been scheduled for 20/21 September at which the 10 Habitat Monitoring papers presented to the SC will be discussed. Delegates are invited to send written questions beforehand so that this workshop can be as productive as possible.
19. As with the Deepwater Workshop, the Habitat Monitoring Workshop was asked to provide a set of specific recommendations to the Scientific Committee, for example of directions of future research.



7. Arrangements for SC

20. Papers for SC9 were due on 28 August, and include 31 DocXX papers (including Annual Reports from 12 Members), 5 JMXX papers, 15 DWXX papers, 8 SQXX papers, 10 HMXX papers and 4 ObsXX papers. They are all either up on the [website](#) already, or due to go up shortly.
21. There are four Observer papers for the SC ([SC9-Obs1](#), [SC9-Obs2](#), [SC9-Obs3](#), [SC9-Obs4](#)), and rather than having a specific Observer session as was done at SC8, it is proposed that these will be considered within the relevant agenda items where possible.
22. In order to ensure that SC9 runs to schedule, it is intended that there will be no presentations at SC9, and SC9 will only need to consider the recommendations coming from the Working Groups. In the event that this means that there is too little material to fill the allocated session, the session would generally be cut short rather than bringing forward agenda items.
23. Annual reports have been presented from 12 Members. It is proposed that these are not discussed at the SC, but that (as with last year), Members provide a short summary for the SC9-Report, and questions and answers about the Annual Reports be dealt with by email and online.
 - a. Therefore - by 8 September, could Members please put all Annual Report Summaries directly into the [draft Report on Teams](#), or if this is not possible email them to Marianne at the Secretariat. Members are also requested to please post any questions about any Annual Reports in Teams (or by email to Marianne) by 15 September.
24. Presenters of papers are also asked to provide a one paragraph summary for each of their papers for the Report, including:
 - a. What the paragraph refers to (including paper reference)
 - b. What was done
 - c. What was found
 - d. What the SC should make of the findings
 - e. Any recommendations that the SC should consider
25. If all of these summaries can be put into the report beforehand, then the Rapporteurs will only need to record important discussion and changes of recommendation that come out of the meeting itself.
26. Volunteer Rapporteurs will be required for SC-9, and will be asked to meet once per day, after Session 2 of each day to coordinate work on the Report.

8. Next steps

27. The next meetings are:
 - a. Deepwater (Exploratory fisheries) 7/8 September
 - b. Jack mackerel (stock assessment) 15/16 September
 - c. Squid (Annual reports and stock assessments) 14/15 September
 - d. Habitat Monitoring Workshop 20/21 September
 - e. Jack Mackerel (Stock assessment) 21/22 September
 - f. Deepwater Workshop 21-23/22-24 September



28. The Annual Meeting of the SC starts on 27 September.
29. Action points:
 - a. Remaining Jack mackerel stock assessment data to be provided ASAP, including Chile CPUE data, Peru Length Frequency data and Russian Federation ALK data and predictions of 2021 catches from EU, Russian Federation, Chile (including North/South split) and Peru.
 - b. Jack mackerel Data Workshop Report to be circulated
 - c. Annual Report Summaries to be put directly into the [draft Report on Teams](#) (or if this is not possible, then emailed to Marianne).
 - d. Reminder emails from the Secretariat for Annual Report Summaries, and Questions and Answers about Annual Reports to go out over coming weeks.
 - e. Volunteer rapporteurs to come forward please.



ANNEX 1. List of Participants

SC CHAIRPERSON

Jim Ianelli

AUSTRALIA

James Larcombe

CHILE

Christian Ibáñez
Ignacio Payá
Katherine Bernal
Víctor Espejo
Silvia Hernandez
Aquiles Sepulveda
Marcos Troncoso

ECUADOR

J. Isidro Andrade
Jorge Costain

EUROPEAN UNION

Niels Hintzen
Martin Pastoors

KOREA

Eunjung Kim
Sanggyu Shin

NEW ZEALAND

Marco Milardi

PERU

Jorge Csirke

RUSSIAN FEDERATION

Alexander Glubokov

CHINESE TAIPEI

Han-Ching Chuang
Ren-Fen Wu
Shih-Chin Chou
Tung-Hsieh Chiang

UNITED STATES OF AMERICA

John Syslo

EXPERTS

Lee Qi

SPRFMO SECRETARIAT

Marianne Vignaux



ANNEX 2. Agenda for the 4th SC web meeting

1. OPENING OF THE MEETING
 - Welcoming of Participants
 - Confirmation of discussion topics
2. UPDATES FROM WORKING GROUPS AND REPORT BACK ON ACTION POINTS
 - Jack mackerel Working Group – from Data workshop and on assessment
 - Squid Working Group - report back from Squid Working Group meeting 17/18 August
 - Deepwater working group – progress report from SPACWG meeting 11 August
 - Habitat Monitoring working group – report back from meeting 24/25 August
3. ARRANGEMENTS FOR SC9
4. OTHER MATTERS



ANNEX 3. SC web meeting summary

| 2021 Web Meetings | Dates <i>(may be across dateline)</i> | Status | Invitation | Report | Link |
|--|---------------------------------------|-----------|---------------------------|---------------------------|----------------------|
| SC9 Annual meeting | 27 Sept – 2 Oct 2021 | Scheduled | G96-2021 | | |
| Deepwater workshop (SCW13) | 21-23/22-24 Sept | Scheduled | G114-2021 | | Link |
| 2nd Jack Mackerel WG Web meeting | 21/22 Sept | Scheduled | G131-2021 | | Link |
| Habitat Monitoring workshop (SCW12) | 20/21 Sept | Scheduled | G110-2021 | | Link |
| 3rd Squid WG Web meeting | 14/15 Sept | Scheduled | G120-2021 | | Link |
| 1st Jack Mackerel WG Web meeting | 15/16 Sept | Scheduled | G121-2021 | | Link |
| 1st Deepwater WG Web meeting (Exploratory fisheries) | 07/08 Sept | Scheduled | G116-2021 | | Link |
| 4th SC Web Meeting | 31 Aug /1 Sept | Held | G109-2021 | | Link |
| 3rd HMWG Meeting | 24/25 Aug | Held | G110-2021 | G129-2021 | Link |
| 2nd Squid WG Web meeting | 17/18 Aug | Held | G103-2021 | G120-2021 | Link |
| Jack mackerel Data workshop (SCW11) | 9,10 (& 11) Aug | Held | G95-2021 | SCW11 | Link |
| 3 rd SC Web Meeting | 27/28 July | Held | G100-2021 | G109-2021 | Link |
| 2nd Habitat Monitoring WG | 14/15 July | Held | G97-2021 | G110-2021 | Link |
| 1 st Squid WG Web meeting | 13/14 July | Held | G87-2021 | G103-2021 | Link |
| 2 nd SC Web Meeting | 29/30 June | Held | G72-2021 | G100-2021 | |
| 1 st SC Web Meeting | 25/26 May | Held | G62-2021 | G72-2021 | |
| 1 st Habitat Monitoring WG | 24/25 May | Held | G67-2021 | | |

REPORT OF THE SECOND 2021 HMWG WEB MEETING

14/15 July 2021

1. Introductions

1. The Co-Chairperson of the Habitat Monitoring Working Group (Mariano Gutierrez) welcomed all participants. The 1.5-hour web meeting was attended by 12 delegates. A list of participants is provided in Annex 1.
2. The Agenda (Annex 2) and topics were agreed as below.

2. Review on the state of progress of the HMWG workplan

3. The Habitat Monitoring Working Group workplan was reviewed, with particular emphasis on identifying what papers are expected to be ready for consideration by SC9. The current state of expected papers is included as Annex 3 (note that these are preliminary indications for planning purposes only, and not a definite list). Approximately 10 papers (or report backs from subgroups) are expected.

