

Report of the Fourth Meeting of the  
Scientific Committee of the  
Southern Indian Ocean Fisheries Agreement  
(SIOFA)

Yokohama, Japan

25 – 29 March 2019



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## **Agenda item 1 – Opening**

### **Agenda item 1.1 Opening statement from the Chair**

1. The fourth meeting of the SIOFA Scientific Committee (SC) was opened at 10:00 a.m. on 25 March 2019 by Dr Ilona Stobutzki, Chair of the SC. Dr Stobutzki welcomed participants to the meeting and thanked Japan for hosting the meeting.
2. On behalf of the host country, Dr Toshiya Kishiro of the National Research Institute of Far Seas Fisheries explained Japan's involvement in SIOFA and expressed the country's honour to be hosting the SC meeting.
3. The Chair reminded the SC that their role was to provide robust advice to the Meeting of the Parties (MoP) using the best scientific information available.

### **Agenda item 1.2 Introduction of participants**

4. Contracting Parties (CPs), SIOFA Observers and External Experts introduced themselves and a list of participants is at Annex A.

## **Agenda item 2 – Administrative arrangements**

### **Agenda item 2.1 Adoption of the agenda**

5. The agenda was adopted (Annex B).

### **Agenda item 2.2 Confirmation of meeting documents**

6. The Chair noted that there were a number of late papers that needed to be considered and formally accepted as meeting documents.
7. The report of the First Meeting of the Protected Areas and Ecosystems Working Group (PAEWG1; SC-04-30) was accepted as a working paper.
8. The report of the First Meeting of the Stock and Ecological Risk Assessment Working Group (SERAWG1; SC-04-31) was accepted as a working paper.
9. The restricted reports on the Patagonian toothfish and alfonsino scoping studies (SC-04-INFO-10 and SC-04-INFO-11), which were originally submitted to the SERAWG1, were accepted as information papers.
10. The restricted paper on preliminary ecological risk assessment of SIOFA teleosts (SC-04-27) was accepted as a working paper.
11. The Cook Islands' annual report (SC-04-29) was accepted as a working paper.
12. Korea's annual report (SC-04-33) was accepted as a working paper.
13. A paper reporting on China's fishing activities (SC-04-INFO-09) was accepted as an information paper.
14. The paper on scientific research and new/exploratory fisheries (SC-04-INFO-12) was accepted as an information paper.
15. The meeting documents (Annex C) were confirmed.

### **Agenda item 2.3 Appointment of rapporteurs.**

16. Mr Alexander Meyer (Urban Connections, Tokyo) was appointed to act as rapporteur, with assistance from delegations.

### **Agenda item 2.4 Review of functions and terms of reference**

17. The Chair reminded the SC of SIOFA's objectives, the SC's functions and its Terms of Reference, and explained the arrangements for conducting the meeting and finalising the meeting report.

## **Agenda item 3 – Annual National Reports**

18. The Chair reminded the SC that in accordance with Conservation and Management Measure (CMM) 2018/02 paragraph 9, each CP, CNCP and PFE shall provide to the SC an annual National Report.
19. Annual reports were submitted by Australia, Cook Islands, EU, France (Territories), Japan, Korea, Seychelles and Thailand. An annual report was not submitted by Mauritius.
20. A report on fishing activities was submitted by China as an information paper.

### **Australia Annual Report: SC-04-12**

21. Australia presented their annual report, which updates the SIOFA SC on Australia's fishing activities in the SIOFA Area. Australian operators are currently authorised by the Australian Government to target various species with mid-water and demersal trawl, dropline, minor line, automatic longline and demersal longline gears. There was no fishing effort by Australia-flagged vessels during 2017. One trip was undertaken by a single vessel in 2018 (noting this also spanned into the 2019 fishing year). An observer was on-board for the duration of the trip. No VME thresholds were triggered by any Australian-flagged vessels during 2018. All catch and effort data for fishing operations during 2018 will be submitted to SIOFA in accordance with CMM 2018/02 on Data Standards. All data presented in this report comply with Australia's domestic policy associated with the dissemination of fisheries data and this report does not disclose any non-public domain data within the meaning of SIOFA CMM 2016/03 on Data Confidentiality.

### **Cook Islands Annual Report: SC-04-29**

22. The Cook Islands presented their annual report. In 2018 the Cook Islands authorised two vessels to operate in the SIOFA area, pursuant to High Seas fishing authorisations issued by the Ministry of Marine Resources (MMR). These vessels target deepwater finfish species, primarily alfonsino (*Beryx splendens*) and orange roughy (*Hoplostethus atlanticus*) using bottom and midwater trawl fishing methods. The main catch composition of the fleet in 2018 was alfonsino (57%), orange roughy (33%) and boarfish and cardinal (4%) accounting for 94% of the total species catch.
23. The Cook Islands noted that the catch composition trend by year saw a significant drop in catches in 2018. This was due to a reduction in fishing effort by one of its fleet by nearly half its usual fishing effort. Cook Islands also noted that the CPUE data provided for alfonsino and orange roughy are not thought to be indicative of trends in biomass. The Cook Islands stated their VME encounter thresholds for trawling and

noted that there was 100% observer coverage for its SIOFA fleet in 2018. The Cook Islands noted that many areas in SIOFA are closed to Cook Islands vessels due to the potential for significant adverse impact on known VMEs by bottom fishing activity, and these areas are well known to Cook Islands-flagged vessels.

24. The Cook Islands explained their position that CPUE, by itself, was not an appropriate index to establish the status of orange roughy fish stocks. The SC discussed that CPUE was generally regarded to be an unreliable index of orange roughy biomass due to the aggregating nature of the species.

**EU Annual Report: SC-04-23**

25. The EU presented their annual report. Two vessels from EU-Spain were operating in the SIOFA Area in 2018, in the Areas 2, 3b and 7. None from EU-France operated in SIOFA in 2018. In 2018, a second EU-Spain vessel operated in the region for 77 fishing days. The EU continues the process of improving the fine scale data collection from fishing activities in SIOFA. EU-Spain implemented a dedicated scientific observation in 2017 and 2018 (observation coverage were 72% and 100% by vessel in 2018). As no EU-France vessel fished in the SIOFA area in 2018, the observer program was not implemented in 2018. However, the training program and the observer recruitment process are ready for commencement, in the case that fishing operations were to resume in the future.
26. The SC asked for more details regarding EU-Spain's shark fishery, including whether Portuguese dogfish (*Centroscymnus coelolepis*) was the main targeted species and whether there was any bycatch associated with the fishing of the species. The EU explained that it will provide answers intersessionally or at SC5.
27. The SC noted the substantial increase in the spatial area of bottom fishing by EU-Spain from 2017 to 2018, and asked the EU if they intended to update their bottom fishing impact assessment (BFIA), which was current up to 2017 and had been submitted to SC3. The EU acknowledged this substantial increase and expanded fishing area and stated their intention to update their BFIA. The Chair reminded the SC that, in accordance with paragraph 18e of CMM 2018/01 on Bottom Fishing, a BFIA shall be updated when a substantial change in the fishery has occurred.
28. The SC asked the EU how the EU-Spain 2018 fishing effort and/or catch levels compare to the average annual levels in active years over a representative period as described in paragraph 9(1)(a)i of CMM 2018/01 on Bottom Fishing. The EU will provide an answer intersessionally or at MoP6.
29. The SC encouraged the EU to submit information on VME threshold encounters and biological sampling in next year's annual report, in accordance with the guidelines for the submission of Annual National Reports, and noted that data for biological sampling has been submitted in other EU papers. The EU stated their intention to provide this information in its 2020 annual report.

**France (Territories) Annual Report: SC-04-24**

30. France (Territories) presented their annual report, which summarises and updates fishing activity by France for French Territories-flagged vessels in the Southern Indian Ocean Fisheries Agreement (SIOFA) Area for 2018. The fishing activity has been very low in 2018, only one trawler/potter vessel occurs in the area during two days. Traps effort was fifty traps, and vertical longline effort was 2,615 hooks. No VME indicator thresholds were triggered during 2018.

**Japan Annual Report: SC-04-10\_Rev1**

31. Japan presented their annual report, which describes the following seven items requested by the National Report Template, i.e., "1. Fisheries", "2. Catch, effort and



CPUE”, “3. Fisheries data collection and research activities”, “4. VME thresholds”, “5. Biological sampling and length/age composition of catches”, “6. Data verification mechanisms” and “7. Observer program”. In the SIOFA convention area (CA), Japan has been operating two different types of fisheries discontinuously for 42 years (1977-2018), i.e., trawl fisheries targeting splendid alfonsino and bottom longline fisheries targeting Patagonian toothfish. Based on accumulated information, the seven items are described each for trawl and bottom longline fisheries.

32. Japan explained that their trawl fisheries operate in the mid-water and they assume that there will not be any contact with the seafloor and have not established threshold levels nor a move-on-rule. They have instead temporarily adopted the threshold levels and move-on-rules as required by CMM 2018/01 on Bottom Fishing, based on those applied by the North Pacific Fisheries Commission. The threshold levels are based on bycatch of corals and no other taxa. Japan also explained that, for their bottom longline fisheries, they are temporarily applying the threshold levels and move-on-rules used by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR). Japan reported that in 2018 no bottom longline fisheries were operated in the SIOFA Area and no VME thresholds were triggered.
33. In response to a suggestion that catch and effort and length frequency data for the Saya de Malha Bank would be useful for understanding fisheries in that sub-area, Japan explained that they had submitted catch and effort data to the Secretariat but not length frequency data.

#### **Korea Annual Report: SC-04-33**

34. Korea presented their annual report. The Korean bottom longline fishery and trawl fishery were started in the SIOFA area in 1999 and 2000, respectively. The number of trawlers and longliners operated in the SIOFA Area were one and one-to-three vessels, respectively; however, none of the fishing vessels have been operating in the SIOFA Area since 2014. Major target species were pelagic armorhead and splendid alfonsino by trawl, and Patagonian toothfish and hapuka by bottom longline. The annual observer coverage has been more than 50% of fishing vessel operating days for bottom impacted gear fishery by domestic law since 2009. It consists of threshold (60kg-corals, 800kg-sponges) of VME organisms, move on rule etc. In terms of the verification of catch data and landing and transshipment information, measures to cross-check information collected by different authorities (e.g. NIFS, NFQ, FMC) are specified from September 2015.
35. The SC noted that Korea’s catch included some small armorhead fish, which may be in their juvenile stage. The SC **requested** Korea to share more detailed information such as location or timing of the catch, which could be useful for understanding the habitat and behaviour of juvenile-stage armorhead. Korea stated their intention to share such data.
36. The SC **requested** that Korea provide spatial effort data for use in the ecological risk assessments (ERAs) for deepwater chondrichthyans and SIOFA teleosts. Korea stated their intention to provide spatial effort data from their observer programme.

#### **Seychelles Annual Report: SC-04-25**

37. Seychelles presented their annual report. Seychelles vessels operating on the high seas consist of mostly purse seiners and longliners that target tuna and tuna-like species. The majority of local vessels operates within the Seychelles EEZ and targets mostly demersal and pelagic species using a range of fishing gears such as traps, handline, dropline and pelagic longlines. Seychelles informed the meeting that since writing the report it was realised that a number of Taiwanese vessels flagged to Seychelles were fishing in the SIOFA Area and catching SIOFA species and that these catches would be reported next year. With the increasing pressure on the inshore

resources and Seychelles' focus on Blue Economy growth and diversification, it is envisaged that in future, fishers could potentially venture into deep-sea fishing activities beyond Seychelles' EEZ. Furthermore, with the newly established Joint Management Area between Mauritius and Seychelles for the continental shelf in the Mascarene Shelf Plateau, there could be future potential for exploration of deep sea resources in this region.

