

MoP-08-INFO-15

8<sup>th</sup> Meeting of the Parties of the Southern Indian Ocean Fisheries Agreement  
(MoP8)  
5-9 July 2021 (online)

## SC6 report

*Relates to agenda item: 4*

Working paper  Info paper

## SIOFA Scientific Committee

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### Abstract

The SIOFA SC presents the report of its 6<sup>th</sup> meeting to the Meeting of Parties.

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

Held via Online Forum and Zoom  
Videoconferences on 22-26 March 2021

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## **Agenda item 1 – Opening**

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

1. The Chair, Mr Alistair Dunn, opened the sixth SC meeting via email on 1 March 2021.

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

2. The list of meeting participants is attached (**Annex A**).

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

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

3. The agenda was adopted (**Annex B**).

### **Agenda item 2.2 Confirmation of Meeting Documents**

4. The table of meeting documents and related items (**Annex C**) was confirmed.

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

5. 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**

6. No changes to the functions and terms of reference of the SC were proposed.

### **Agenda item 2.5 Advice to the MoP**

7. No advice was proposed.

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

### **Agenda item 3.1. Discussion and questions for each annual national report**

8. Annual reports were submitted by Australia, China, Comoros, Cook Islands, European Union, France (Territories), Japan, Korea, Seychelles, Chinese Taipei and Thailand. An annual report was not submitted by Mauritius.

#### **Japan Annual Report: SC-06-09**

9. Japan presented its annual report. The report described Japan's 1. Fisheries, 2. Catch, effort and catch per unit effort (CPUE), 3. Fisheries data collection and research activities, 4. Vulnerable marine ecosystem (VME) thresholds, 5. Biological sampling and length/age composition of catches, 6. Data verification mechanisms and 7. Observer program. In the SIOFA Area Japan had operated two different types of fisheries discontinuously for 45 years (1977-2020), i.e., trawl fisheries targeting splendid alfonsino and bottom longline fisheries targeting Patagonian toothfish. Based on accumulated information, the seven items are described for the trawl and bottom longline fisheries, respectively, highlighting the recent 6 years (2015-2020). Although Japan had been concerned about observer coverage due to the COVID-19 pandemic, it was able to achieve 100% coverage.

#### **Seychelles Annual Report: SC-06-10**

10. Seychelles presented its annual report. The report described Seychelles' fishing activities within the SIOFA Area. The Seychelles had no locally flagged vessels operating in the SIOFA Area. Seychelles flagged vessels operating on the high seas consisted of mostly purse seiners and longliners that target tuna and tuna-like species and are therefore operating in the Indian Ocean Tuna Commission (IOTC) area of competence. The majority of local vessels operated within the Seychelles exclusive economic zone (EEZ) and targeted mostly demersal and pelagic species using a range of fishing gears such as traps, handline, dropline and pelagic longlines.

#### **Thailand Annual Report: SC-06-11**

11. Thailand presented its annual report. Thailand began authorising Thai-flagged overseas fishing vessels to operate in the SIOFA Area in May 2019. The main fishing grounds were distributed around Saya de Malha Bank, between 9-11° S latitude and 60 to 62° E longitude. The fishing gear were otter board trawl and handline. Currently, there are no transshipments at sea by Thai carriers in the SIOFA Area because there are still only few Thai fishing vessels operated in the area and they are required to unload fish at Thai ports. The fishing information were recorded during January – December 2020. There were 924.51 tons of catch from otter board trawl and 379.39 tons of catch from handline. For trawl, 464 hauls were operated and the average CPUE was 476.92 kg/hr. The dominant caught species consisted of *Decapterus* spp., *Saurida* spp., *Nemipterus* spp., *Selar crumemophthalmus*, and *Sphyrna* spp. For handline, 133 fishing days were operated and the average CPUE was 2852.59 kg/day. The major caught species consisted of *Carangoides* spp., *Lutjanus* spp., *Serranid* fish, *Aprion virescens*, and *Lethrinus* spp. Incidental bycatch was also observed and reported by onboard observers. Seabirds and marine mammals were not caught by Thai fishing vessels in 2020. From trawl, three leatherback sea turtle, 560 kg hammerhead sharks (*Sphyrna* spp.), one mobulid ray, five bowmouth guitarfish (*Rhina ancylostoma*), 323 kg sponge, and 0.02 kg black coral (*Antipathes dichotoma*) were reported as incidental bycatch. From handline, four kawakawa and 10-kg Staghorn Coral (*Acropora formosa*) were reported as incidental bycatch.