3. Dates for the pre-SC workshop of HMWG and preliminary scheduling of presentations

4. There was some discussion about the criteria for deciding what work should be presented at the SC itself, and what should be presented at a pre-SC workshop. As time at the SC will be extremely limited and there is so much important work to be presented, it was decided that all presentations would be at a 1 day (3 hour) workshop on the 20th September (i.e. one week before the opening of the SC) allowing time to prepare a report from the workshop with specific focus on recommendations for the SC to consider.
5. It was agreed that all presentations would be recorded, either at the workshop or pre-recorded by every presenter. This would mean that Members of the SC could watch the presentations at any time in the week coming up to the SC if they were unable to attend the workshop (for example if time zone issues made it difficult for them to attend).
6. Because of the virtual nature of the workshop, meaning that the session time for the workshop would be restricted to 3 hours, it was agreed that presentations at the workshop would be restricted to 10 minutes, with about 5 minutes for discussion. Presenters could prepare longer pre-recorded presentations for SC participants to watch in their own time, but these should also be short and extremely focussed.
7. The Habitat Monitoring slot within the SC would then focus on reviewing the recommendations from the workshop, and deciding on SC recommendations for the SC9 Report.

4. Terms of Reference for Habitat Symposium in 2022

8. The current status of planning for the Habitat Symposium in 2022 was considered.



9. There is to be a Small Pelagics meeting in Lisbon in 7-11 November which is thought to have a similar audience to the Habitat Symposium. However, on consideration it was agreed that the topic areas to be covered in the two meetings are somewhat different. For example, the Small Pelagics meeting is really focussed on very small fish such as anchovy and herring, and it is hoped that the Habitat Symposium will cover similar methodologies applied to a wide range of species including Jack mackerel but also squid and deepwater species.
10. Therefore, it was agreed that the Habitat Symposium be distinct from the Small Pelagics meeting and held in the second week of December 2022 in Concepción, Chile. (The Secretariat notes that this is a very busy time of year, in preparing papers for Commission and so Secretariat support during the proposed symposium will be limited).
11. Draft Terms of Reference for the Symposium will be circulated for consideration shortly and the wider membership of the SC will be invited at the next SC web meeting to give input into topics to be covered, and what sessions they would like to see.

5. Other Issues

12. No other issues were identified, and the meeting closed.

6. Action points

13. Action points:
 - a. Subgroup of specialists to evaluate advantages and biases of analysis methods to meet to progress this recommendation from SC8.
 - b. Other identified papers to be prepared and submitted by 28 August.
 - c. Pre-SC workshop 20 September 2021 with a series of 10 minute presentations and short discussion. Presentations to be recorded (either in the workshop or previously) for any SC member who finds it difficult to attend the workshop.
 - d. SC9 to focus on deciding recommendations from this work to go into the SC9 report.
 - e. Draft Terms of Reference for Habitat Symposium to be circulated for comment, and wider membership of SC to be asked for input into topics at the [third SC web meeting](#) on 27 July.



ANNEX 1. List of Participants

SC CHAIRPERSON

Jim Ianelli

HMWG CHAIRPERSONS

Aquiles Sepúlveda

Mariano Gutierrez

CHILE

Víctor Espejo

ECUADOR

Rebeca Espinoza

Viviana Jurado

Jose Pacheco

EUROPEAN UNION

Martin Pastoors

KOREA

Eunjung Kim

NEW ZEALAND

Marco Milardi

IATTC

Shane Griffiths

SPRFMO SECRETARIAT

Marianne Vignaux



ANNEX 2. Agenda Items

- 1) Review on the state of progress of the HMWG workplan
- 2) Dates for the pre-SC workshop of HMWG and preliminary scheduling of presentations
- 3) Terms of Reference for Habitat Symposium in 2022
- 4) Other Issues

ANNEX 3. HMWG Workplan and developments

| Task | Objective | Timeline | Coordinator | Funding |
|--|---|---|-------------|---------|
| 1. Evaluate the applicability of data collected from fishing vessels targeting pelagic species | 1. Mapping spatial-temporal population density distribution of jack mackerel using a combination of the existing acoustic survey data and acoustic information as obtained from industry vessels <ul style="list-style-type: none"> Changes in the habitat of Jack mackerel (<i>Trachurus murphyi</i>) and chub mackerel (<i>Scomber japonicus</i>) in Peruvian jurisdictional waters between 2020 and 2021. SNP-IHMA Habitat Workshop 2021 report. Environmental effects in the jack mackerel fishery of Chile (Yañez et al. 2021). Jack mackerel habitat along the coast of Chile (Yañez et al. 2021). | <i>Permanent</i> <ul style="list-style-type: none"> Perú Chile (3 last years) | Peru/Chile | In-kind |
| | 2. Subgroup of specialists to evaluate advantages and biases of analysis methods | 2023 <i>M. Pastoors</i> <i>A. Sepulveda</i> <i>M. Gutierrez</i> | Peru/Chile | In-kind |



| Task | Objective | Timeline | Coordinator | Funding |
|--|---|---|-------------|---------|
| | <p>3.Subgroup of specialists to organise classification of fishing fleets.</p> <p>Develop an inventory of technologies available aboard fishing vessels in order to identify the potential to collect data using the technologies currently being deployed.</p> <ul style="list-style-type: none"> Classification of the Peruvian industrial fleet according to its capacity to collect scientific quality data. 2021 version. | <p>2022</p> <p><i>M.Gutierrez</i> <i>N. Alegria</i> <i>J. Oliva</i></p> | Peru/Chile | In-kind |
| 2.Further developments of standardised oceanographic data products and modelling | 1.Characterise jack mackerel habitat (e.g., past studies done in Peru and Chile) | <p>2023</p> <ul style="list-style-type: none"> <i>Chile</i> | Peru/Chile | In-Kind |
| | 2.Provide ecosystem status overview for SC at seasonal to decadal scale | <p>2024</p> | Peru/Chile | In-kind |
| | 3.Explore the concept of jack mackerel habitat under an interdisciplinary ontogeny approach for jack mackerel and other species (by life history stages and regions). Workshop virtually conducted during 2021. | <p>2021+</p> <ul style="list-style-type: none"> <i>EU</i> | Peru/Chile | In-kind |
| | 4.Define a list of existing environmental data: satellite, acoustic surveys, acoustic fisheries surveys, fishing data, fishing vessel data (VMS, Observers) in time and space that already exist inside the SPRFMO area | <p>2021+</p> <ul style="list-style-type: none"> <i>Chile</i> | Peru/Chile | In-kind |
| | 5.Integration of databases provided by different members of the HMWG and other working groups of the SC with linkage to a metadata repository | <p>2022</p> <p><i>(in progress in Chile and Peru)</i></p> | Peru/Chile | In-kind |
| | 6.Develop an inventory of research programmes currently being developed by industry and scientific institutions regarding data collection and monitoring of marine habitats | | Peru/Chile | In-kind |
| 3.Species behaviour and preferences | 1.Analyse the habitat preferences of jumbo squid and Jack mackerel, noting the useful data and analyses provided by Peru and Chile | <p>2023</p> | Peru/Chile | In-kind |
| | 2.Habitat suitability modelling of Jack Mackerel | <p>2022/23</p> <ul style="list-style-type: none"> <i>Peru (Valdez et al. 2015, 2021)</i> | Peru/Chile | In-kind |
| | 3.Incorporate behaviour, distribution, and abundance information about mesopelagic, euphausiids and other key species of the Humboldt Current System | <p>2022/23</p> <p><i>(in progress in Peru)</i></p> | Peru/Chile | In-kind |



| Task | Objective | Timeline | Coordinator | Funding |
|----------------------|--|--|-------------|---------|
| 4. Use of new Tools | <p>1. Develop new approaches based on different tools such as GAM, GLM, INLA, ROMS, Biogeochemical, Geostatistics, big data and machine learning (e.g. for acoustic classification of targets).</p> <ul style="list-style-type: none"> Interannual variability of the habitat suitability of jack mackerel in the Northern Humboldt Current System (Grados et al. 2021). Relating sea surface anomaly to ocean vorticity and catches of Jack mackerel (<i>Trachurus murphyi</i>) between 2011 and 2019 (Montero et al. 2021). <p>2. Utilization of different platforms: Scientific surveys, fishing vessels, satellite oceanography, gliders, buoys, AUV</p> | <p>Permanent</p> <ul style="list-style-type: none"> Peru: Random Forest Modell on JM, also INLA (in progress Chile) EU (in progress) | Peru/Chile | In-kind |
| 5. 2021-22 Symposium | <p>1. Symposium on Habitat Monitoring is organised prior to the 2022 meeting of the Commission</p> <p>Review the state of the art of habitat research in order to recommend specific lines of investigation in this topic within the framework of the SPRFMO.</p> | <p>2022 Steering Committee: A. Sepulveda, M. Gutierrez, Eunjum Kim, M. Milardi, E. Yanez, F. Stephenson, C. Lang. Terms of Reference being drafted</p> | Chile/Peru | NZ\$63k |