#### **Thailand Annual Report: SC-04-22**

38. Thailand presented their annual report. During 2015 – 2017, 62 authorised Thai oversea fishing vessels were fishing in the Western Indian Ocean. The main fishing grounds were distributed around Saya de Malha Bank. The fishing gear mostly used was trawl, while trap was used by only one vessel. The catch of the trawl fishery is composed of both pelagic species, e.g., round scad, bigeye scad, and Indian mackerel, and demersal species, e.g., lizardfish and threadfin bream. However, in 2018, Thai flagged fishing vessel did not operate in the Indian Ocean. As an MCS and data verification mechanism, Thailand has put in place a range of management and technical measures through the Fisheries Act B.E. 2558 (2015), and the subordinate Ministerial Regulations and Implementing Rules for Thai overseas fishing vessels operating in high seas. Furthermore, Thailand has defined the minimum requirements for authorised vessels, which include the installation of VMS ERS and EMS, human observers, port-in and port-out measures, and the submission of logbooks. Currently, Thailand is preparing to re-authorise Thai flagged fishing vessels to operate in the SIOFA Area. Operations are expected to restart from mid-2019.
39. With regard to their trap fishery, Thailand explained that the relevant data have been submitted to the Secretariat. Catch is mainly composed of demersal fish such as red snapper and rabbit fish.
40. Thailand explained that 12 operators have expressed their intention to seek authorisation to fish in the SIOFA area in 2019. While Thailand's regulations do not specify the maximum number of vessels that can be authorised in 2019, Thailand said that not all operators will receive authorisation as Thailand have implemented strict regulatory criteria that operators may have difficulty fulfilling as it needs additional cost.

#### **China Fishing Activities Report: SC-04-INFO-09**

41. China presented a report summarising fishing activities by China-flagged vessels in the SIOFA Area based on accumulated data and statistics. China operated three different types of fisheries intermittently from 2000 to 2017 in the SIOFA Area: Light seining targeting mackerel and species of the *Bramidae* family; bottom longline fishery targeting ruby snapper, etc.; and demersal trawl targeting dories and orange roughy. Since 2018, China has not operated any fisheries in the SIOFA Area. It is worth noting that China has authorised a squid jigging fishery since 2003 in the Indian Ocean, but has not operated any squid jigging vessels in the SIOFA Area. Until China becomes a party to SIOFA and the relevant fishing vessels are registered on the SIOFA record of authorised vessels, the Chinese Government prohibits all Chinese fishing vessels from fishing in the SIOFA Area.

#### **Agenda item 3.1 – Guidelines for the submission of Annual National Reports**

42. The SIOFA Executive Secretary, Mr Jon Lansley, explained that the Secretariat had reviewed the guidelines for the submission of Annual National Reports after MoP5 to determine whether any revisions were required to align them with newly adopted CMMs. Based on the review, it had been determined that no revisions were necessary.
43. The SC discussed the need to develop a template for national reports, based on the existing guidelines, so as to ensure the greater clarity of and consistency among

Annual National Reports. A draft template was prepared by the Secretariat and reviewed by the SC during the meeting (Annex D).

44. The SC recognised that it would be useful to consider data of a finer resolution than those in the Annual National Reports, presented in a similar format, on a confidential basis during meetings of the SC. The SC also recognised that this would require additional work to be done by CCPs. The SC encouraged CCPs to provide an additional report that would be confidential and contain data of a finer resolution than the Annual National Reports, if possible.
45. The SC discussed the requirement to prepare National Reports each year, despite having no fishing or new information to report. The Chair noted this was a requirement of CMM 2018/02 on Data Standards, paragraph 9.
46. The SC noted that the map of the sub-areas for which CPs were required to submit information did not include the Saya de Malha Bank sub-area this year.
47. The SIOFA Data Manager presented a summary of potential data confidentiality issues identified in previous national reports.
48. The SC reiterated previous discussions that the national reports were public documents and that it is the responsibility of CCPs to ensure that there are no confidentiality issues arising from the national report they submit.
49. The Deep Sea Conservation Coalition (DSCC) expressed their appreciation for SIOFA's approach to date of making national reports open to the public. While acknowledging that some data need to be confidential and should therefore be submitted directly to the Secretariat without being made public, the DSCC encouraged SIOFA to maintain their current practices.
50. Regarding the guidelines for the submission of Annual National Reports, the SC concluded the following:
  - The SC **requests** that CCPs use the draft Annual National Report template (Annex D) to be reviewed at SC5.
  - The SC **recommends** that the MoP consider whether, if a CCP has not fished in the previous calendar year and there have been no substantive changes to their fisheries-related activities, they can provide a simple statement of this fact, rather than having to submit a full National Report.
  - Regarding the omission of Saya de Malha Bank from the map of the sub-areas for which CPs were required to submit information, the SC **requested** the Secretariat to ensure the most up to date map was being used.

## **Agenda item 4 – Current and historical status of fishing activities**

### **Agenda item 4.1 Historical Catch and Effort Data**

51. The Chair reminded the SC that in accordance with CMM 2018/02 on Data Standards, Contracting Parties, CNCPs and PFEs shall provide to the Secretariat, by 31 January 2018, historical catch, effort data and, if available, observer data for period 2000 to 2015 and any previous years where available.
52. The SIOFA Data Manager provided an update on the status of submissions for historical catch and effort data.
53. France (Territories) informed that for the period from 2000 to 2005 the absence of data is likely due to an absence of fishing activities except in 2002. The statement of no

fishing for this period will be sent to the Secretariat by 31st May 2019. The observer data from 2000 to 2018 will be provided.

54. CPs worked with the Data Manager to clarify any data gaps and update their data submission status. The finalised table describing the status of submissions for historical catch and effort data is attached at Annex E.

#### **Agenda item 4.2 Spatial Extent of Historic Catch Data**

55. The Chair reminded the SC that in accordance with 2018/01 para 13, CCPs shall, at least 30 days prior to the commencement of the ordinary meeting of the SC in 2018, submit to the Secretariat relevant data on the spatial extent of its historical bottom fishing effort in the Agreement Area expressed as grid blocks of at least 20 minutes resolution or, if available, a finer scale; and any other data the Scientific Committee may consider to be useful in developing the SIOFA BFIA. Furthermore, the Chair reminded the SC that the MoP had tasked the SC with providing advice on an appropriate SIOFA bottom fishing footprint and SIOFA BFIA to MoP7.
56. In accordance with SC Work Plan 2018-2021, the SIOFA Data Manager provided an update on the status of the spatial extent of historical fishing effort data.
57. To aid the work to develop a bottom fishing footprint, the Secretariat provided a summary of the spatial resolution of submitted catch and effort data (Annex E).
58. The SC **noted** that some CPs had submitted historical bottom fishing effort data at a coarser scale than 20 minute grids, in some cases this reflected the data collection scale, for other CPs the data had been collected at a finer spatial scale.
59. In order to develop an appropriate bottom fishing footprint, the SC **requested** the Secretariat to prepare maps of the spatial distribution of effort (2000-2015) to be presented to and considered by the PAEWG intersessionally:
  - I. A map at 20 minute grid resolution for the CP data supplied at this resolution or finer
  - II. A map at 1 degree grid resolution for all the CP data supplied, except where the spatial scale supplied is larger than 1 degree grid
  - III. A map at 1 degree grid resolution for the CP data supplied at the finer spatial scale resolution (the data used in I.)
  - IV. The map produced in II. with areas of unfishable depths excluded. The PAEWG will need to provide advice on the depths that should be excluded.
60. The SC **agreed** that the maps will include all grid squares in which fishing effort has been recorded between 2000 and 2015. The SC noted the maps are likely to include confidential data and will need to be managed in line with the CMM 2016/03 Data confidentiality.
61. The SC **agreed** that the maps will be produced separately for longline, trawl and other gears.
62. The SC **requested** maps I., II., and III. are replicated showing the gradient of fishing effort across the footprint noting that these are likely to include confidential data and will need to be managed in line with the CMM 2016/03 Data Confidentiality.
63. The SC welcomed Japan and Korea's intention to submit their historical catch and effort data at the highest spatial scale resolution at which it is available by 31 May 2019.

64. The SC agreed to an intersessional work plan for this mapping work, under the PAEWG prior to SC5.

#### **Agenda item 4.3 Overview of SIOFA fisheries 2018**

65. The SIOFA Data Manager presented a draft overview of SIOFA fisheries in 2018 (SC-04-28), by compiling information on active fleets; fishing effort; total catch; catch composition; VME thresholds, response and measures, and encounters; and observer and port sampling programs from National Reports (as at 18 March 2019) and the Secretariat's databases.
66. The SC reviewed and finalised the overview of SIOFA fisheries in 2018 (Annex F).
67. The SC **noted** that currently, VME information are only recorded in National Reports when a VME threshold is triggered. However, the SC encouraged that all VME bycatch be reported in annual reports to facilitate more informed discussions for the setting of VME thresholds and other relevant issues.
68. The SC **requested** that the Secretariat disaggregate catches of deepwater sharks by the main species in the graphs in the SIOFA Overview of Fisheries (Annex F, fig.5), provided there would be no confidentiality issues.

### **Agenda item 5 – Scientific data standards**

#### **Agenda item 5.1 SIOFA Scientific Database**

69. The SIOFA Data Manager gave a presentation on the status of the development of the SIOFA Scientific/Observers Database (SC-04-INFO-02).
70. The SERAWG Co-Chair, Mr Lee Georgeson of Australia, presented paper SC-04-14, which updates the SIOFA SC on development of a SIOFA species list, which is needed to categorise SIOFA species into the SIOFA stock assessment framework and for the ecological risk assessment for SIOFA teleosts. The work has relevance to the SIOFA databases, and more broadly, to any future work that requires reliable species-specific information. The species list (provided with the paper as an Excel spreadsheet attachment) was built using catch records held in the SIOFA databases and checked against codes and species reported in annual national reports. Two-hundred-and-eleven species or group codes were identified. These were assumed to be the FAO 3-alpha species codes against which CCPs are required to submit data to SIOFA in accordance with CMM 2018/02. Species distribution data were then checked to confirm if the species or species group corresponding to the code occurred in the SIOFA area. The work uncovered a number of likely errors in the database coding arising from erroneous codes being used by CPs for data submission, including for some key target species. The analysis has also highlighted that a proportion of the data in the SIOFA databases is currently associated with group codes, indicating that deriving species-specific information (such as catch volume) for applications such as stock assessment may be challenging.
71. The SC discussed paper SC-04-14 and concluded the following:
  - The SC **agreed** that there were a number of errors and inconsistencies in the SIOFA databases and species list that needed to be rectified to allow continuation of other work.
  - Regarding the issue of CPs using erroneous codes (i.e. not FAO 3-alpha species codes) when submitting data to SIOFA, the SC recognised that each

CP may not necessarily use the FAO codes domestically. However, when submitting data to SIOFA, the SC **agreed** that FAO codes shall be used.