#### **China Fishing Activities Report: SC-06-12**

12. China presented its annual report. In the SIOFA Area, China used to operate three different types of fishing intermittently from 2000 to 2017: Light seining targeting mackerel and *Bramidae* family, bottom longlining targeting ruby snapper, etc. and demersal trawling targeting dories and orange roughy. Since 2018, China has no SIOFA fisheries in the Area. Based on accumulated data and statistics, this report summarised the fishing activities of Chinese-flagged vessels in the area. It also noted that China has been authorising squid jigging since 2003 in the Indian Ocean, but there are no squid jiggers fishing in the SIOFA Area. Hence, this report did not include Chinese squid jigging in the Indian Ocean. Since 2019, China has been a Contracting Party to SIOFA.

#### **Australia Annual Report: SC-06-14**

13. Australia presented its annual report. The report provided an update on Australia's fishing activities in the SIOFA Area. Australian operators are currently authorised by the Australian Government to target various species with midwater trawl, demersal trawl and demersal line gears. One trip was undertaken by a single vessel using line fishing methods in 2020. The vessel recorded 168210 demersal longline hooks (156 sets) and 5565 dropline hooks (8 sets), with the majority of catches being comprised of *Polyprion* species. All catch and effort data for fishing operations during 2020 will be submitted to SIOFA in accordance with CMM 2019/02. 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.

#### **France (Territories) Annual Report: SC-06-15**

14. France (Territories) presented its annual report. The report summarised and updated fishing activity by France for French Territories-flagged vessels in the SIOFA Area for 2020. The fishing activity was very low in 2020, with only two longliner vessels operating in the area during two cruises for a total of 9 days. The vessels conducted a total of 46 fishing operations with 127800 hooks set. No VME thresholds were triggered. All catch and effort data for fishing operations during 2020 will be submitted to SIOFA in accordance with CMM 2019/02. No VME indicator thresholds were triggered during 2020. The report also provided an overview of the French observer program implemented on bottom longline fishery. The observer coverage was 100%, meaning that observers were on vessels for every fishing event. Data (including both from the observer and skipper) were entered daily in an electronic logbook and their consistency was checked on a daily basis by observers at sea and on a weekly basis by the Muséum National d'Histoire Naturelle.

#### **Korea Annual Report: SC-06-19**

15. Korea presented its annual report. The Korean longline fishery in the high seas of the Indian Ocean started in 1999, and Korean trawl fishery initiated operations in the SIOFA Area from 2000. The number of trawlers and longliners that operated in the SIOFA Area between 2011 and 2013 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 for Korean trawlers in the area have been pelagic armorhead and splendid alfonso, while Korean longliners have targeted Patagonian toothfish and hapuka. Korean fishing vessels have caught less than 400 tons yearly between 2009-2011. The catch increased up to about 1000 tons in 2012 and 2013, due to the increased catch by the trawl fishery. The annual observer coverage has been more than 50% for bottom impact gear fishery since 2009. Korea established a procedure to protect VMEs from bottom fishing in the high seas in 2009. It consists of threshold 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., National Institute of Fisheries Science, National Fishery Products Quality Management Service, Fisheries Monitoring Center) were specified.

#### **Chinese Taipei Annual Report: SC-06-20**

16. Chinese Taipei presented its annual report. Oilfish, including *Ruvettus pretiosus* and *Lepidocybium flavobrunneum*, was a bycatch species of large-scale Chinese Taipei tuna longline fleet prior to 2005. Some tuna longliners started shifting to the southwest Indian Ocean fishing for oilfish seasonally after 2005 to obtain extra earnings. The numbers of longliners that fished for oilfish seasonally were between 9 and 45 from 2000 to 2019, and there were 51 authorised ones fishing for oilfish within the SIOFA Area in 2020. The average catch in the recent 5 years (2016 to 2020) by this fleet was at around 6,690 metric tons.

#### **EU Annual Report: SC-06-21**

17. The European Union (EU) presented its annual report. The report presented an overview of the fishery data available from the EU fleets operating in the SIOFA Area updating the previous reports to the end of 2020. Information about catch, CPUE, data collection, VME and other data of interest were included. While France did not request any authorisation in 2020 and therefore did not fish in the SIOFA Area, Spanish fishing activities were focused in three fishing grounds, namely Walter Shoals (Area 2), Southwest Indian Ridge (Area 3b and 3a) and more recently in the SE Indian Ocean (Area 7). In 2020 a few fishing sets were located in the Ninety-Degree East Ridge (Area 4). The threshold of 10 or more VME indicator units by segment has never been



reached. Scientific observers were deployed on board the one EU fishing vessel operating in the region in 2020 and there was 100% observer coverage.