REPORT OF THE THIRD 2021 HMWG WEB MEETING

24/25 August 2021

1. Introduction

1. The Co-Chairpersons of the Habitat Monitoring Working Group (Mariano Gutierrez and Aquiles Sepúlveda) welcomed all participants. The 1.5-hour web meeting was attended by 10 delegates. A list of participants is provided in Annex 1.
2. The Agenda (Annex 2) and topics were agreed as below.

2. Terms of Reference for Habitat Symposium

3. Draft Terms of Reference for the Habitat Symposium were presented and discussed in detail.
4. Martin Pastoors noted that information will need to be available on a website well in advance of when abstracts are due so that potential participants know about it.
5. Jorge Csirke suggested that participants should have access to full manuscripts before the meeting.
6. Marco Milardi suggested that more time may be needed between abstract acceptance and registration deadline so that participants can organise travel after having had their abstracts accepted.
7. There was some discussion about the kind of Journal that the papers should end up in – with fees possibly being a consideration for some potential participants. The journal “Ecological Modelling” was suggested as one option
8. The Secretariat noted that organising this Symposium is a significant amount of work, and asked what involvement would be expected from the Secretariat. One suggestion was that the Secretariat could coordinate people in other organisations who would be doing the day-to-day work of organising a Symposium (registration lists etc).
9. It was identified that a specific list of tasks and who would do them was needed.

3. Sub-group to review direct assessment methods

10. The SC workplan asks for a subgroup of specialists to evaluate advantages and biases of analysis methods of data collected from fishing vessels targeting pelagic species.
11. Martin Pastoors suggested that a Terms of Reference was needed for this group, and specific tasks, based on the SC8-Report.
12. It was also noted that the identified subgroup was too small at present, and that the SC should be asked if more people could be involved.

4. Classifying fishing vessels by data collection capabilities

13. The SC workplan asks for a subgroup of specialists to organise classification of fishing fleets and develop an inventory of technologies available aboard fishing vessels to identify the potential to collect data using the technologies currently being deployed.



14. Again, it was identified that the group of people identified for this task was too small, and more would need to be recruited.
15. There was a suggestion that vessels were currently in a state of change, and now might be a difficult time to assess such a classification. On the other hand, it was noted that vessels are always changing their electronics, and that that is one of the challenges of using this fishery-collected data. It was also noted that the classification can be revised every one to two years.

5. Papers for HMWG workshop

16. Working Group members were reminded that all papers, (including the Symposium Terms of Reference) that would be put before the Scientific Committee were due on 28 August, so that Members could consider them beforehand, but that revised versions could be put out if the documents were further developed in subsequent weeks.
17. Preliminary indications are that there will be 7 papers for the HMWG Workshop in September.

6. Action points

18. Action points:
 - a. Symposium Terms of Reference to be further developed, including updated timeframes and specific tasks identified
 - b. Subgroup on advantages and biases of analysis methods of data collected from fishing vessels to identify a Terms of Reference based on SC8-Report.
 - c. Participants at SC9 to be canvassed to identify other potential members for the two subgroups.
 - d. Other identified papers (including Symposium Terms of Reference) to be prepared and submitted by 28 August.



ANNEX 1. List of Participants

SC CHAIRPERSON

Jim Ianelli

HMWG CHAIRPERSONS

Aquiles Sepúlveda

Mariano Gutierrez

CHILE

Jorge Oliva

ECUADOR

Jose Pacheco

EUROPEAN UNION

Martin Pastoors

LIBERIA

Francis Boimah

NEW ZEALAND

Marco Milardi

PERU

Jorge Csirke

SPRFMO SECRETARIAT

Marianne Vignaux



ANNEX 2. Agenda Items

1. Terms of Reference for Habitat Symposium
2. Sub-group to review direct assessment methods
3. Classifying fishing vessels by data collection capabilities

REPORT OF THE FIRST 2021 SQUID WG WEB MEETING

13/14 July 2021

1. Introductions

1. The SC Chairperson (Jim Ianelli) on behalf of the Squid Working Group Chairperson (Gang Li) welcomed all participants. The 2.5-hour web meeting was attended by 30 delegates. A list of participants is provided in Annex 1.
2. The Agenda (Annex 2) and topics were agreed as below, with the draft agenda rearranged so that Fishery Monitoring/CMM approaches were discussed before squid genetics.

2. Fishery Monitoring and CMM development

3. Chinese Taipei presented [a brief summary](#) of how their Jumbo flying squid fishery in the SPRFMO Convention area is managed by them. Of particular note is that their vessels are required to report on VMS hourly (including carrier/transshipment vessels) and report catches daily on an electronic logbook system. Data from these logbook recordings are compared with landings figures at the end of a trip.
4. Ecuador asked why only Callao was identified as a port of landing for these fish, and it was explained that this is because of a long-standing agreement between Chinese Taipei and Peru for the use of port facilities.
5. The use of a simple vessel count (and size) as a unit of effort (and as a recommended way to design a CMM) was discussed. Criticisms of such simple measures were highlighted including that vessels of different sizes could have different fishing power, and different vessels could be in the fishery for different numbers of fishing days in the season. A finer scale system is needed to provide scientific robustness on a measure of effort.
6. The European Union presented [a summary](#) of possible approaches to the problem of measuring effort in this fishery. They noted that simply using registered (authorised) vessels from the SPRFMO Record of Vessels was inappropriate because being authorised does not necessarily mean that the vessel has actually fished. Using reported Active vessels (either on an annual basis or on a monthly basis) would be an improvement. Also, VMS data could be used to count vessel days (and with some VMS analysis, fishing days) in the Convention area. It is also possible to weight the vessels by Gross Tonnage or kW so that any of these indicators better reflect the fishing power of the vessels.
7. There was discussion about whether the number of jigging machines could be used as an even better measure of the fishing power of the vessel. However, this information is missing as part of the vessel authorisation. It is an allowed fishing activity data provided 6 months after the end of the calendar year. However, it has mostly been incompletely reported and in its present state, is unusable as a measure of historical effort.
8. Korea remembered that the original idea was to freeze effort at some measure of the existing level and noted that the number of vessels was a poor indicator for this purpose. Some vessels may fish all year while some only fish part of a year. They were therefore interested in the indicators based on active vessels (on a monthly basis) or days at sea.