- Regarding the issue of data being submitted with group codes, the SC encouraged CCPs to submit catch and other data at a species level.
- The SC **requested** the Secretariat to resolve the species coding issues in collaboration with CCPs before SC5 in 2020.
- The SC did not support requesting FAO to change its global species code for orange roughy (SC3 Report, para 245).

#### **Agenda item 5.2 Templates for data submission**

72. The SIOFA Data Manager presented draft templates for data submission (SC-04-09). Since 2017, all CPs, CNCPs and PFEs have provided fisheries data to the Secretariat under various formats (datasets) coming from their respective statistical systems. The task of processing datasets into structured databases is therefore time consuming and more prone to the risk of errors.
73. The Data Manager prepared several Microsoft Excel templates for review by the SC that match the data submission requirements of CMM 2018/02 on Data Standards and would improve the processing of data into databases. Those templates would also help to clearly identify what data are required for submission to the Secretariat. They would also allow the SC to review the reporting relevance of each of the observer's data fields.
74. The SC **requested** that CCPs work intersessionally to review the draft templates and provide comments to the Secretariat by the end of April 2019, and that the Secretariat consider and reflect comments, while taking into account the requirements of CMM 2018/02 on Data Standards and their workload. If necessary, the Secretariat can seek guidance from the SC Chair, and an intersessional discussion can be held to resolve any outstanding issues.

#### **Agenda item 5.3 Secure transfer of SIOFA confidential data**

75. In response to a request from SC3 to investigate and implement protocols for the secure transfer of confidential data, the SIOFA Data Manager presented protocols for the secure transfer of confidential data (SC-04-26) for review.
76. The SC acknowledged the work done by the Secretariat and welcomed the implementation of these protocols.

#### **Agenda item 5.4 Annual data holdings report and data inventory**

77. The SIOFA Data Manager provided an update on work done by the Secretariat in response to a request from SC3 to prepare an annual data holdings report and data inventory (SC-04-INFO-02).
78. The SC acknowledged the work to date and **requested** the Secretariat to continue to refine and consolidate the annual data holdings report and data inventory into one document. This document would capture any data challenges faced by the Secretariat and assist the SC in understanding data gaps.

### Agenda item 5.5 Observer coverage

79. The Chair reminded the SC that paragraph 32 of CMM 2018/01 on Bottom Fishing directs the SC to review the observer coverage levels prescribed in paragraph 31 of the same CMM and provide advice to the MoP. Furthermore, the Chair reminded the SC of the advice given at SC3 in relation to this matter (SC3 Report, para 90).
80. France (Territories) reminded that the observer coverage for the France (Territories) longline fisheries is:
  - 100 % catch and bycatch set by set and
  - 25% of each line is observed
81. The France (Territories) program was presented as Info Paper (SC-04-INFO-07 French fisheries observation program). France (Territories) recommended that CCPs use the Benthos Observation Protocol presented during SC3 (SC-03-06(02)). France (Territories) recommended that a data acquisition protocol for whale depredation was used by CCPs (SC-04-INFO-06) for a better understanding of whale depredation.
82. France said that observing 100% of each line will not make models more robust, because of an aggregation effect; 25% is enough; better to maximise geographical coverage and fine scale data.
83. The SC **agreed** that with respect to the observer coverage on non-trawl fisheries, there are situations where higher levels of observer coverage should be considered, such as potential interactions with rare and/or species of concern and high risk areas.
84. The SC **noted** that in the SIOFA area where fisheries were often data limited, a high level of observer coverage could facilitate more comprehensive collection of data to better inform science and management.
85. The SC **agreed** that the current observer coverage needed to be representative of the spatial and temporal scope of fishing activities. The SC **agreed** to consider the information on the spatial and temporal coverage at SC5.
86. The SC **requested** CPs and the SERAWG and PAEWG continue to consider what levels of coverage at the level of fishing trips, hauls and subsampling of hauls, would be needed to facilitate the provision of advice from the SC to the MoP.
87. Thailand noted that they have adopted both electronic observer (electronic monitoring and electronic reporting system) and human observers. Thailand said that they intended to submit a proposal for the SC5 to evaluate the use of their electronic observer program for scientific data collection, in line with the Guidelines adopted by MoP4. This work was included in the SC Operational Work Plan (Annex W) and resources are requested to support this work (Annex H).

### Agenda item 5.6 Observer data

88. The Chair reminded the SC that, in accordance with paragraph 14 of CMM 2018/02 on Data Standards, they shall review Annex B (Observer Data) of the same CMM by the 2020 SC meeting.
89. The SC **requested** that the Secretariat compile an inventory of submitted observer data by CP (as requested in SC3 Report, para 90) prior to SC5 to facilitate the SC5 review.

### Agenda item 5.7 Appropriate spatial resolution for the collection and reporting of data

90. The Chair reminded the SC that, in accordance with paragraph 5 of CMM 2018/02 on Data Standards, the SC shall, by no later than the ordinary meeting of the SC in 2019,

provide advice and recommendations to the MoP on an appropriate spatial resolution for the collection and reporting of data to facilitate effective stock assessment.

91. The SC **recommends** that, with respect to stock assessment data needs, the collection and reporting of data should be done at the finest spatial scale as possible, preferably at the level of each fishing operation with latitude and longitude location information.

## **Agenda item 6 – Vulnerable Marine Ecosystems**

### **Agenda item 6.1 Protected Areas and Ecosystems Working Group (PAEWG)**

92. The Chair of the PAEWG (Mr Patrice Pruvost), presented the report of the first meeting of the PAEWG (SC-04-30). The presentation highlighted some important notes from the report and abstract of the working documents (PAEWG-01-16, PAEWG-01-13, PAEWG-01-12, PAEWG-01-14, PAEWG-01-07, PAEWG-01-08, PAEWG-01-09, PAEWG-01-10 and PAEWG-01-11). The working group progressed scientific discussions and was able to provide advice to the SC on the different items.
93. Dr Tony Thompson of the Food and Agriculture Organization of the United Nations (FAO) reported on the FAO collaboration with the PAEWG1 meeting held on 17-18 March 2019. SIOFA invited the FAO Deep Sea project to provide a multi-regional perspective to the science and management of deep sea fisheries undertaken globally since 2006. Four invited experts with experience from other regions (Martin Cryer (NZ), Tony Thompson (FAO), Ellen Kenchington (Canada), Ashley Rowden (NZ), Keith Reid (CCAMLR)), presented global summaries on information relevant to the protection of VMEs. Discussions on the approach taken in other regions assisted the PAEWG in developing specific advice for the Southern Indian Ocean.
94. The SC thanked FAO for participating in and assisting with PAEWG1, recognising the valuable contribution of the FAO experts to the discussions.
95. The SC acknowledged the role played by FAO facilitating cooperation and exchanges of information among RFMOs in relation to VMEs.

### **Agenda item 6.2 VME mapping**

96. The Chair reminded the SC that paragraph 5 of CMM 2018/01 on Bottom Fishing tasks the SC with providing advice and recommendations to the MoP on maps of where VMEs are known to occur, or likely to occur in the agreement area.
97. France (Territories) invited the SC to consider the FAO experts' recommendations about VME mapping and the related working paper submitted by France (Territories) to the PAEWG (PAEWG-01-15). Mapping predictive modelling results of VME taxa suitable habitats may allow the SC to provide maps about VME encounter risks. Such information may be useful to provide tools to reduce the risk of triggering thresholds of VME, and scientific support to design Protected Areas. VME data from SIOFA fisheries monitoring and fishery-independent data (e.g. GBIF, raw data from scientific surveys, environmental layers from international databases) may be used. A project to produce these maps should include a common development process about the choice of the modelling methods to be used.
98. France (Territories) stated that:
  - VME indicator taxa are indicators of habitat structure (cf Kerguelen study); focusing on VME taxa is sufficient;



- FAO advice is to use various modelling methods like Ensemble; a lot of different methods are available;
  - two sources of data are available: 1. observer data aggregated at coarse taxonomic level can be used for community analysis, 2. GBIF in which data are species coming from scientific surveys and that are suitable for species distribution modelling;
  - validation of VME data is made by each state and GBIF has a national validation process before it gets into the database, but can ask for a second step validation with benthic expert on SIOFA areas;
99. France (Territories) recommends mapping the risk areas for VME encounters and enabling fisheries to avoid the risk areas. There are ways to validate predictive models with VME raw data to highlight the value of the prediction.
100. The SC developed a plan for work to be done by SC5 towards the development of maps where VMEs are known to, or likely to occur (Annex I).
101. The SC:
- **Recommends** that, despite a probable paucity of data, attempts are made to model habitat suitability to investigate their use in providing maps of VME habitat;
  - **Noted** that the VME indicator taxa list (Annex J) could be used in conjunction with information on physico-chemical and geological features (such as vents and cold water seeps) to inform protection of potential VMEs in SIOFA;
  - **Recommends** reviewing the locations of hydrothermal vents, seamounts and other VME elements and identify areas where VMEs are 'likely to occur';
  - **Noted**, in relation to the definition of VMEs, that paragraph 3a of the bottom fishing measure defines VMEs in accordance with paragraph 42 of the deep sea fishing guidelines. These criteria have been considered in the formulation of a SIOFA-specific list of VME indicator taxa.
  - **Recommends** that, for consistent estimation of VME taxa quantity, CPs consider recording by weight only and provide guidance to observers on how to convert volume to weight (kg).

### Agenda Item 6.3 VME indicator species and responses to VME encounters

102. The Chair recalled the direction within 2018/01 para 6 and by the MoP5 to the SC to provide advice on criteria for what constitutes evidence of an encounter with a VME, in particular threshold levels and indicator species, and the most appropriate response to a VME encounter.
103. The SC discussed the PAEWG1 recommendation to consider adopting the VME indicator taxa list adapted from the CCAMLR VME Taxa Classification Guide 2009 based on a review of the relevance to SIOFA.
104. With regard to VME indicator species the SC:
- **Recommends** that the MoP adopt the VME Indicator taxa list for use in the SIOFA Area (Annex J)
  - **Requests** the Secretariat develop a pictorial VME Indicator taxa guide based on that used by CCAMLR, to assist observers and fishers.