18. The Deep Sea Conservation Coalition (DSCC) expressed concern over the extension of the EU fishery into areas outside the agreed management areas covered by CMM 2020/15 (Management of Demersal Stocks) and ongoing fishing without clear joint arrangements with Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR).

#### **Comoros Annual Report: SC-06-25**

19. As Comoros was absent from the meeting, its annual report was taken as read. The report covers the activities carried out by the Diego Star 2 from January 16 to Jun 8, 2020 and provides an impact assessment of deep-sea fishing activities on VMEs and deep-sea fish stocks in the SIOFA Area, covering the first semester of 2020. The report is based on historical information from the Diego Star 2 available through logbooks. No information was collected from observers for this vessel.

#### **Cook Islands Annual Report: SC-06-27**

20. Cook Islands presented its annual report. In 2020 the Cook Islands authorised two vessels to undertake fishing in the SIOFA Area. These vessels target deepwater finfish species, primarily alfonso ( *Beryx splendens* ) and orange roughy ( *Hoplostethus atlanticus* ) using bottom and midwater trawl fishing methods. The report captured catch and effort data, fisheries data collection, research activities, VME thresholds for bottom fishing activities, biological sampling and length/age composition of catches, the observer programme, the port sampling and inspection programme, the vessel monitoring system, and interactions with sharks. Appendices were also provided on the Cook Islands to FAO species codes and list of Benthic Protected Areas (BPAs) closed to Cook Island flagged vessels.
21. In 2020, The Cook Islands National Observer Programme (CINOP) was unable to maintain 100% observer trip coverage due to the global impact of Covid-19: 50% trips covered and 52% haul coverage. However, in the absence of 100% observer coverage as a result of the derogation of CMM 2019-01, para 39a, the Cook Islands made best efforts to collect data by alternate means through vessel officers and crew.
22. In 2020, despite not maintaining a 100% observer coverage as a result of derogation of CMM 2019-01, para 39a, the Cook Islands continued to collect a wide range of data through vessel officers and crew including fishing activities, catch composition, discards, bycatch, seabird, mammal, vessel sightings, biological data, otoliths and VME encounters.

#### **Agenda item 3.2 Recommendations**

23. See agenda item 3.3.

#### **Agenda item 3.3 Advice to the MoP**

24. The SC **NOTED** there are two areas of apparent toothfish fishing that are outside the Del Cano Rise and Williams Ridge management areas specified in CMM 2020/15 (Management of Demersal Stocks; See SC-06-21, Figure 1 - EU-Spain 2020 footprint). These areas are:
  - An area to the immediate north-west of the Del Cano Rise management area.
  - An area on the southern boundary of Region 7 around 99 degrees East.
25. The SC **NOTED** that these two areas are not covered under CMM 2020/15 and are in close proximity to the CCAMLR Convention Area, and **RECOMMENDS** that the MoP

consider measures to effectively manage toothfish in these two areas and other similar areas where toothfish are caught in the SIOFA Area.