9. Peru was interested in an indicator that reflected the number of jigging machines per day, and noted that the number of jigging machines would be related to the size of the vessel because a larger vessel has room for more machines. They felt that kilowatts was a less appropriate measure for fishing power for jigging vessels, because the fishing takes place when the vessel is nearly stationary. They suggested that Gross Tonnage or length could be used as a proxy for the number of jiggers as a proxy for fishing power.
10. Chinese Taipei agreed with Korea that the goal is a precautionary effort limit, but warned that fishing days could vary greatly with weather for example, and that the number of jigging machines could also change every day as jigging machines were turned on or off. They suggested that a measure based on number of vessels would be a good start.
11. China noted that the number of fishing days did not necessarily equal the number of days at sea, but suggested that not just one but a combination of effort measures could be used e.g. total number of fishing vessels and gross tonnage. They noted that historically it has not been possible to provide number of jigging machines on a daily basis in the Fishing Activity data, but will try to provide this in future.
12. Chile asked why there are no “Jiggers” in the SPRFMO Record of Vessels and it was explained that under Annex 10 of [CMM 02](#) which sets out the 1984 “FAO International Standard Statistical Classification of Fishery Vessels by Vessel Types” to be used in the SPRFMO Record of Vessels, there is no specific code for “Jiggers” but they are included in category 07.3 which are “Liners – Pole and Line vessel”. Note that FAO have recently released a new Statistical Classification of Fishery Vessels that does reference Jiggers, but this is not yet allowed for in CMM 02, nor in the database software.
13. The working group suggested that a database of squid vessels be compiled, and it was asked that this includes associated carrier vessels.

3. Squid Genetics

14. Chile presented [their presentation](#), and asked for samples from more places, for example within EEZs of coastal States, and the idea of a sample exchange was agreed to be desirable.
15. China presented [their presentation](#) which also noted the difficulty in getting samples from a wide range of areas. Their work indicated that the three phenotypes (small, medium, large) did not differentiate significantly, and should be considered as one management unit. The work also suggested that the population appeared to be seriously inbred. They noted that because of the difficulty in sourcing at-sea samples, the maturity stage for some of the samples (large phenotype) is not known, however it doesn't change the final result.
16. Chile and Peru had some questions on this work, including the mutation rate assumed, the coverage for sequencing, the number of reads/sample, and the number of loci from the SNPs. It was agreed that these technical questions be followed up by email or on the [chat in Teams](#).
17. Peru presented [a summary](#) of their genetic programme, which is based on samples from North, Central and Southern areas both close to the coast and offshore, looking at small and medium phenotype squid.
18. Chile asked why the different phenotypes should be expected to differ genetically, and it was explained that in some cases the SNPs method can give information about environmental interactions with genetic material.



19. Korea presented their [template](#) on their squid genetics programme, which is a work in progress. They plan to do one reference specimen, and then 500 samples. They asked if Chile would be willing to exchange some samples from the high seas for some of their EEZ samples and it was agreed that this be followed up, preferably in a coordinated way with all Members with active squid genetics programmes able to contribute.
20. China (with Secretariat support) will prepare an overall comparison of the different programmes for the SC. It was noted that different Members appear to be using different techniques, for example different enzymes. It was suggested that although data is easier to exchange than samples, in the first instance sample exchange and the application of different techniques will give further information about how big the differences are. It was also suggested that one coordinator from each relevant Member should be nominated to facilitate the squid sample exchange.

4. Action points

21. Action points:
 - a. Secretariat to look at compiling a list of “squid vessels” for use in any effort measure work including lists of both jiggers and carrier vessels
 - b. Work to continue on effort measures, incorporating feedback from this meeting. The group highlighted the need for finer resolution data; the SC Chair notes that such refinements should not delay steps toward develop an effective CMM in the interim.
 - c. China to answer technical questions on squid genetics in email or possibly on the [chat in Teams](#)
 - d. Sample exchanges to be progressed, and China to suggest a possible coordinated approach
 - e. China (with Secretariat support) to summarise comparison of squid genetics programmes for SC9



ANNEX 1. List of Participants

SC CHAIRPERSON

Jim Ianelli

SQUID WG CHAIRPERSONS

Gang Li

CHILE

Marcos Troncoso
Katherine Bernal
Christian Ibáñez
Ignacio Payá

CHINA

Luoliang Xu
Bilin Liu
Dongming Lin
Congcong Wang
Jin Ziyun

ECUADOR

Jorge Costain
Rebeca Espinoza
Jose Andrade
Jose Pacheco

EUROPEAN UNION

Niels Hintzen

KOREA

Il Kang Na
Eunjung Kim
Kyum Joon Park

PERU

Juan Arguelles
Jorge Csirke
Giovanna Sotil
Ricardo Tafur Jimenez
Jimena Mendoza

CHINESE TAIPEI

Hanching Chuang
Chih-Shin Chen
Fang-Chia Hsu
Shih-Ming Kao
Shih-Chin Chou

UNITED STATES OF AMERICA

John Syslo



ANNEX 2. Agenda for the 1st SC Squid Working Group web meeting

- 1) OPENING OF THE MEETING
 - a. Identification of Participants
 - b. Confirmation of discussion topics
- 2) FISHERY MONITORING AND CMM DEVELOPMENT
 - a. Presentations of possible approaches to fishery monitoring and CMM development
- 3) SQUID CONNECTIVITY / GENETICS
 - a. Presentations of existing approaches to genetic analyses

REPORT OF THE SECOND 2021 SQUID WG WEB MEETING

17/18 August 2021

1. Introductions

1. The SPRFMO SC Squid Working Group Chairperson (Gang Li) welcomed all participants and asked delegations to introduce themselves. The 2.75-hour web meeting was attended by 36 delegates. A list of participants is provided in Annex 1.
2. The Agenda (Annex 2) and topics were agreed as below, with the focus of the meeting on CMM development and Agenda Item 3 (Other Matters) covered briefly at the start of the meeting.

2. Species Profiles

3. The Working Group agreed that the outdated version of the Species Profile for GIS currently on the website should be revised and updated. A group including Juan Arguelles, Ricardo Tafur, Bilin Liu and a representative from Chile were tasked with updating the short version of the Species Profile before SC-9, particularly to include references to relevant new research.
4. Marianne was asked to brief this small group on the task (to produce a short Species Profile suitable for the website, that doesn't have to be updated every year and therefore focusses mainly on well understood biological information rather than fishery information).
5. The Working Group also agreed that the "long version" or "synopsis" currently on the website was still a useful product (although now out of date), and this should be worked on and updated prior to SC-10.
6. It was further agreed that the Species Profiles for the other two squid species (Neon flying squid *Ommastrephes bartrami* and Purpleback squid *Sthenoteuthis oualaniensis*) did not need to be updated, as these species were not caught in significant quantities in the SPRFMO area.

3. Fishery Monitoring and CMM development

7. A presentation of comparison of indices by Niels Hintzen was put before the working group. It was noted that the big decline in catch in 2019 is due to in-zone catch figures from Peru not being available (while being included in previous years). It was suggested that these figures should not include EEZ catches at all, because it is not possible to include EEZ vessels.
8. There was general agreement among the SPRFMO SC Squid Working Group that a freeze on effort was desirable, and that this group should try to come to an agreement about how this could be achieved. Two initial questions were identified, as what the effort should be limited by, and what level the effort should be limited at. It was agreed that the limit should be easy to measure and control.
9. There was general agreement that Gross Tonnage was a useful parameter, because a limit simply on number of vessels might allow effort to increase by increasing the size of individual vessels.