- **Notes** Thailand's request for capacity building assistance for on the identification of VME indicator taxa.
105. With regard to VME encounter thresholds the SC recalled the discussions of the PAEWG1.
  106. France (Territories) invited the SC to recommend the threshold used by the CCAMLR for longline fisheries, which is already implemented by French vessels in the SIOFA area.
  107. For longline gears, the SC **agreed** on the appropriateness of the threshold used to trigger closure of a 'VME risk area' in CCAMLR (10 VME indicator units)].
  108. For trawl gears, the SC **noted** that CPs currently use different thresholds and some CPs expressed concern that some of these thresholds may not be sufficiently precautionary. The DSCC supported this concern. The SC discussed the application of thresholds in the different trawl fleets (midwater trawl, deep water demersal trawl and shallow water demersal trawl).
  109. France (Territories) invited the SC to recommend the use of a common temporary threshold for trawl gears, if consensus is not reached during SC4. According to a precautionary approach, the temporary common threshold may be the lowest threshold used by the CPs in SIOFA.
  110. The DSCC urged the Parties to be precautionary in determining thresholds, particularly if fisheries were being initiated prior to an exploratory fisheries measure being developed.
  111. The SC:
    - **Recommends** setting the catch/recovery of 10 or more VME-indicator units<sup>1</sup> in a single line segment<sup>2</sup> as the threshold that triggers the encounter protocol for longline fishing.
    - Could not reach consensus on consistent thresholds for trawl gears. The SC **requests** that interested parties work intersessionally to identify a suitable threshold. Such intersessional work could include review of the methods used by CPs to establish their existing thresholds, as well as development of a consistent threshold based on consolidated records of benthic bycatch data for trawl gears. Using this method, thresholds could be based on medians, percentiles or other metrics (e.g. trawling duration).
  112. With regard to the appropriate response to VME encounters the SC **recommends** that:
    - If a VME encounter threshold is triggered, this should be considered to be evidence of the potential presence of a VME. To avoid significant adverse impacts on the potential VME, an appropriately-sized area should be closed to fishing by all fishing gears and a review by the SC should be undertaken to determine, based on the best available science, whether or not there is a VME. Such a review should consider cumulative impacts using all available data.
    - The SC should also periodically review all benthic bycatch data to inform its consideration of the location of potential VMEs, and potential impacts thereon.

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<sup>1</sup> 'VME indicator unit' means either one litre of those VME indicator organisms that can be placed in a 10-litre container, or one kilogram of those VME indicator organisms that do not fit into a 10-litre container.

<sup>2</sup> 'Line segment' means a 1000-hook section of line or a 1 200 m section of line, whichever is the shorter.

#### Agenda Item 6.4 SIOFA Standard protocols for future protected areas designation

113. The Chair reminded the SC that, in accordance with paragraph 6 of CMM 2018/01 on Bottom Fishing, the SC shall, by no later than the close of the ordinary meeting in 2019, develop and provide advice and recommendations to the MoP on the interim SIOFA Standard Protocol for Future Protected Areas Designation adopted by the MoP in 2018 and research and management plans, to be adopted at MoP6, for each of the protected areas listed in Annex 2 of the same CMM.
114. France (Territories) presented information discussed at the PAEWG1 regarding the use of spatial and biophysical analysis of the SIOFA area (Annex K) to complement the SIOFA Interim Protocol for the Designation of Protected Areas (MoP5 Report, Annex K). The approach, described in PAEWG-01-12 and PAEWG-01-13, would allow to provide scientific information for the protected area proposals based on environmental indices and a description of the ecological context. This information aims to ensure the possibility for the SC to provide a scientific analysis of the protected area proposals even when areas proposed to be protected are located in data poor areas. Furthermore, the approach may allow comparisons between the proposals and analysis according to the concept of a network of protected areas.
115. The SC reviewed and revised the SIOFA Standard Protocol for Future Protected Areas Designation (Annex L). The SC **agreed** that the criteria in the protocol have no particular ranking of importance.
116. The SC **recommends** that the MoP adopt the revised protocol (Annex L).
117. Australia presented draft research and management plans for each of the protected areas listed in Annex 2 of CMM 2018/01 on Bottom Fishing (SC-04-13; SC-04-15 – 18).
118. In relation to the research and management plan for the Atlantis Bank protected area, the SC **recommends** that the MoP consider that fishing with all gears were identified as activities that degrade the biodiversity value of the area, noting that different gears typically have different levels of impact. The SC noted that fishing using trawl gears is not currently permitted in the area and a closure to trawl fishing has been observed by Australian and Cook Islands vessels since 2006. Information on the use of non-trawl gears in this area is lacking.
119. In relation to the research and management plan for the Coral protected area, the SC **recommends** the MoP consider that fishing with all gears were identified as activities that degrade the scientific and biodiversity value of the area, noting that different gears typically have different levels of impact. The SC noted that fishing using trawl gears is not currently permitted in the area and a closure to trawl fishing has been observed by Australian and Cook Islands vessels since 2006. Information on the use of non-trawl gears in this area is lacking.
120. In relation to the research and management plan for the Fools Flat protected area, the SC **recommends** that the MoP consider that fishing with all gears were identified as activities that degrade the biodiversity value of the area, noting that different gears typically have different levels of impact. The SC noted that fishing using trawl gears is not currently permitted in the area and a closure to trawl fishing has been observed by Australian and Cook Islands vessels since 2006. Information on the use of non-trawl gears in this area is lacking.
121. In relation to the research and management plan for the Middle of What protected area, the SC **noted** that fishing using trawl gears is not currently permitted in the area and a closure to trawl fishing has been observed by Australian and Cook Islands vessels since 2006. Information on the use of non-trawl gears in this area is lacking.

122. In relation to the research and management plan for the Walters Shoal protected area, SC **recommends** that the MoP consider that fishing with all gears were identified as activities that degrade the scientific and biodiversity value of the area, noting that different gears typically have different levels of impact. The SC noted that fishing using trawl gears is not currently permitted in the area and a closure to trawl fishing has been observed by Australian and Cook Islands vessels since 2006. Information on the use of non-trawl gears in this area is lacking.
123. In relation to the research and management plans for the Atlantis Bank, Coral, Fools Flat, Middle of What and Walters Shoal protected areas, the SC:
- **Recalled** the Guidance for SC Recommendations to the Meeting of the Parties outlined in the standard protocol for protected areas designation (SC3 report, Annex H), which states that:
    - i. *If the proposal documents the necessary data and scientific information to support a protected area using protocol, different measures could be applied, such as management measures, technical measures, closures.*
    - ii. *In case of an area becoming protected, a management and research plan shall be associated to it on the year to come. It will include:*
      1. *The measures in place in the protected area;*
      2. *The time of review of the protected area;*
      3. *If needed, the research that should be undertaken in the area.*
  - **Recommends** that any fishing-related or research activity planned in the protected area requires a research plan for review by the PAEWG and SC. This research plan should specify (1) how the activity furthers the objectives of the protected area, (2) an assessment of impacts, and (3) proposed measures to prevent or minimise those impacts.
  - **Recommends** that ‘non-destructive’ monitoring in the form of scientific research (including, for example, the use of camera based systems) should be required within protected areas, and that components of the ‘Framework for the Development of Research and Management Plans (PAEWG-01-14)’ could be a useful guide for informing monitoring and scientific research within protected areas.
    - i. ‘Non-destructive’, in this context, is defined as research that does not cause significant adverse impacts on VMEs but may include the collection of minimal amounts of benthos.
  - **Recommends** to the Meeting of the Parties that the research and management plans included at Annexes M-Q be adopted for the Atlantis Bank, Coral, Fools Flat, Middle of What and Walters Shoal protected areas.

#### **Agenda Item 6.5 VME database**

124. The SIOFA Data Manager provided an update on how additional ‘non-observer VME data’ could be included in the SIOFA database. He confirmed that such data can be added to the current catch and effort database.

#### **Agenda Item 6.6 Bottom Fishing Impact Assessments (BFIA)**

125. The Chair reminded the SC that, in accordance with paragraph 15 of CMM 2018/01 on Bottom Fishing, the SC shall consider all BFIA received and provide advice to the MoP.

126. Comoros presented a report on the BFIA they conducted in the SIOFA Area (SC-04-08) for the proposed registration of their flotilla (Diego Star 2 and Diego Star 3) in the SIOFA record of authorised vessels. This report is based on the historical information of the two vessels available in the logbooks. No information has been gathered from observers. However, to strengthen evaluation measures, Comoros intends to implement a national observer plan, as well as emphasising the capacity building of inspectors and observers. A team of researchers will be available during 2019; this measure will be useful to support evaluation efforts in the future.
127. The SC acknowledged the work done by Comoros and updated the Gap Analysis of CP BFIA against BFIA standards (Annex R) and the Summary of Contracting Parties' BFIA presented, completed by the individual Contracting Parties (Annex S) with the information provided by Comoros.
128. The SC discussed potential research to assess the cumulative impact of trawl gears and longline gears. The SC **requested** that the PAEWG work during the meeting to identify specific tasks and resource needs for inclusion in their workplan (Annex T) and that the PAEWG present research papers to SC5.
129. The SC **reaffirmed** that, in accordance with paragraph 18e of CMM 2018/01 on Bottom Fishing, a BFIA shall be updated when a substantial change in the fishery has occurred.

## **Agenda item 7 – Stock assessment and ecological risk assessment**

### **Agenda item 7.1 Stock Assessment and Ecological Risk Assessment Working Group (SERAWG)**

130. The Co-Chairs of the SERAWG (Mr Lee Georgeson and Dr Tsutomu Nishida), presented the report of the first meeting of the SERAWG (SC-04-31). The working group progressed technical discussions in line with the stock assessment and ERA elements (Annex U) of the SC operational work plan -.

#### **Agenda item 7.1.1 SIOFA stock assessment framework**

131. The SC acknowledged the value of the preliminary work done to categorise SIOFA species within the tiered stock assessment framework. They recognised that the SIOFA database and species need to be further refined in order to be able continue this work and categorise SIOFA species into tiers with more confidence.
132. The SC **agreed** to continue and support the work to use ERAs to categorise species into an appropriate tier of the stock assessment framework as part of the SC workplan.

#### **Agenda item 7.2 Alfonsino**

133. The SC considered the SERAWG advice (SERAWG1 Report, paras 14 – 17, 19) and noted the scoping study (SC-04- SC-04-INFO-11).
134. The SC **agreed** that without work on the assessment it was unable to provide advice on the status of the stock.
135. With respect to progressing the alfonsino stock assessment for consideration by SC5, the SC:
  - **agreed** that selection of a stock assessment model should be based on data availability.

- **requested** the Cook Islands to provide an inventory of available acoustic survey data for alfonso to the SERAWG.
  - **agreed** that the acoustic survey inventory would be considered intersessionally to inform whether to proceed with an expert review of the usefulness of the available acoustic data. The SC **agreed** that if such data were deemed to be useful, an acoustics expert should be engaged to investigate whether these data could be used to inform abundance indices that could be used in a stock assessment.
  - **agreed** that a stock assessment scientist would review the CPUE data as a potential index of biomass for inclusion in the stock assessment.
  - **noted** Japan was developing age length keys for its fishery and **recommends** ageing and analysing 100-150 otoliths per year per area for three areas (Walter's Shoal, South Indian Ridge, 90 degrees east).
  - **agreed** to the work plan for the SERAWG to progress this work (Annex V)
136. The SC **agreed** that development of a potential acoustics survey protocol should be done after the review of the previous survey data.

### Agenda item 7.3 Patagonian toothfish

137. Australia presented paper SC-04-21: Population structure of Patagonian toothfish on the Kerguelen Plateau and consequences for the fishery in SIOFA Statistical Area 7.

#### Summary of paper

138. Almost the entire Kerguelen Plateau is situated within the area managed by CCAMLR, with only a portion of the William's Ridge on the eastern side of the Plateau extending into SIOFA Statistical Area 7. Based on available genetic information, catch composition and tag-recapture data from the toothfish fisheries in the French and Australian EEZs, Patagonian toothfish are continuously distributed on the northern part of the Kerguelen Plateau, populations are linked, and toothfish on William's Ridge are part of the same population as those in the Australian EEZ. Population linkages between the French and Australian EEZs are accounted for in the toothfish assessment for the Australian EEZ undertaken by CCAMLR. Based on CCAMLR decision rules, this assessment estimates the catch limit which is fully taken within CCAMLR waters. Any additional fishing mortality of this population on William's Ridge is therefore likely to result in the total fishing mortality exceeding the catch limit set by CCAMLR.