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

### **Agenda item 4.1 Spatial Extent of Historic Catch Data, Bottom Fishing Footprint**

26. Japan presented SC-06-13, which provided Japan's comments on the purposes of the SIOFA bottom fishing footprint and the framework for scientific research. Japan recommended that the primary purpose of the footprint is to identify the spatial extent of existing fishing grounds, and that the primary purpose of the framework for scientific research is to define the footprint (existing fishing grounds) and thereby identify new fishing grounds, so that research activities such as bottom fishing impact assessment (BFIA) for both existing and new fishing grounds (framework) duly take into account the different nature of VMEs distributed in them.
27. To accomplish these purposes, Japan requested the SC to consider the following points.
  - Regarding the bottom fishing footprint, the SC should:
    - i. adopt the definition of the footprint with a spatial resolution by  $1^{\circ} \times 1^{\circ}$  including finer resolutions, in order to utilise maximum available historical fishing effort from the majority of CCPs;
    - ii. provide a composite (common) footprint including all types of gears from the viewpoint of practicality; and
    - iii. use all fishing effort data with no depth constraints in order to make the footprint practical.
  - Regarding the framework for scientific research, the SC should:
    - i. adopt the definition of the SIOFA bottom fishing footprint to identify the spatial extent of existing fishing grounds, so that the new fishing grounds (outside of the existing fishing grounds) are clearly defined;
    - ii. consider that the framework is defined as these two areas (existing (up to 2015) and new fishing area), so that scientific research activities (fishing surveys, exploratory fishing, BFIA and other associated activities) as well as fisheries management can be implemented differently and meaningfully under this framework; and
    - iii. establish the criteria to categorise new fishing grounds as existing fishing grounds using the SEAFO criteria (SEAFO-CM30/15), as one of the abovementioned associated activities.
28. Some CCPs pointed out that they currently map their footprints at a finer scale than  $1^{\circ} \times 1^{\circ}$  and suggested that adopting the coarser scale of  $1^{\circ} \times 1^{\circ}$  as the unified core SIOFA scale would be counterproductive.

### **Agenda item 4.2 Overview of SIOFA fisheries 2020**

29. The SIOFA Data Manager presented a draft Overview of SIOFA fisheries in 2020 (SC-06-26), by compiling information on active fleet composition; fisheries operating in the SIOFA Area; fishing effort; total catches and catch composition; VME thresholds, response and measures, and encounters; observer and port sampling programs; and biological sampling; from National Reports (as of 10 March 2021) and the Secretariat's

databases. The Data Manager noted that most of the 2020 data could not be included in the overview as the submission of 2020 data is not due until the end of May 2021.

30. The SC discussed the high value of benthos bycatch (Scleractinia) reported by the Cook Islands. The Cook Islands provided further explanation that these bycatch were composed of dead coral rubbles and the data will be revised and resubmitted to the Secretariat to separate live and dead coral.
31. The SC reviewed and finalised the Overview of SIOFA fisheries in 2020 (**Annex D**).
32. The SC discussed potential amendments to the Guidelines for the Submission of Annual National Reports to the SIOFA SC.
33. Japan pointed out that the guidelines specify that the description of fisheries and biological sampling sections of annual reports should include information from the past five years, but do not specify any time period for the other sections of annual reports. Japan suggested that these sections should similarly include information for a minimum of five years.
34. France (Territories) suggested the following amendments to the guidelines:
  - that information be presented by area for catch, effort and CPUE summaries;
  - that CCPs provide a map with an overview of operations that exceeded the pre-determined VME threshold and a summary table of all estimated quantities of VME-listed benthic species caught by area;
  - that a new section be included for incidental bycatch of marine mammals, seabirds, reptiles and other species of concern, with:
    - i. a summary table of incidental bycatch by species and life status of animals (alive, dead or injured), and
    - ii. a summary table of recorded species interactions with fishing gear;
  - that, for biological sampling, CCPs provide a summary table of marking operations and tag recoveries by species and area.

#### **Agenda item 4.3 Recommendations**

35. See agenda item 4.4.

#### **Agenda item 4.4 Advice to the MoP**

36. The SC **RECOMMENDS** that the overview of SIOFA fisheries, incorporating any SC6 input, also be provided to future meetings of its working groups.

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

### **Agenda item 5.1 Templates for data submission**

#### **Agenda item 5.2 Historical Catch and Effort Data**

37. The Data Manager informed the SC that, since SC5, Korea has submitted its historical data and Australia has submitted its historical observer data. The Secretariat reported that no historical information is available from Mauritius.
38. The Data Manager asked if Cook Island would be able to provide historical catch and effort data on a haul-by-haul basis (historical data have been provided on a daily basis). The Cook Islands stated that it is considering this, but will wait to see the

outcomes of the data security audit recommended by SC6 to MoP8. In the interim the Cook Islands will consider any analyses of stocks and benthic impacts on a case by case basis and provide the data if deemed required by the Secretariat.

39. The Data Manager asked if Seychelles knows of any past fishing operations that would have occurred in the SIOFA Area. Seychelles replied that it would investigate and report to the Secretariat.