10. China suggested a limit on the number of vessels, with a further restriction that if new vessels replace existing vessels that the gross tonnage should not increase. This would limit both number of vessels and gross tonnage, and would be similar to how Jack mackerel was managed before catch limits were introduced (see paragraph 4 of [CMM 01-2021 \(Trachurus Murphyi\)](#)). Members did consider that it was important to allow new vessels to replace old vessels that were leaving the fishery, possibly by notifying the Secretariat of the exchange (on the condition that the gross tonnage not increase).
11. There was discussion about effort by coastal States, and Members with historical interest in the squid fishery that had no vessels currently authorised. It was agreed that some allowance should be made for these situations, either by allocating 5 or 10% of the overall limitation or in some other way to be decided by the Commission.
12. The Working Group agreed that at least effort should be capped at 2020 levels, with 2016-2018 considered more precautionary and preferred by some Members. It was also suggested that Members could select their own reference year.
13. Several Members expressed a preference for freezing effort in terms of Authorised (as distinct from Active) vessels, although it was recognised that this was less precautionary because some Members have more vessels Authorised than actually actively fish.
14. The practical problem of identifying which vessels are squid vessels (given that the SPRFMO Record of Vessels does not identify target species or fishery) was discussed at length. There is a particular problem with coastal States where some vessels may be identified as multi-purpose vessels but may have caught squid in the past, possibly as a bycatch. Other vessels, such as New Zealand liners, are technically authorised to target squid (as are all vessels) but are not normally considered to be part of the squid fleet. However, as the vessels currently fishing for squid in the SPRFMO Convention area are all deep water fleet vessels using squid jiggers, it was hoped that this difficulty should not prevent an effort limitation being introduced. It should be possible to only focus on squid jigging vessels in the Convention area.
15. There is no vessel type that clearly identifies Squid Jiggers in the vessel types specified in Annex 10 of [CMM 02-2021 \(Data Standards\)](#). Squid jiggers are currently coded under 7.3.0 (Pole and line vessels), 7.3.1 (Japanese type) and 7.3.9 (Liners nei) under the general category “Liners” (which also includes Longliners and Handliners in the SPRFMO Convention Area). It was therefore suggested that Members should self-identify which of their Authorised vessels are actually in the squid fishery. The fishery that a vessel fishes in is important information, not just for this question, and there would be advantages in having this information for all vessels and fisheries.
16. Another question is whether the number of vessels/Gross Tonnage in the squid fishery should be monitored at an annual/monthly or even daily level. Some Members felt that it would only be practical to monitor this index on an annual level.
17. A summary of the discussions in terms of advantages and disadvantages of different proposals is included as Annex 3.
18. The Squid Working Group therefore agreed on a recommendation to the Scientific Committee that:
Fishing effort in the squid fishery be limited by both the number of vessels and the total Gross Tonnage of squid jigging vessels Authorised as at 31 December 2020, with Members to confirm which of the vessels that were Authorised in the SPRFMO Record of Vessels at that date should be considered part of the squid fishery for this purpose. Coastal States should still be able to develop their fisheries, in a way for the Commission to decide.



19. The Secretariat was asked to produce a list of vessels from the SPRFMO Record of Vessels that were authorised as of 31 December 2020.

4. Next meeting

20. The Working Group decided that they would like to meet again prior to the SC Annual Meeting to discuss other issues, such as Member Annual Reports, once these have been submitted.

5. Action points

21. Action points:
 - a. A small group including Juan Arguelles, Ricardo Tafur, Bilin Liu and someone from Chile were tasked with updating the short version of the GIS Species Profile before SC9 and the Secretariat to brief this small group on the task for consistency with Species Profile in the other working groups.
 - b. Long version of the Species Profile to be updated intersessionally before SC10.
 - c. Species Profiles for the other two squid species (Neon flying squid *Ommastrephes bartrami* and Purpleback squid *Sthenoteuthis oualaniensis*) not to be updated, and will be removed from the website.
 - d. SPRFMO SC Squid Working Group recommendation to be presented to SC9.
 - e. Secretariat to produce a list of vessels from the SPRFMO Record of Vessels that were authorised as of 31 December 2020.
 - f. Squid Working Group to meet again prior to SC9, to discuss progress and Annual Reports.



ANNEX 1. List of Participants

SQUID WG CHAIRPERSON

Gang Li

CHILE

Marcos Troncoso

Katherine Bernal

Christian Ibáñez

Ignacio Payá

CHINA

Ruojin Qiao

Luoliang Xu

Dongming Lin

Congcong Wang

ECUADOR

Jorge Costain

Jose Andrade

Jose Pacheco

KOREA

Eunjung Kim

PERU

Jorge Csirke

Juan Arguelles

Giovanna Sotil

Ricardo Tafur Jimenez

Jimena Mendoza

NEW ZEALAND

Marco Milardi

CHINESE TAIPEI

Han-Ching Chuang

Tung-Hsieh Chiang

Chih-Shin Chen

Shih-Chin Chou

Shih-Ming Kao

UNITED STATES OF AMERICA

John Syslo

Emily Reynolds

CALAMASUR

Rodrigo Wiff

SC CHAIRPERSON

Jim Ianelli

SECRETARIAT

Marianne Vignaux

Susana Delgado



ANNEX 2. Agenda for the 2nd SC Squid Working Group web meeting

- 1) OPENING OF THE MEETING
 - c. Identification of Participants
 - d. Confirmation of discussion topics
- 2) FISHERY MONITORING AND CMM DEVELOPMENT
 - b. Comparison of possible approaches to fishery monitoring and CMM development
- 3) OTHER MATTERS
 - a. Report back from action points
 - b. Species profiles



ANNEX 3. Summary of discussions about effort limitation options

| | Advantages | Disadvantages |
|---|--|---|
| Freeze on authorisation of new vessels (except replacing retiring vessels) | Excludes the growth potential of fishing effort above the upper limit of currently authorised vessels | Fishing effort could continue to increase before reaching the upper limit of currently authorised vessels |
| Cap on number of Active vessels | No agreement by Members | |
| Cap on number of Authorised vessels | Simple Agreement by many Members | Not as precautionary as Active vessels because not all vessels that are Authorised at present are actively fishing. SPRFMO Record of Vessels does not identify fishery or target species for Authorised vessels. |
| Cap on Gross Tonnage | Does not allow effort creep as larger vessels replace smaller ones Consistent with Jack mackerel management measure | |
| Cap on Engine power | Does not allow effort creep as larger vessels replace smaller ones | Not significantly different from Gross Tonnage |
| Cap on both number and Gross Tonnage of Authorised vessels (squid jiggers only) | Agreement by Squid Working Group Does not allow effort creep as larger vessels replace smaller ones Consistent with Jack mackerel management measure | |

REPORT OF THE THIRD 2021 SQUID WG WEB MEETING

14/15 September 2021

1. Introductions

1. The SPRFMO SC Squid Working Group Chairperson (Gang Li) welcomed all participants and asked delegations to introduce themselves. The 2.75-hour web meeting was attended by 40 delegates. A list of participants is provided in Annex 1.
2. The Agenda (Annex 2) and topics were agreed as below, with the focus of the meeting on Annual Reports and Stock Assessment modelling.

2. Report back from action points

3. Peru confirmed that it had finished its work on the jumbo flying squid (*Dosidicus gigas* - GIS) species profile, and other Members, in particular Ecuador and Chile were invited to review and add material if they wished.
4. Chile reported that they still had some doubts about the text of the draft recommendation that had been prepared at the Second 2021 Squid Working Group meeting and presented in draft form at the fourth 2021 SPRFMO SC web meeting. The Working Group agreed that there would be further discussion on the wording by email.

3. Annual Reports

5. Members presented their annual reports, and in the interests of time it was agreed that questions should be raised and answered on Teams (in the draft SC9 Report).
6. China presented SC9-Doc28_rev1, their Annual Report, and SC9-Doc29 the China Observer Implementation Report, which describes the first Observer data from the Chinese squid fleet.
7. Chile presented SC9-Doc25, their Annual Report.
8. Korea presented SC9-Doc17, their Annual Report, noting that the observer template for jigging vessels will be submitted from this year onwards. The observers have been collecting extra biological information which will be helpful for the stock assessment in the future.
9. Peru noted that they had no catch of squid in the SPRFMO Convention Area in 2020 or 2021.
10. Ecuador presented SC9-Doc19, their Annual Report for squid.
11. Chinese Taipei presented SC9-Doc21, noting that their first Observer in the squid fishery is on board the vessel now, and the data will be presented at SC10.

4. Stock Assessment modelling

12. Ecuador presented SC9-SQ08, a proof of concept note regarding a Stock assessment of the flying jumbo squid in Ecuadorian waters with generalised depletion models. There was some discussion about the within-EEZ monthly mean weight figures, and whether the trends were consistent with those seen in the SPRFMO Convention area, or whether there might be issues due to small numbers of samples.