#### SC discussion

139. The SC considered the advice provide by the SERAWG.
140. The SC **noted** that:
- Large toothfish catches were taken on William's Ridge in 2018 by one fishing vessel. In 2019, there has been further fishing by a second fishing vessel.
  - This is the first time that fishing has occurred in this area since the early 2000s.
141. The SC **agreed** that:
- Based on genetic information, catch composition and tag-recapture data from the French and Australian toothfish fisheries, Patagonian toothfish on the northern part of the Kerguelen Plateau are continuously distributed and populations are linked;

- The population linkages between the Australian and French EEZ are accounted for in the CCAMLR assessments as well as the estimation of catch limits for toothfish in the Australian EEZ, and the yield is fully taken within CCAMLR waters;
  - This fish population is well studied, with a large amount of fishery-dependent and independent data being available.
  - The CCAMLR stock assessments are subject to a rigorous review process;
  - The movement of the five toothfish, released in the Australian or French EEZ and recaptured on William's Ridge in 2018, is consistent with the observed movement patterns of toothfish across the Kerguelen Plateau;
  - Given continuous toothfish habitat across the northern part of the Kerguelen Plateau, the proximity of William's Ridge to the Australian EEZ, and the known fish movement patterns across the plateau, toothfish on William's Ridge are part of the same population as those in the Australian EEZ;
  - Toothfish catches on the SIOFA part of William's Ridge are likely to result in total fishing mortality exceeding the fishing mortality used by CCAMLR to determine the catch limit and may undermine the CCAMLR management objectives for this toothfish population;
  - Given the large catches taken on William's Ridge over a short period, there is also a high risk of localised depletion in this relatively small area.
  - There is the potential for further unrestricted toothfish catches to be taken on Williams Ridge, without any management measure on catch limits;
  - Any additional catches in excess of the already established catch limit for this population should be avoided;
  - To help ensure the long-term sustainability of this toothfish population, data from fishing activities in the CCAMLR and SIOFA areas should be incorporated into the stock assessment model, and SIOFA should collaborate with CCAMLR as outlined in the MoU between the two organisations in exchanging data and scientific information and cooperating with each other's conservation and management measures.
142. Australia and Cook Islands expressed their strong concerns about large catches of toothfish on William's Ridge in 2018, 2019 catches of unknown quantity, and potential future catches for which there are no restrictions in place. Based on the high risk of total mortality exceeding the catch limits estimated for this population and the high risk of localised depletion on William's Ridge, Australia and Cook Islands recommended that fishing activities should cease on William's Ridge until management measures to regulate toothfish fishing in this area are in place.
143. The SC **recommends** that the MoP urgently considers adopting temporary measures to regulate toothfish fishing on William's Ridge at levels commensurate with fishing activities reported in 2016.
144. The SC **requested** that the EU provide their fishing data from 2018 and 2019 to Australia so these data can be included in the stock assessment for this population undertaken in 2019.

### **SC discussion on Toothfish on Del Cano Rise**

145. The SC **noted** that:

- Patagonian toothfish catch in the SIOFA part of Del Cano Rise increased dramatically from 2016 to 2018.
- The Del Cano Rise is spread over SIOFA, CCAMLR waters, the French EEZ of Crozet and the South African EEZ of Marion and Prince Edward Islands. Most of the catches in the SIOFA area are taken adjacent to the CCAMLR area and the French EEZ of Crozet.

146. The SC **agreed** that:

- Based on tag-recapture data from the French toothfish fisheries and biological knowledge of the reproduction of Patagonian toothfish, Patagonian toothfish populations of the Del Cano Rise and the Crozet plateau are linked.
- Five toothfish released in the French EEZ (2 around Crozet Island, 3 around Kerguelen Islands) were recaptured on SIOFA part of the Del Cano Rise, which is consistent with movement patterns of toothfish in the region (Sarralde and Barreiro, 2019).
- Patagonian toothfish show size and sex specific habitat preference. In particular, the juvenile phase relies on shallow waters (<600m depth) while large adult, mostly female, are distributed in deep-sea habitats (from 1200m up to 2300m+) (Peron et al., 2016). As there is only deep area in the Del Cano Rise, and based on the oceanography of the area (West to East) (Pollard et al., 2007), the population of the Del Cano Rise is likely to rely on Crozet and Marion-Prince Edwards plateau for its juvenile phase.
- A CCAMLR assessment estimates the catch limits for the toothfish population in the French EEZ of Crozet-Del Cano, and the yield is fully taken within CCAMLR waters (Sinagre et al., 2017).
- This CCAMLR stock assessment is subject to a rigorous review process.
- Toothfish catches from the Del Cano Rise in the SIOFA area are likely to result in catch limits being exceeded for the Crozet-Del Cano toothfish population, which may undermine the CCAMLR management objectives for this population.
- Catches from the Del Cano Rise in the SIOFA area are also likely to impact the recruitment of the population of Crozet-Del Cano. Since there are no observations of recruitment at Crozet through, for example, a trawl survey, any impact on recruitment would only be observed with a large delay which may put the sustainability of the population of Crozet-Del Cano at risk.
- To help ensure the long-term sustainability of this toothfish population, data from fishing activities in the CCAMLR and SIOFA areas should be incorporated into the stock assessment model, and SIOFA should collaborate with CCAMLR as outlined in the MoU between the two organisations in exchanging data and scientific information and cooperating with each other's conservation and management measures.

147. The SC **recommends** that the MoP urgently considers adopting temporary measures to regulate toothfish fishing on the Del Cano Rise in the SIOFA area at levels commensurate with fishing activities reported up to 2016.

148. Dr Keith Reid (CCAMLR) introduced SC-04-INFO-08 and outlined CCAMLR's use of a comparative seabed-area approach and a mark-recapture method from toothfish tagging data to estimate the biomass of toothfish in data-limited areas. The approaches taken by CCAMLR aim to set catch limits for toothfish that allow sufficient data collection to generate fully integrated stock assessments but that do not place



stocks at risk in the intervening period. The catch limit that is used is 4% of the most recent biomass estimate as this exploitation rate is considered unlikely to impede the recovery of stocks in areas that might have been exposed to unknown levels of historical fishing. Fishing in data-limited exploratory toothfish fisheries in CCAMLR has a specific geographic restriction to 'research blocks' and is required to follow a detailed research plan that is endorsed by the Scientific Committee and the Commission. A transparent process to estimate biomass using the two different approaches has been agreed, as has a procedure to determine the most appropriate biomass estimate to use in setting catch limits for future research fishing.

149. The SC thanked CCAMLR for their assistance with the Patagonian toothfish scoping study.

#### **Agenda item 7.4 Orange Roughy**

150. The SC recalled the SC3 advice to the MoP (SC3 Report, para 234), in particular:
  - All three assessment approaches indicated that ss17 for the 7 sub-regions assessed was likely to be above 50%SSB0.
  - The median estimates for the Walters Shoal Region from the base model and eight sensitivities evaluated varied between 63%SSB0 and 85%SSB0. The median estimate of the Base model was 76%SSB0.
151. The SC **noted** that the 2018 stock assessment for the Walters Shoal Region provided deterministic estimates of BMSY assuming a Beverton and Holt stock recruitment relationship, a combination of assumed steepness and natural mortality, and maturity parameters (SC-03-07.1.1(04)). The BMSY estimate using the base model parameters was 23.6% B0 (SC-03-07.1.1(04), Table 3 assuming a 50% age-at-maturity of 37 years and 12 years to reach 95% after 50%).
152. The SC **noted** the advice in SC-03-07.1.1(04) that:
  - 'Deterministic BMSY has not been found to be a useful reference point for New Zealand orange roughy stocks. It is highly dependent on the stock recruitment relationship and is therefore very uncertain.'
153. The SC **agreed** that deterministic estimates of BMSY were highly uncertain and therefore not suitable to be used as a reference point for management advice for this stock.

#### **Agenda item 7.5 Deepwater chondrichthyans**

154. Australia presented SC-04-19. The paper provides a draft manuscript for an ecological risk assessment for the effects of bottom fishing gears on deepwater chondrichthyans in high seas areas of the Southern Indian and South Pacific Oceans. Productivity-Susceptibility Analysis (PSA) and Sustainability Assessment for Fishing Effects (SAFE) methods were adapted to assess the vulnerability of 174 deepwater chondrichthyans to demersal trawl, demersal longline and demersal gillnet fishing gears in the Southern Indian and South Pacific Oceans. A number of species were categorised as being at high or extreme vulnerability to all gears, including some in the Southern Indian Ocean that are likely taken in association with commercial deepwater shark fisheries. Overall, there was good concurrence between PSA and SAFE results at the upper end of the vulnerability spectrum for Southern Indian Ocean fisheries. Despite a number of methodological limitations of this assessment, such methods can be used effectively to prioritise management action for those species considered to have the highest vulnerability to fishing.

155. The SC considered the SERAWG advice.
156. The SC **noted** that there is missing data for certain gears in certain years, which may bias the results of the deepwater chondrichthyan ERA towards underestimating the vulnerability of certain species.
157. The SC **noted** that results should be considered in the context of information on the annual levels of catch for each gear type. The SC **noted** that SERAWG1 had requested the Secretariat to provide the annual catch data for deepwater shark catches in SIOFA from 2012 to 2017 for review by the Working Group in accordance with CMM 2016/03 (data confidentiality).
158. The SC **noted** that in accordance with the SIOFA Rules of Procedure these data were viewed and discussed within a closed session by SERAWG1. Upon request observers and industry affiliates were absent while the SERAWG1 considered these fine-scale data, a subset of which were confidential as they related to total annual catches for individual species taken by EU-Spain. Based on the SERAWG's review of available data, the SC **noted** that most of the catch of deepwater chondrichthyans recorded in the SIOFA database is being taken by the demersal longline fishery (although noting that this has replaced a demersal gillnet fishery since 2015) and confirmed that the majority of these catches were being taken by one CP.
159. Based on their discussion of the risk assessment results and the SERAWG's analysis of catches, the SC **noted** that the 'key species of concern' in the longline fishery include *Centroscymnus coelolepis* (Portuguese dogfish – SAFE risk low), *Centrophorus granulosus* (Gulper shark - SAFE risk extreme), *Deania calcea* (Brier shark - SAFE risk extreme), *Dalatias licha* (Black shark – SAFE risk extreme), *Zameus squamulosus* (Velvet shark – SAFE risk extreme), *Scymnodon plunketi* (Plunket's dogfish – SAFE risk extreme) and *Centroselachus crepidater* (Golden dogfish – SAFE risk extreme). Three newly described species of chimaera were also assessed to be at high risk in the SAFE assessment for longline gears (*Chimaera willwatchi*, *C. buccanigella* and *C. didierae*).
160. The SC **noted** that as well as a number of species assessed to be at high or extreme vulnerability for all gears, the majority of species were assessed to be at the lower end of the vulnerability spectrum.
161. The SC **noted** that annual catch information was available to the SERAWG to inform its consideration of the risk assessment results for *C. coelolepis*, *C. granulosus*, *D. calcea*, *D. licha* and *Etmopterus granulosus* (*E. granulosus* - SAFE risk low). *E. granulosus* was included because it is reported as the fourth highest catch volume.
162. The SC **noted** for 2013 – 2016 the annual catch data available indicates that these catches are from targeted fishing for Portuguese dogfish in the longline and gillnet fisheries. The SC noted that for one year of catch data (2015) there were two gears in use (longline and gillnet). For one year (2017) the characteristics of longline fishing by this Contracting Party changed with the addition of catches of toothfish. In this context, it was noted that without additional analyses of the spatial distribution of catches, it was difficult to establish whether catches of the aforementioned 'key species of concern' for which catch data are available for 2017 were being taken in association with the main target species (which is thought to be Portuguese dogfish (*Centroscymnus coelolepis*), as it is the species being caught in the highest volumes) or whether these species of concern may be being taken as bycatch when targeting other species (e.g. toothfish).
163. The SC **noted** that additional analysis of the spatial and depth distribution of catches of the main target species and the species of concern in the longline fishery would be

useful so that catch rate and catch trend information could be considered in the context of the results from the ecological risk assessment.

164. In summary, the SC:

- **Agreed** there is limited catch, effort and biological information for many species of deepwater chondrichthyans;
- **Agreed** that the PSA and SAFE analyses have identified a number of species of deepwater chondrichthyans at high or extreme relative vulnerability to fishing using demersal trawl, demersal longline and demersal gillnet gears;
- **Noted** that based on the results of the ERA and the understanding of the vulnerability of many deepwater chondrichthyans species to fishing, four 'key species of concern' for which catch data are available (*C. coelolepis*, *C. granulosus*, *D. calcea* and *D. licha*) are caught in relatively high volumes.
- **Recommends** the collection and submission of more detailed observer data (e.g. improved species identification in accordance with the implementation of the FAO shark guides, biological samples to enable future genetic research, number of pups/eggs, life status (i.e. if discarded)) for species of concern (e.g. those at high or extreme vulnerability to fishing using certain gears) and all other data in accordance with CMM 2018/02, Annex B;
- **Requests** the MoP to urgently consider measures to mitigate the potential for overexploitation of 'key species of concern' that has been seen in similar fisheries globally.

#### Agenda item 7.6 Saya de Malha Bank Fisheries

165. The SC **noted** previous advice to SC3 indicated that Mauritius and MRAG had conducted some assessment of the Saya de Malha bank fisheries. The SC **requested** the Secretariat to follow up with MRAG regarding submitting information on any assessments to the next SERAWG meeting.
166. The SC **noted** that the Saya de Malha Bank longline fishery had been grouped together with other longline fisheries in the SIOFA area when conducting the ERA, even though they occur in different areas and target different species. This may lead to skewed results. The SC **recommends** that various longline fisheries should be treated separately in future ERAs.
167. The SC was informed that Seychelles had been involved in the most recent EAF-Nansen cruise which took place from May to June in 2018. In 2008 there was also a survey that covered Mascarene Plateau. The SC was advised of a Nansen data policy which may be used by SIOFA to request data and that benthic mapping data collected could be of interest. It was explained that the owners of the data are the lead participating countries and Mauritius is the current owner of the data. The report from the most recent cruise was due to be finalised in December 2018 but has not yet been completed. Once the report has been finalised this can be shared with SIOFA.

#### Agenda item 7.7 Other teleosts

168. The Co-Chair of the SERAWG (Australia) presented paper SC-04-27, which updates the SC on a preliminary ecological risk assessment for SIOFA teleosts. The preliminary species list was developed using catch records in the SIOFA databases and information from annual reports submitted by SIOFA Contracting Parties. The species list is incomplete due to the developmental nature of the SIOFA databases

and associated issues, some of which are captured in the paper 'SIOFA species list' submitted to SERAWG1 and SC4.

169. The assessment applies PSA and SAFE methods to assess the relative vulnerability of teleosts to demersal trawl, midwater trawl, 'shallow trawl' (Saya de Malha bank fishery), demersal line and demersal gillnet gears in the SIOFA area. Fishing effort data were provided by most Contracting Parties for the 2012-2016 period; however, some effort data are missing. Species distribution data were sourced from aquamaps.org (80-100% probability of occurrence layer was used). Life history attribute data were sourced from the CSIRO database that underpins the CSIRO ERA online tool and was available for most species.
170. The results are preliminary and cannot currently be used for management advice on species status or fishing mortality. Once refined, the results could be used for prioritising assessment options (in line with the SIOFA stock assessment framework), or for informing requirements for additional data collection. The next step is to refine the SIOFA species list and the assumptions used in the assessment, and to encourage collaboration with other SIOFA CPs.
171. The SC **noted** that the same species list was used for different types of gear in the PSA, which may lead to misleading results. The SC also **noted** that the analysis could be improved by producing an explicit list of data gaps (including, for example, the requirement for some additional species biology, fishing effort and gear configuration data) and **requests** that this should be further investigated.
172. The SC **agreed** that the work described above would lead to additional technical work and have some resourcing implications and **requests** that these be included in the SC Operational workplan (Annex W).

#### **Agenda item 7.8 Harvest strategies**

173. The Chair reminded the SC that the MoP had requested that the SC provide advice on candidate target (TRP) and limit reference points (LRP) for orange roughy, alfonsino and toothfish and develop a framework and a work plan for the establishment of harvest strategies for key SIOFA stocks (MoP5 report, paras 52 – 53).
174. The SC **agreed**:
  - that scientific work was required to inform SC advice on TRPs and LRPs. The SC **requests** the SERAWG to form a group of key interested parties to work intersessionally with a consultant to draft a technical working paper for submission to the next SERAWG meeting;
  - to develop a generic approach for determining reference points for current and future stocks;
  - that candidate reference points should take into account the level of data uncertainty in stocks, noting the data-limited nature of some fisheries/stocks;
  - that for straddling stocks consistent reference points should be applied across the stock.
175. The SC **recommends** that the MoP consider including six elements when developing harvest strategies, and the SC begin work to populate those elements: (i) operational objectives, (ii) reference points, (iii) an acceptable level of risk of breaching reference points, (iv) a monitoring strategy, (v) decision rules for achieving reference points, and (vi) a process for evaluating harvest strategies.

176. The SC **agreed** to a work plan to progress this work (Annex X). The work plan includes scientists – fishery managers – stakeholders dialogues to discuss the key concepts of harvest strategies.

## **Agenda item 8 – Proposals to bottom fish in the Agreement Area in a manner at variance with established measures**

177. No papers were provided for this agenda item.

## **Agenda item 9 – Scientific impact assessments**

### **Agenda item 9.1 Demersal gillnet operations**

178. No papers were provided for this agenda item.

## **Agenda item 10 – Cooperation with other RFMOs and international bodies**

### **Agenda item 10.1 FAO ABNJ Deep Seas Project**

179. Tony Thompson provided an update on the five-year ABNJ Deep Seas Project. This project is supported by GEF, and implemented jointly by FAO and UNE (September 2014-August 2019). The Project is designed to enhance sustainable use of deep-sea living resources whilst minimising impacts from fisheries to conserve biodiversity conservation in the ABNJ following an ecosystem approach. It brings together over 20 partners who work on deep-sea fisheries and conservation issues in the ABNJ globally. FAO undertook the legal and fisheries components, and UNE-WCMC the spatial planning component. The project has published global reviews on legal instruments, the management of VMEs, orange roughy, CDS, climate change, and Area-based planning, relevant to deep-sea fisheries and biodiversity conservation in the high seas. Soon to be published reports include an Update Worldwide Review of Bottom Fisheries in the High Seas, MSC, and the application of EAFM. Work more relevant to the Indian Ocean and SIOFA includes MSC for deep-sea fisheries, training on implementing international obligations relating to deep sea fishing and conservation in the ABNJ, shark and ecosystem risk assessment, and support to the SIOFA PAEWG and SERAWG. Further details can be found in information paper SC-04-INFO-04.
180. The SC acknowledged the value of elements of the Project and the contribution it had made to SC and CP activities.
181. The Executive Secretary informed the meeting that at the recently-held fourth Project Steering Committee (PSC4) meeting in Reunion, the PSC4 was informed that CSIRO had been engaged to lead an analysis of the risk of different fishing gears to biodiversity for SEAFO, SIOFA, and SPRFMO and that the report would be made available to SIOFA as soon as completed. An update on the status of the report was not available but this work is due to be completed by May 2019. The SC **requested** the Executive Secretary circulate the report to the SC when available.
182. The Executive Secretary informed the SC that FAO had invited him and the SC Chair to attend the DEEP SEA Conference 2019, 7 to 9 May 2019 in Rome, Italy. The Chair

explained that neither she nor the Executive Secretary would be able to attend and that she would nominate the PAEWG Chair to attend on behalf of SIOFA SC.

183. The Executive Secretary informed the SC that he had been invited to attend the second workshop on the development of a future phase of the Common Oceans ABNJ Programme and identification of project activities, which would be held from 23 to 26 April 2019. The Chair explained that neither he nor the MoP Chair would be able to attend.
184. The SC **agreed** that continued engagement in a future phase was valuable given the proposed themes would contribute to key activities/issues being addressed in SIOFA, that are reflected in the SC Research Plan (Annex G).
185. Australia informed the SC that the Coalition of Legal Toothfish Operators would be holding a workshop on data collecting and reporting for toothfish in the CCAMLR Convention Area, July 2019 in South Africa. More information will be shared with the Secretariat for circulation to CPs and for the Secretariat to consider attendance.

#### **Agenda item 10.2 FAO SIOFA-FIRMS Potential Partnership**

186. Tony Thompson presented a brief overview of the Fisheries Resource Monitoring System (FIRMS). FIRMS is a partnership of organisations, which includes many of the R(F)MOs, that displays information of marine fisheries and fish stocks in the EEZ and ABNJ. The information for a region is entered by the partners responsible for that region. FIRMS has two types of membership arrangements: 'Partnership' in which the member is expected to attend the annual meetings and assist in the development of FIRMS through a voting process, and 'Collaborative' which is a more passive membership where meeting attendance is not expected. The amount of information submitted and the way it is displayed is the same in both cases. FIRMS invites SIOFA to become a member of FIRMS under a 'Partnership' or 'Collaborative' arrangement. Further details are found in paper SC-04-11.
187. Dr Thompson explained that joining FIRMS should enable SIOFA to more effectively disseminate SIOFA's work as an RFMO to global stakeholders. Regarding data confidentiality, FAO explained that all data provided by SIOFA to FIRMS would enter the public domain and SIOFA would therefore have to deal with any data confidentiality issues at the input stage.
188. The SC discussed the resourcing implications of joining FIRMS, with the Secretariat required to provide data submissions and potentially participate in meetings. The SC recognised that SIOFA could explore the possibility of seeking funding from FAO for participation in meetings.
189. The SC **recommends** that the MoP consider that the SC supported, in principle, joining FIRMS as a Partnership Arrangement, noting the resourcing implications.

#### **Agenda item 10.3 Southwest Indian Ocean Fisheries Commission (SWIOFC)**

190. No papers were provided for this agenda item.

#### **Agenda item 10.4 The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)**

191. The SC welcomed the *Arrangement between the Meeting of the Parties of the Southern Indian Ocean Fisheries Agreement and the Commission for the Conservation of Antarctic Marine Living Resources* that was signed on 28 August 2018. This recognises the common objectives of the two organisations and

encourages the harmonisation of approaches to the conservation and management in areas of mutual interest. The SC particularly welcomed the potential efficiencies that this arrangement encouraged by information and experience sharing between the respective secretariats.