13. China presented SC9-SQ05 which used a state-space surplus production model to assess the jumbo flying squid (*Dosidicus gigas*) stock, which as well as including an update from the 2017 model also added temperature linked parameters, in which different r and K parameters were estimated depending on whether la Nina or El Nino conditions were prevailing.
14. There was some discussion about whether a simple model would be able to manage the complex situation in this fishery with three different phenotypes with different growth rates, and which may change in proportion over time. It was suggested that simple models would be a starting point, with for example size or age structure being added in later on.
15. CALAMASUR presented SC9-Obs04 a conceptual proposal for a regional stock assessment of the flying jumbo squid in the South-Eastern Pacific. This model includes migration from Ecuador to Peru, Peru to Chile and the high seas region, and from Chile to the high seas region, but would require monthly catches and mean weights from all regions in order to estimate these migrations (using relative changes in CPUE in neighbouring areas). It was again noted that different phenotypes and the complexity and scale of the fishery could make these difficult to estimate, and more data may be required. It was suggested that perhaps VMS data could be used to index connectivity between adjacent areas.
16. There was some discussion about the output from such a model, and whether it could be used for setting a quota that could be applied for a whole season, or whether it was only for estimating productivity in the first instance
17. The Squid Working Group **recommended** that the Scientific Committee pursue the collection of a joint dataset from all Members of Catch (kg), Effort (e.g. vessels, vessel days, hauls, hours) and (where available) mean weight by month and area. Note that Monthly catch and effort data are required under CMM02-2021 anyway, but within-EEZ data would also be required for a fully regional stock assessment. This joint dataset could be used by different stock assessment models and was a necessary first step in progressing any stock assessment modelling for jumbo flying squid in the SPRFMO area:

| Basic Data Template | | | | | | |
|---------------------|------|-------|------|-------|--------|-------------|
| Member | Area | Month | Year | Catch | Effort | Mean weight |
| | | | | | | |
| | | | | | | |



18. The Squid Working Group asked for a table of the advantages and disadvantages of the different proposed modelling approaches:

| Table of Advantages and Disadvantages of different proposed modelling approaches | | | | | |
|--|------------|---------------|---|--|-------------|
| | Advantages | Disadvantages | Implications of growth/genetic differences e.g. of different phenotypes | Data needs | Needs Index |
| SC9-SQ08- single area generalised depletion model | | | | Template sufficient/not sufficient for now | Yes/No |
| SC9-SQ05 – state space surplus production model | | | | Template sufficient/not sufficient for now | Yes/No |
| SC9-Obs04 – multi-area generalised depletion model | | | | Template sufficient/not sufficient for now | Yes/No |
| Others (Peru 2019?, Chile's) | | | | Template sufficient/not sufficient for now | Yes/No |

19. The Squid Working Group **recommended** that a discussion on the best ways to measure fishing effort in this fishery be retained on the Workplan for next year (contingent on the ability to meet face-to-face due to the global pandemic situation).

5. Action points

20. Action points:
- Chairs and Secretariat to recirculate the draft recommendation (from the SWG to the SC) on an effort limit in the squid fishery to give Members another opportunity to consider and refine the wording.
 - Paper authors to help complete the table of the advantages and disadvantages of different proposed modelling approaches, which will be available on Teams.
 - Paper authors to add paragraphs briefly summarising their papers into the draft SC-9 Report.



ANNEX 1. List of Participants

SQUID WG CHAIRPERSON

Gang Li

SC CHAIRPERSON

Jim Ianelli

CHILE

Marcos Troncoso
Katherine Bernal
Christian Ibáñez
Ignacio Payá
Renzo Tacheri

CHINA

Luoliang Xu
Bilin Liu
Congcong Wang
Ce Liu
Meng Wang

ECUADOR

Jorge Costain
Jose Andrade
Jose Pacheco
Ruben Roa Ureta
Rebeca Espinoza
Edwin Castro

KOREA

Eunjung Kim

PERU

Jorge Csirke
Edgar Argumedo
Juan Arguelles
Giovanna Sotil
Ricardo Tafur Jimenez
Jimena Mendoza

NEW ZEALAND

Marco Milardi
Tiffany Bock

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Han-Ching Chuang
Tung-Hsieh Chiang
Chih-Shin Chen
Shih-Chin Chou
Shih-Ming Kao
Ren-Fen Wu

UNITED STATES OF AMERICA

Emily Reynolds

IATTC

Shane Griffiths

CALAMASUR

Rodrigo Wiff
Renato Gozzer

SECRETARIAT

Marianne Vignaux
Susana Delgado
John Cheva



ANNEX 2. Agenda for the 3rd SC Squid Working Group web meeting

1. OPENING OF THE MEETING
 - a. Identification of Participants
 - b. Confirmation of discussion topics
2. ANNUAL REPORTS
3. OTHER MATTERS
 - a. Report back from action points
 - b. Species profiles
 - c. Other Squid papers presented at SC9

REPORT OF THE FIRST 2021 JACK MACKEREL WG WEB MEETING

15/16 September 2021

1. Introductions

1. The SPRFMO SC Jack Mackerel Working Group Chairperson (Martin Pastoors) welcomed all participants and asked delegations to introduce themselves. The 1-hour web meeting was attended by 24 delegates. A list of participants is provided in Annex 1.
2. The Agenda (Annex 2) and topics were agreed as below, with the focus of the meeting on data requirements for stock assessment.

2. Report back from action points

3. Peru confirmed that it had finished its work on the CJM and MAS species profiles but suggested that as stock structure was such an important issue for Jack mackerel, that the short profiles should be extended to include some discussion of these matters.
4. Chile reported that they were still working on their proposed revisions to the draft CJM and MAS species profiles.
5. Species Profiles would be further discussed at the next meeting.

3. Assessment data provision

6. It was clarified that data for this particular assessment would be stored in the [Data folder](#) within the Jack Mackerel channel of the SPRFMO SC9 Team (equivalent to the Meeting Server used at face-to-face SC meetings). The permanent data archive was in the [Data Submissions](#) folder of the persistent SPRFMO SC Jack Mackerel WG Team (which is equivalent to the old Dropbox data storage) and would still be there for SC10 and other meetings.
7. Most of the data required for the stock assessment has been provided, including four Age Length Key files. SC9-JM01, the summary of annual catches was tabled, and Chile was invited to specify the split between the Fleet 1 and Fleet 2 catches. An index from the 2021 Chile Acoustics survey has been provided, but age data was not included and Chile was asked to advise whether it could be made available. The egg survey index has not been updated. Chile, Peru and offshore CPUE indices have all been provided.
8. Niels will begin to compile the data for the stock assessment, using ages from both the old and the new ageing method.

4. Stock Assessment modelling

9. The stock assessment model from last year is ready to do a simple update using the new data (pending the Benchmark workshop which has been delayed due to the COVID-19 pandemic).



5. Action points

10. Action points:
 - a. Chile to progress work on CJM and MAS species profiles on Teams
 - b. Chile to provide update on catch split between Fleet 1 and Fleet 2
 - c. Chile to advise whether age data is available for the latest acoustics survey indices
 - d. Niels to compile data for the stock assessment
 - e. Preliminary assessment runs for next meeting
 - f. Next meeting agenda (for 2nd 2021 Jack Mackerel Working Group meeting, 21/22 September) to be developed including presentation of preliminary results and working documents.



ANNEX 1. List of Participants

JACK MACKEREL WG CHAIRPERSON

Martin Pastoors

SC CHAIRPERSON

Jim Ianelli

CHILE

Katherine Bernal
Ignacio Payá
Aguiles Sepulveda
Victor Espejo
Renzo Tascheri
Andres Couve
Silvia Hernandez

EUROPEAN UNION

Niels Hintzen

ECUADOR

Jorge Costain
Manuel Peralta
Jose Pacheco

KOREA

Eunjung Kim

NEW ZEALAND

Marco Milardi

PERU

Daniel Grados
Jorge Csirke
Ana Alegre
Erich Diaz
Enrique Ramoz
Pablo Marin

SPC

Claudio Castillo

INVITED EXPERT

Lee Qi

SECRETARIAT

Marianne Vignaux



ANNEX 2. Agenda for the 1st Jack Mackerel Working Group Web Meeting

1. OPENING OF THE MEETING
 - a. Identification of Participants
 - b. Confirmation of discussion topics
2. JACK MACKEREL
 - a. Review Jack Mackerel updated data for the assessment
 - b. Other Jack mackerel topics

REPORT OF THE SECOND 2021 JACK MACKEREL WG WEB MEETING

21/22 September 2021

1. Introductions

1. The SPRFMO SC Jack Mackerel Working Group Chairperson (Martin Pastoors) welcomed all participants and any new members were invited to introduce themselves. The 2-hour web meeting was attended by 24 delegates. A list of participants is provided in Annex 1.
2. The Agenda (Annex 2) and topics were agreed as below, with the focus of the meeting on data requirements for stock assessment.

2. Report back from action points

3. Action points:
 - a. Chile to progress work on CJM and MAS species profiles on Teams – still in progress,
 - b. Chile to provide update on catch split between Fleet 1 and Fleet 2 for 2021 (and 2020) – done, email 15 and 16 September 2021
 - c. Chile to advise whether age data is available for the latest acoustics survey indices-confirmed that there is no update for the age information for Fleet 2 acoustic survey, which is consistent with previous years
 - d. Niels to compile data for the stock assessment – done, and provided to the modelling team
 - e. Preliminary assessment runs for next meeting – Done, and presented at this meeting
 - f. Next meeting agenda (for 2nd 2021 Jack Mackerel Working Group meeting, 21/22 September) to be developed including presentation of preliminary results, working documents and species profiles. - done

3. Comments on Annual Reports

4. EU asked a question regarding the Electronic Monitoring system referred to in Chile's Annual Report SC9-Doc 24.
5. Chile explained that this system was composed of both a tablet on board so that vessels could report their data manually (Electronic Reporting) as well as a set of cameras on board recording footage that can be reviewed at a later stage. Chile was invited to present more details at SC10.



6. Regarding Peru's Annual Report (SC9-Doc23). EU noted that the 2020 CPUE presented is almost double the value shown in the Annual Report of SC8 (SC8-Doc24). Peru explained that this was likely to be because the SC8 value was based on partial data taken from only the first half of 2020, and the SC9 value includes the data from the artisanal fleet in the second half of 2020, which showed a significant increase in CPUE. However, they also noted that the artisanal fleet, as well as being larger (gross tonnage) than previous years (which the model can account for) may also have had higher fishing power (which the model is not set up to account for), which may have inflated the figure. Peru indicated that they would look for a closer understanding of the observed differences.
7. The EU also asked about the output of the JJM model given in Figure 20 of SC9-Doc23 which suggests a significantly larger biomass than was estimated in the JJM model run during SC8. Peru explained that the only difference was the data input to the model (such as the CPUE index). Peru were asked to provide the control files.
8. The EU gave a short presentation on SC9-JM02 regarding the offshore fleet CPUE standardisation. A small change was needed to the model because with only one vessel fishing in 2020 (which fished for the first time in 2020), the model was unable to estimate a 2020 year effect with a Vessel variable in the model. Therefore the Vessel variable was changed to Contracting Party, and the model was then able to estimate a CPUE index, with results similar to last year, but with a slightly higher year effect in recent years. The new 2021 index was significantly higher but with large uncertainty. The Working Group noted that the model doesn't currently use different CV values for different year indices within a series, but it was agreed to put a higher standard error on the 2020 value, in a sensitivity analysis.
9. The possibility of using the Francis method for selecting model CVs (using smoothers and comparing residuals) was considered, and it was agreed that this should be considered at the Benchmark, not just for the offshore fleet CPUE, but for all CPUE series used in the assessment.
10. The Working Group discussed the difficulty of getting a reliable CPUE index when the distribution of fish is changing and the fishery and the fleet has increasingly good fish finding equipment and habitat prediction information. A 2% average increase in efficiency has been assumed in global analyses, but this has not been applied so far in the CPUE series used for Jack mackerel.

4. Stock Assessment modelling

11. The stock assessment model from last year has been updated with new data, and Lee Qi presented preliminary results showing nearly identical results so far (models 0.00 to 0.08, one stock model only), with the only noticeable change a slight increase in the 2021 recruitment when the age composition data was included in the model.
12. It was clarified that there were three different age compositions to be considered this year – the set used in the model last year, a revised set using the old ageing method ("Antiguo") and a set using the new ageing method (only to be used as a sensitivity analysis).
13. The Working Group asked for more information in the documentation on how to compile the model.



5. Species Profiles

14. Regarding the CJM species profile (SC9-Doc12), Chile reported that they had added clarification on the new ageing method, and were drafting new text for the habitat section. There was some discussion about whether the phrase “sub-tropical waters” covered the whole range of the species and it was suggested that the useful phrase “jack mackerel belt” could be used. Peru reported that they had added their text, but were also suggesting a paragraph on stock structure hypotheses including the metapopulation hypothesis. The Working Group asked Peru to draft a paragraph for consideration. It was hoped that the updated CJM species profile would be able to be agreed at SC9.
15. Regarding the MAS species profile (SC9-Doc12), Peru reported that they had edited the document. The Working Group asked for the map in Figure 1 to be changed so that the SPRFMO area was at the centre (rather than the edges) of the figure. Chile reported that they were planning to update the profile with recent information, but were reminded that for these short profiles there was no need for information such as catch figures that would need to be updated on a regular basis. The Working Group discussed the map showing data on spawning locations, and it was agreed that it might give the wrong impression of the whole range over which spawning occurred, so the figure would either be removed or replaced with a simple diagram.

6. Action points

16. Action points:
 - a. Chile to provide details about their Electronic Monitoring programme at SC10 once it has been in operation for a year.
 - b. Peru to provide the control files for their December run of the JJM model which produced the outputs given in SC9-Doc23.
 - c. A higher standard error to be put on the 2020 CPUE estimate from the offshore fleet and other CPUE indices as it was based on a very limited amount of data, as a sensitivity analysis.
 - d. The possibility of using the Francis method to select model index CVs to be considered at the Benchmark
 - e. Preparation of the stock assessment model to continue.
 - f. Supply information in the documentation (github) on how to compile the JJM model.
 - g. Chile and Peru to continue work on the CJM and MAS Species Profiles based on Working Group discussion, for final consideration at SC9



ANNEX 1. List of Participants

JACK MACKEREL WG CHAIRPERSON

Martin Pastoors

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Aquiles Sepulveda
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FAROE ISLANDS

Jan Arge

KOREA

Eunjung Kim

PERU

Jorge Csirke
Ana Alegre
Erich Diaz
Enrique Ramoz
Pablo Marin
Jorge Mostacero

IATTC

Shane Griffiths

EXPERTS

Lee Qi

SECRETARIAT

Marianne Vignaux



ANNEX 2. Agenda for the 2nd 2021 SPRFMO SC Jack Mackerel Working Group web meeting

| Time | Topic | Presenter |
|------|---|-----------|
| 0:00 | 1. Opening of the meeting | |
| | 1.a Identification of participants | |
| | 1.b Confirmation of discussion topics | |
| | 1.c Follow-up on action items 15/9/2021 | |
| 0:20 | 2. Jack mackerel | |
| 0:20 | 2.a Other Jack mackerel topics | |
| 0:20 | 2.a.1 Comments to JM sections in national reports (if any) | |
| 0:30 | 2.a.2 JM02 CPUE standardization offshore fleet | |
| 0:40 | 2.b Preliminary results of the Jack mackerel stock assessment | |
| 1:40 | 3. Status of species profiles JM & MAS | |
| 2:00 | Closing | |

REPORT OF THE FIRST 2021 DEEPWATER WG WEB MEETING

7/8 September 2021

1. Introduction

1. The Interim Chairpersons of the Deepwater Working Group (Dr John Syslo) welcomed all participants. The 2-hour web meeting was attended by 22 delegates. A list of participants is provided in Annex 1.
2. The Agenda (Annex 2) and topics were agreed as below.