192. Dr Reid described how the CCAMLR Secretariat manages the CCAMLR toothfish tagging programme including the management of the process for purchasing tags, their distribution to vessels and the curation of all tagging and subsequent recapture data. CCAMLR holds toothfish tagging from EEZs of South Africa, France and Australia.
193. The SC **agreed** that an increased level of interaction with CCAMLR was timely given the increased interest in fishing for Patagonian toothfish in SIOFA in areas adjacent to CCAMLR fisheries with full assessments.

## **Agenda item 11 – Scientific Committee Work Plan**

### **Agenda item 11.1 Long term research plan**

194. The SC **recommends** that the MoP adopt the updated long term research plan to include the impacts of climate change as a priority theme (Annex G).

### **Agenda item 11.2 2018 – 2021 operational work plan and budget**

195. The SC adopted an updated operational work plan (Annex W).
196. The SC discussed priorities as provided in CMMs and requests from the MoP and allocated High, Medium and Low priority to each activity accordingly.
197. The SC **recommends** that the MoP consider the research activities described in Annex H for inclusion in the SIOFA budget.

## **Agenda item 12 – Review and development of Conservation and Management Measures (CMMs)**

### **Agenda item 12.1 Draft CMM on fishing research**

198. The Chair reminded the SC that SC3 had considered and discussed the EU proposal on a draft CMM to regulate fisheries research in the SIOFA Area and the SC had recommended that a revised draft be provided taking into account the guidance and requests provided in paragraph 289 of the SC3 Report.
199. The EU presented an information paper with an updated proposal (SC-04-INFO-12). The SC encouraged CPs to continue to hold intersessional discussions and further refine the proposal to reflect the advice of SC3. The SC encouraged CPs to submit a working paper with an updated proposal to SC5, so as to be able to hold more substantive discussions.

### **Agenda item 12.2 CMM 2018/01 Interim Management of Bottom Fishing**

200. No papers were provided for this agenda item.

### **Agenda item 12.3 CMM 2018/02 Data Standards**

201. The SC recognised the increasing concern arising from whale depredation in the toothfish fishery, and the importance of assessing the amount of fish lost due to depredation and incorporating those values into stock assessment models. The SC encouraged CPs with longline fleets to collect whale depredation data if possible and encouraged CPs to submit working papers for the establishment of formal data collection guidelines to SC5, when the SC is scheduled to review Annex B (Observer Data) of this CMM.

### **Agenda item 12.4 CMM 2016/03 Data Confidentiality**

202. The Secretariat noted some areas of CMM 2016/03 Data Confidentiality that would benefit from clarification.
203. The SC acknowledged that some paragraphs of the CMM could be reviewed/rephrased by the MoP to provide greater clarity, in particular paragraph 2 c).
204. The SC **agreed** that their interpretation of CMM 2016/03 was that it intended to facilitate the work of the SC and working groups, in particular paragraph 2 e), while managing confidentiality of data.
205. The SC suggested the Secretariat could develop process guidelines to assist in their implementation of CMM 2016/03.

### **Agenda item 13 – SIOFA SC official contacts**

206. The Executive Secretary explained to the SC that most CPs do not identify/include the SC HoD and/or SC representatives in the SIOFA Official Contacts. This causes difficulties in consulting all SC representatives in the intersessional period and progressing activities.
207. To facilitate SC intersessional work, the SC **requests** that the MoP require each CP include in the SIOFA Official Contacts List their SC representatives identifying the SC HoD and an alternate.

### **Agenda item 14 – Advice to the Meeting of Parties**

Consolidation of advice to the Meeting of the Parties

#### ***In relation to agenda item 3.1 – Guidelines for the submission of Annual National Reports:***

- The SC **requests** that CCPs use the draft Annual National Report template (Annex D) to be reviewed at SC5.
- The SC **recommends** that the MoP consider whether, if a CCP has not fished in the previous calendar year and there have been no substantive changes to their fisheries-related activities, they can provide a simple statement of this fact, rather than having to submit a full National Report. (Paragraph 50)



***In relation to agenda item 5.1 SIOFA Scientific Database:***

- Regarding the issue of CPs using erroneous codes (i.e. not FAO 3-alpha species codes) when submitting data to SIOFA, the SC recognised that each CP may not necessarily use the FAO codes domestically. However, when submitting data to SIOFA, the SC **agreed** that FAO codes shall be used. (Paragraph 71)

***In relation to agenda item 5.2 Templates for data submission:***

The SC **requested** that CCPs work intersessionally to review the draft templates and provide comments to the Secretariat by the end of April 2019, and that the Secretariat consider and reflect comments, while taking into account the requirements of CMM 2018/02 on Data Standards and their workload. If necessary, the Secretariat can seek guidance from the SC Chair, and an intersessional discussion can be held to resolve any outstanding issues. (Paragraph 74)

***In relation to agenda item 5.5 Observer coverage:***

The SC **agreed** that with respect to the observer coverage on non-trawl fisheries, there are situations where higher levels of observer coverage should be considered, such as potential interactions with rare and/or species of concern and high risk areas. (Paragraph 83)

The SC **noted** that in the SIOFA area where fisheries were often data limited, a high level of observer coverage could facilitate more comprehensive collection of data to better inform science and management. (Paragraph 84)

The SC **agreed** that the current observer coverage needed to be representative of the spatial and temporal scope of fishing activities. The SC **agreed** to consider the information on the spatial and temporal coverage at SC5. (Paragraph 85)

The SC **requested** CPs and the SERAWG and PAEWG continue to consider what levels of coverage at the level of fishing trips, hauls and subsampling of hauls, would be needed to facilitate the provision of advice from the SC to the MoP. (Paragraph 86)

***In relation to agenda item 5.7 Appropriate spatial resolution for the collection and reporting of data:***

The SC **recommends** that, with respect to stock assessment data needs, the collection and reporting of data should be done at the finest spatial scale as possible, preferably at the level of each fishing operation with latitude and longitude location information. (Paragraph 91)

***In relation to agenda item 6.2 VME mapping the SC:***

- **Recommends** that, despite a probable paucity of data, attempts are made to model habitat suitability to investigate their use in providing maps of VME habitat;
- **Noted** that the VME indicator taxa list (Annex J) could be used in conjunction with information on physico-chemical and geological features (such as vents and cold water seeps) to inform protection of potential VMEs in SIOFA;
- **Recommends** reviewing the locations of hydrothermal vents, seamounts and other VME elements and identify areas where VMEs are 'likely to occur';

- **Noted**, in relation to the definition of VMEs, that paragraph 3a of the bottom fishing measure defines VMEs in accordance with paragraph 42 of the deep sea fishing guidelines. These criteria have been considered in the formulation of a SIOFA-specific list of VME indicator taxa.
- **Recommends** that, for consistent estimation of VME taxa quantity, CPs consider recording by weight only and provide guidance to observers on how to convert volume to weight (kg). (Paragraph 101)

***In relation to agenda item 6.3 VME indicator species and responses to VME encounters the SC:***

With regard to VME indicator species the SC:

- **Recommends** that the MoP adopt the VME Indicator taxa list for use in the SIOFA Area (Annex J)
- **Requests** the Secretariat develop a pictorial VME Indicator taxa guide based on that used by CCAMLR, to assist observers and fishers.
- **Notes** Thailand's request for capacity building assistance for on the identification of VME indicator taxa. (Paragraph 104)

The SC:

- **Recommends** setting the catch/recovery of 10 or more VME-indicator units<sup>3</sup> in a single line segment<sup>4</sup> as the threshold that triggers the encounter protocol for longline fishing.
- Could not reach consensus on consistent thresholds for trawl gears. The SC **requests** that interested parties work intersessionally to identify a suitable threshold. Such intersessional work could include review of the methods used by CPs to establish their existing thresholds, as well as development of a consistent threshold based on consolidated records of benthic bycatch data for trawl gears. Using this method, thresholds could be based on medians, percentiles or other metrics (e.g. trawling duration). (Paragraph 111)

With regard to the appropriate response to VME encounters the SC **recommends** that:

- If a VME encounter threshold is triggered, this should be considered to be evidence of the potential presence of a VME. To avoid significant adverse impacts on the potential VME, an appropriately-sized area should be closed to fishing by all fishing gears and a review by the SC should be undertaken to determine, based on the best available science, whether or not there is a VME. Such a review should consider cumulative impacts using all available data.
- The SC should also periodically review all benthic bycatch data to inform its consideration of the location of potential VMEs, and potential impacts thereon. (Paragraph 112)

***In relation to agenda item 6.4 SIOFA Standard protocols for future protected areas designation:***

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<sup>3</sup> 'VME indicator unit' means either one litre of those VME indicator organisms that can be placed in a 10-litre container, or one kilogram of those VME indicator organisms that do not fit into a 10-litre container.

<sup>4</sup> 'Line segment' means a 1000-hook section of line or a 1 200 m section of line, whichever is the shorter.

The SC reviewed and revised the SIOFA Standard Protocol for Future Protected Areas Designation (Annex L). The SC **agreed** that the criteria in the protocol have no particular ranking of importance. (Paragraph 115)

The SC **recommends** that the MoP adopt the revised protocol (Annex L). (Paragraph 116)

In relation to the research and management plan for the Atlantis Bank protected area, the SC **recommends** that the MoP consider that fishing with all gears were identified as activities that degrade the biodiversity value of the area, noting that different gears typically have different levels of impact. The SC noted that fishing using trawl gears is not currently permitted in the area and a closure to trawl fishing has been observed by Australian and Cook Islands vessels since 2006. Information on the use of non-trawl gears in this area is lacking. (Paragraph 118)

In relation to the research and management plan for the Coral protected area, the SC **recommends** the MoP consider that fishing with all gears were identified as activities that degrade the scientific and biodiversity value of the area, noting that different gears typically have different levels of impact. The SC noted that fishing using trawl gears is not currently permitted in the area and a closure to trawl fishing has been observed by Australian and Cook Islands vessels since 2006. Information on the use of non-trawl gears in this area is lacking. (Paragraph 119)

In relation to the research and management plan for the Fools Flat protected area, the SC **recommends** that the MoP consider that fishing with all gears were identified as activities that degrade the biodiversity value of the area, noting that different gears typically have different levels of impact. The SC noted that fishing using trawl gears is not currently permitted in the area and a closure to trawl fishing has been observed by Australian and Cook Islands vessels since 2006. Information on the use of non-trawl gears in this area is lacking. (Paragraph 120)

In relation to the research and management plan for the Middle of What protected area, the SC **noted** that fishing using trawl gears is not currently permitted in the area and a closure to trawl fishing has been observed by Australian and Cook Islands vessels since 2006. Information on the use of non-trawl gears in this area is lacking. (Paragraph 121)

In relation to the research and management plan for the Walters Shoal protected area, SC **recommends** that the MoP consider that fishing with all gears were identified as activities that degrade the scientific and biodiversity value of the area, noting that different gears typically have different levels of impact. The SC noted that fishing using trawl gears is not currently permitted in the area and a closure to trawl fishing has been observed by Australian and Cook Islands vessels since 2006. Information on the use of non-trawl gears in this area is lacking. (Paragraph 122)