2. Proposed Plan for a 2022 industry acoustic survey on alfonsinos and redbait

3. Niels Hintzen gave a presentation on a Proposed Plan for a 2022 industry acoustic survey on alfonsinos and redbait (SC9-DW15).
4. He noted that during the 2021 Jack mackerel fishery the EU fleet came upon large aggregations of alfonsino and redbait, and that the EU proposed to do an industry acoustic survey in 2022 to make absolute estimates of biomass as well as to collect biological and genetic samples. The survey was planned to cover 9 seamounts in 3 weeks.
5. The working group noted that the Chilean Research vessel *Abate Molina* and New Zealand commercial vessels fishing in the 1990s had also recorded these large aggregations in previous years.
6. There was some discussion as to whether this should be assessed as a research survey or as an exploratory fishery. There is no specific CMM to cover research within SPRFMO, and the Exploratory Fisheries [CMM 13-2021](#) defines a fishery as exploratory fishing if it has not been subject to fishing in the previous ten years; or for the purposes of fishing with a particular gear type or technique, if it has not been subject to fishing by that particular gear type or technique in the previous ten years. The EU explained that the intention and the goal of this proposal is for research rather than for an exploratory fishery, but that it is an industry survey and it is likely that an exploratory fishery proposal might be envisaged in future years.
7. The Working Group noted that Chile's paper SC9-Doc31 is proposing the need for additional protection on the High Seas of Nazca and Salas y Gomez Submarine Ridges which is in the same area.
8. There was discussion about the definition of mid-water trawling in [CMM 03-2021](#), and it was noted that although the mid-water trawling in the proposal uses somewhat different gear than the mid-water trawling that was defined as bottom trawling in CMM03, and was not expected to come near the bottom, nevertheless under CMM03 it may well be defined as bottom trawling.
9. The lack of discussion of seabird mitigation in the proposal was queried, and it was explained that the vessels would have the same mitigation as used in the CJM fishery in the same area.



10. The Working Group decided that its role was to consider the scientific and methodological aspects of the research, rather than to assess whether it was an exploratory fishery, but invited the EU to prepare an exploratory fishing checklist, to assist the SC in their considerations. However, they did suggest the following draft recommendation for the SC:

The SC welcomes the EU proposal and considers the research would be beneficial. The SC supported the proposed research methodology. The SC was unclear on the decision-making framework for the proposed research activity and encouraged the EU to resolve this with Members ahead of Commission to enable the research to proceed.

3. Final Report on New Zealand's Exploratory Fishery for Toothfish

11. New Zealand gave a presentation as their final report on their exploratory fishery for toothfish under CMM14a ([SC9-DW04](#)), noting in particular the importance of this research for the understanding of the relationship with the straddling stock in the CCAMLR area. Seven tags had been recovered in SPRFMO, of which one had been tagged in the CCAMLR zone. None of the fish tagged in SPRFMO had been recovered within CCAMLR.

4. Proposal for exploratory bottom longlining for toothfish by New Zealand Vessels 2022-2024

12. New Zealand gave a presentation on their proposal for exploratory bottom longlining for toothfish by New Zealand vessels 2022-2024 ([SC9-DW01](#)), noting that this builds on the previous exploratory fishery, adding new strata towards the East.
13. The SC asked where the total cap of 240 tonnes had come from, and New Zealand explained that it was more conservative than simply totalling the within-strata limits.
14. The relationship with the CCAMLR stock assessment was queried, and it was explained that they included the SPRFMO catches in their stock assessment, and they planned to do it in a more localised way, when they developed a more multi-area assessment.
15. It was suggested that CCAMLR had reference points for the same species, so these could be included in the Reference Points section of the Fisheries Operational Plan (FOP). The Working Group agreed on a draft recommendation:

The SC noted that CCAMLR has defined reference points for toothfish which may be considered in SPRFMO given the joint management approach.

16. New Zealand's checklist ([SC9-DW05](#)) was considered, and there were no further comments.
17. The Working Group reviewed and agreed on the following draft recommendations for the SC:

It is recommended that the Scientific Committee:

- a. notes New Zealand's proposal and its Fisheries Operation Plan to extend its exploratory demersal longline fishery for toothfish (limited at 240 tonnes greenweight retained annually);
- b. recognises the cautious, exploratory nature of the proposal;
- c. recognises the scientific benefits of the proposed data collection, especially for understanding the distribution, movement, spawning dynamics, and stock structure of toothfishes and supporting the CCAMLR stock assessment models for Antarctic toothfish;



- d. agrees that data and analyses from New Zealand's exploratory fishing continue to be shared in a timely manner with CCAMLR;
- e. agrees that a spatial stratification consistent with CCAMLR's should be adopted by SPRFMO to facilitate the collection and sharing of data;
- f. approves or amends the Data Collection Plan included in the proposal;
- g. advises the Commission that the proposal is acceptable in terms of Articles 2 and 22, CMM 13-2021 (exploratory fisheries), CMM 03-2021 (bottom fisheries), and the BFIAS.

5. Templates for Fisheries Operation Plans

- 18. The Chairperson presented SC9-DW03, a template for Fisheries Operation Plans aimed to assist proponents to meet the requirements of CMM 13-2021. This had been requested by SC8 and the outline drafted by the Secretariat as requested by SC8.
- 19. The Cook Islands suggested adding a new section:

2.7 (bis) Overlapping fisheries

Information on any overlapping fisheries, including information on any fisheries operating in the same area with the same gear in the previous 10 years. This should outline any agreed co-operation with other SPRFMO Members or CNCPs.

- 20. The Working Group was invited to contribute any more edits prior to SC9.

6. Species Profiles

- 21. The Chairperson noted that the outdated Species Profiles on the SPRFMO website drafted 2007 included two Exploratory Fishery species. Truncated draft versions had been prepared (SC9-Doc12), in which information that needed frequent updating had been removed.
- 22. Working Group members with necessary expertise were invited to review Species Profiles prior to the SC.
- 23. The Working Group agreed that the truncated versions could be used on the website until more detailed ones were developed.

7. Updates of exploratory fisheries

- 24. Members with exploratory fisheries under CMM14 were invited to give brief updates to the Working Group.
- 25. The Cook Islands explained that they had had a limited fishery in 2020, which was described in their Annual Report [SC9-Doc26](#).
- 26. The EU was not present at this part of the meeting but had presented a report of NIL fishing in 2020.
- 27. Chile was not present at this part of the meeting, and had not mentioned their exploratory fishery in their Annual Report ([SC9-Doc24](#)), and would be contacted prior to SC9 to see if they had more to report.



ANNEX 1. List of Participants

DEEPWATER WG CHAIRPERSON

John Syslo

SC CHAIRPERSON

Jim Ianelli

AUSTRALIA

James Larcombe

COOK ISLANDS

Kerrie Robertson

Chloe Wragg

Steve Brouwer

EUROPEAN UNION

Niels Hintzen

Martin Pastoors

Jan Geert Hiddink

KOREA

Eunjung Kim

NEW ZEALAND

Marco Milardi

Tiffany Bock

Shane Geange

Jeremy Schofield

PERU

Jorge Csirke

Juan Arguelles

Maritza Saldarriaga

UNITED STATES OF AMERICA

Emily Reynolds

HSFG

Jack Fenaughty

Andy Smith

SPRFMO SECRETARIAT

Marianne Vignaux

Susana Delgado



ANNEX 2. UPDATED Agenda for the SPRFMO SC Deepwater web meeting to cover Exploratory fishery issues

1. Opening of the meeting
 - a. Identification of participants
 - b. Confirmation of discussion topics
2. EU Proposed Plan for a 2022 industry acoustic survey on alfonsinos and redbait
3. NZ Final report on toothfish
4. NZ Fisheries Operation plan for toothfish
5. Fisheries Operation plan template
6. Exploratory fisheries species profiles
7. Other matters
 - a. Exploratory Fishery Updates