In relation to the research and management plans for the Atlantis Bank, Coral, Fools Flat, Middle of What and Walters Shoal protected areas, the SC:

- **Recalled** the Guidance for SC Recommendations to the Meeting of the Parties outlined in the standard protocol for protected areas designation (SC3 report, Annex H), which states that:
  - i. *If the proposal documents the necessary data and scientific information to support a protected area using protocol, different measures could be applied, such as management measures, technical measures, closures.*
  - ii. *In case of an area becoming protected, a management and research plan shall be associated to it on the year to come. It will include:*

1. *The measures in place in the protected area;*
  2. *The time of review of the protected area;*
  3. *If needed, the research that should be undertaken in the area.*
- **Recommends** that any fishing-related or research activity planned in the protected area requires a research plan for review by the PAEWG and SC. This research plan should specify (1) how the activity furthers the objectives of the protected area, (2) an assessment of impacts, and (3) proposed measures to prevent or minimise those impacts.
  - **Recommends** that 'non-destructive' monitoring in the form of scientific research (including, for example, the use of camera based systems) should be required within protected areas, and that components of the 'Framework for the Development of Research and Management Plans (PAEWG-01-14)' could be a useful guide for informing monitoring and scientific research within protected areas.
    - i. 'Non-destructive', in this context, is defined as research that does not cause significant adverse impacts on VMEs but may include the collection of minimal amounts of benthos.
  - **Recommends** to the Meeting of the Parties that the research and management plans included at Annexes M-Q be adopted for the Atlantis Bank, Coral, Fools Flat, Middle of What and Walters Shoal protected areas. (Paragraph 123)

***In relation to agenda item 6.6 Bottom Fishing Impact Assessments (BFIA):***

The SC **reaffirmed** that, in accordance with paragraph 18e of CMM 2018/01 on Bottom Fishing, a BFIA shall be updated when a substantial change in the fishery has occurred. (Paragraph 129)

***In relation to agenda item 7.2 Alfonsino:***

The SC **agreed** that without work on the assessment it was unable to provide advice on the status of the stock. (Paragraph 134)

***In relation to agenda item 7.3 Patagonian toothfish:***

The SC **recommends** that the MoP urgently considers adopting temporary measures to regulate toothfish fishing on William's Ridge at levels commensurate with fishing activities reported in 2016. (Paragraph 143)

The SC **requested** that the EU provide their fishing data from 2018 and 2019 to Australia so these data can be included in the stock assessment for this population undertaken in 2019. (Paragraph 144)

The SC **recommends** that the MoP urgently considers adopting temporary measures to regulate toothfish fishing on the Del Cano Rise in the SIOFA area at levels commensurate with fishing activities reported up to 2016. (Paragraph 147)

***In relation to agenda item 7.4 Orange roughy:***

The SC **noted** that the 2018 stock assessment for the Walters Shoal Region provided deterministic estimates of BMSY assuming a Beverton and Holt stock recruitment relationship, a combination of assumed steepness and natural mortality, and maturity

parameters (SC-03-07.1.1(04)). The BMSY estimate using the base model parameters was 23.6% B0 (SC-03-07.1.1(04), Table 3 assuming a 50% age-at-maturity of 37 years and 12 years to reach 95% after 50%). (Paragraph 151)

The SC **noted** the advice in SC-03-07.1.1(04) that:

- ‘Deterministic BMSY has not been found to be a useful reference point for New Zealand orange roughy stocks. It is highly dependent on the stock recruitment relationship and is therefore very uncertain.’ (Paragraph 152)

The SC **agreed** that deterministic estimates of BMSY were highly uncertain and therefore not suitable to be used as a reference point for management advice for this stock. (Paragraph 153)

***In relation to agenda item 7.5 Deepwater chondrichthyans in summary the SC:***

- **Agreed** there is limited catch, effort and biological information for many species of deepwater chondrichthyans;
- **Agreed** that the PSA and SAFE analyses have identified a number of species of deepwater chondrichthyans at high or extreme relative vulnerability to fishing using demersal trawl, demersal longline and demersal gillnet gears;
- **Noted** that based on the results of the ERA and the understanding of the vulnerability of many deepwater chondrichthyans species to fishing, four ‘key species of concern’ for which catch data are available (*C. coelolepis*, *C. granulosus*, *D. calcea* and *D. licha*) are caught in relatively high volumes.
- **Recommends** the collection and submission of more detailed observer data (e.g. improved species identification in accordance with the implementation of the FAO shark guides, biological samples to enable future genetic research, number of pups/eggs, life status (i.e. if discarded)) for species of concern (e.g. those at high or extreme vulnerability to fishing using certain gears) and all other data in accordance with CMM 2018/02, Annex B;
- **Requests** the MoP to urgently consider measures to mitigate the potential for overexploitation of ‘key species of concern’ that has been seen in similar fisheries globally. (Paragraph 164)

***In relation to agenda item 7.6 Saya de Malha Bank Fisheries:***

The SC **noted** that the Saya de Malha Bank longline fishery had been grouped together with other longline fisheries in the SIOFA area when conducting the ERA, even though they occur in different areas and target different species. This may lead to skewed results. The SC **recommends** that various longline fisheries should be treated separately in future ERAs. (Paragraph 166)

***In relation to agenda item 7.8 Harvest strategies:***

The SC **agreed**:

- that scientific work was required to inform SC advice on TRPs and LRPs. The SC **requests** the SERAWG to form a group of key interested parties to work intersessionally with a consultant to draft a technical working paper for submission to the next SERAWG meeting;
- to develop a generic approach for determining reference points for current and future stocks;

- that candidate reference points should take into account the level of data uncertainty in stocks, noting the data-limited nature of some fisheries/stocks;
- that for straddling stocks consistent reference points should be applied across the stock. (Paragraph 174)

The SC **recommends** that the MoP consider including six elements when developing harvest strategies, and the SC begin work to populate those elements: (i) operational objectives, (ii) reference points, (iii) an acceptable level of risk of breaching reference points, (iv) a monitoring strategy, (v) decision rules for achieving reference points, and (vi) a process for evaluating harvest strategies. (Paragraph 175)

***In relation to agenda item 10.2 FAO SIOFA-FIRMS Potential Partnership:***

The SC **recommends** that the MoP consider that the SC supported, in principle, joining FIRMS as a Partnership Arrangement, noting the resourcing implications. (Paragraph 189)

***In relation to agenda item 11.1 Long term research plan:***

The SC **recommends** that the MoP adopt the updated long term research plan to include the impacts of climate change as a priority theme (Annex G). (Paragraph 194)

***In relation to agenda item 11.2 2018 – 2021 operational work plan and budget:***

The SC **recommends** that the MoP consider the research activities described in Annex H for inclusion in the SIOFA budget. (Paragraph 197)

***In relation to agenda item 13 – SIOFA SC official contacts:***

To facilitate SC intersessional work, the SC **requests** that the MoP require each CP include in the SIOFA Official Contacts List their SC representatives identifying the SC HoD and an alternate. (Paragraph 207)

***In relation to agenda item 17.1 – Seabird bycatch:***

The SC **recommends** that the MoP consider bycatch mitigation measures for areas of high risk as identified by other RFMOs whose areas of competence are adjacent to or overlap with that of SIOFA. Measures which have been successfully used in CCAMLR longline fisheries include:

- the use of streamer lines as birds scaring device during setting,
- weight integrated lines only to increase sinking speed,
- white line only to increase visibility which decreases the catches,
- Brickle curtain in place during hauling,
- setting only at night between the nautical twilights,
- limitation of the light emitted by the ship during operations,
- discards are forbidden during setting and hauling to decrease attractiveness,
- closure of fishing seasons during periods of high risk of seabird bycatch (Paragraph 221)

## Agenda item 15 – Election of Chairperson and Vice Chairperson

208. The Chairperson noted that the 12-month extension had ended for the current Chair (Dr Ilona Stobutzki) and vice-Chair (Dr Tsutomu Nishida).
209. Dr Ilona Stobutzki was nominated as Chair and the SC agreed to appoint her as SIOFA SC Chairperson for an additional 12 months.
210. Dr Tsutomu Nishida was nominated as vice-Chair and the SC agreed to appoint Dr Tsutomu Nishida as SIOFA SC Vice-Chairperson for an additional 12 months.
211. The SC noted that in line with the rules of procedure these would be the final terms for these individuals as the Chair and Vice-Chair.

## Agenda item 16 – Future meeting arrangements

212. The Executive Secretary informed the SC that, at MoP5, Mauritius had offered to host SC5. The Executive Secretary is in the process of confirming whether Mauritius still intends to host the meeting and will inform the SC in the intersessional period.
213. The SC initially recommends that two days be allocated for the PAEWG2 meeting.
214. The SC initially recommends that two days be allocated for the SERAWG2 meeting.

## Agenda item 17 – Other business

215. The SC observed a moment of silence at 11:00 a.m., 29 March, in remembrance of the victims of the Christchurch terror attack.

### 17.1 Seabird bycatch

216. The DSCC noted that measures to mitigate seabird bycatch was an important outstanding issue for SIOFA, particularly given that the CCAMLR area abutting SIOFA is recognised as a high risk area for seabird bycatch. The DSCC urged SIOFA to consider this issue at SC5 and for CCPs to provide information about their experiences and for the Secretariat to seek additional information from CCAMLR and the Agreement on the Conservation of Albatrosses and Petrels (ACAP) to assist these discussions.
217. France (Territories) presented their CCAMLR sea bird mitigation measures for longline fishing implemented for all French vessels in SIOFA and noted the strong decline in seabird mortality in the CCAMLR Area. Considering that risks of bird mortality are similar in SIOFA, France (Territories) invited the SC to recommend the adoption of these mitigation measures for longliners and the adoption of appropriate mitigation measures for trawlers.
218. The SC discussed the potential risk of seabird bycatch, especially in areas adjacent to CCAMLR areas, where seabird bycatch has been assessed at high or extreme risk. The SC **noted** some CPs have mandatory bycatch mitigation measures in place.
219. The SC **requested** the Secretariat summarise data on seabird bycatch for consideration at the next SC.
220. The SC **agreed** there was a need to understand the risk of seabird bycatch across the SIOFA Area and to seek advice from other RFMOs, such as CCAMLR and IOTC, and ACAP.

221. The SC **recommends** that the MoP consider bycatch mitigation measures for areas of high risk as identified by other RFMOs whose areas of competence are adjacent to or overlap with that of SIOFA. Measures which have been successfully used in CCAMLR longline fisheries include:

- the use of streamer lines as birds scaring device during setting,
- weight integrated lines only to increase sinking speed,
- white line only to increase visibility which decreases the catches,
- Brickle curtain in place during hauling,
- setting only at night between the nautical twilights,
- limitation of the light emitted by the ship during operations,
- discards are forbidden during setting and hauling to decrease attractiveness,
- closure of fishing seasons during periods of high risk of seabird bycatch.

### **Agenda item 18 – Adoption of the meeting report**

222. The report of the 4th meeting of the SIOFA SC was adopted at 7:42 p.m., 29 March 2019.

### **Agenda item 19 – Close of meeting**

223. The Chair closed the meeting at 7:44 p.m.