#### **Agenda item 5.3 Annual Catch and Effort Data**

40. SC-06-17, the summary of the 2019 catch and effort data submitted by CCPs, was taken as read.

#### **Agenda item 5.4 Scientific Observer data**

41. SC-06-18, the summary of the scientific observer data submitted by CCPs, was taken as read.
42. France (Territories) clarified that some requirements are not possible to provide by observers (e.g. weight of catches not retained onboard or lost at surface), and requested clarifications on the notation done by the Secretariat.
43. Chinese Taipei clarified that in accordance with paragraph 39 of CMM 2019/01 regarding interim management of bottom fishing, only fishing vessels engaging in bottom fishing should have scientific observers onboard. Meanwhile, there is no CMM currently in force that requires a CCP to deploy scientific observers onboard fishing vessels engaging in pelagic fisheries. Since there were no Chinese Taipei flagged fishing vessels engaging in bottom fishing in the SIOFA Area, Chinese Taipei has no scientific observer data to provide for 2019.

##### **Agenda item 5.4.1. Impact of reduced observer coverage on trawls due to pandemic**

44. The Southern Indian Ocean Deepsea Fishers Association (SIODFA) reported that for two of its members' vessels, observer duties are being undertaken by vessel crew; these reports are signed off by the skipper and vessel manager.
45. The SC discussed the possibility of introducing e-monitoring schemes to complement in-person observer programmes, recognising that e-monitoring schemes would be useful to mitigate the potential impact of reductions in observer coverage due to the pandemic.

#### **Agenda item 5.5 Data Standards (see 10.3)**

46. Chinese Taipei presented SC-06-08, which proposes revisions to CMM 2019/02 (Data Standards) to include Chinese Taipei's pelagic longline fisheries in the data standards.
47. The SC recalled that the MoP has requested that the Secretariat engage with the IOTC Secretariat to develop a bilateral cooperative arrangement, particularly in understanding species which are taken as bycatch in the IOTC Area of Competence but which are fisheries resources under the SIOFA Agreement (MoP7 Report, para 165), and recognised that Chinese Taipei's pelagic longline fisheries target oilfish, which may fall under the IOTC's competency under such a cooperative arrangement.
48. France (Territories) presented SC-06-16, which summarises outstanding issues in relation to the template for annual data submission under the requirements of CMM 2019/02 (Data Standards), specifically with regard to observer data for longline fishing activities and vessel catch and effort data.
49. The Data Manager presented SC-06-07, which proposes revisions to CMM 2019/02 (Data Standards) based on recommendations made to the SC previously to improve

the data collection and submission and the introduction of new CCPs to SIOFA with new fishing methods.

50. Taking into consideration SC-06-07, SC-06-8 and SC-06-16, the SC reviewed and proposed revisions to CMM 2019/02 (**Annex E**).
51. Regarding the collection of bycatch data by fishing vessels, the SC discussed the potential difficulty of vessel crew members correctly identifying rare species.
52. The SC agreed that the word TAXA should replace the word SPECIES in the CMM to enable the input of species either at the genus or the family level.
53. In reference to Japan's concerns on species identification, the Data Manager noted that the use of OTHER as a species identification is not informative enough, as it can be any sort of animal (fishes, molluscs, crustaceans, etc.).
54. Regarding the collection of bycatch data by observers, the SC discussed the need to define 'main' bycatch species. The definition of 'main species' is further discussed under agenda item 7.10.
55. The SC discussed the need to develop common minimum data standards for CCPs' observer programmes. France (Territories) suggested that, as a first step, it would be useful for each CCP to provide a document describing its current observer programme in detail based on the list of criteria developed under the CCAMLR observer training program accreditation scheme (COTPAS).
56. The SC discussed the importance of ensuring the confidentiality of data, especially commercially sensitive data, and recalled that the MoP had expressed interest in a data security audit process but had noted that further research was required before implementing this procedure (MoP 6 Report, para 161).
57. The SC discussed the development of a protocol for tagging Patagonian toothfish in the SIOFA Area and the importance of ensuring consistency with CCAMLR's tagging protocol. CCAMLR and the SIOFA Secretariat are working together in order to develop a protocol using tagging resources from CCAMLR or national tags and sharing CCAMLR's experience in order to use the same tagging procedures for SIOFA and CCAMLR.
58. Thailand gave a presentation on its handline fisheries in the SIOFA Area (SC-06-INFO-13). Basically, one handline is operated by one fisherman for a certain duration. Several fishermen are fishing at the same time from a vessel. The presentation enabled better identification of the fishing effort metrics. The effort is a combination of fishing duration, number of fishermen, number of line lifts, and number of hooks per line.
59. The SC discussed the submission of identical information pertaining to the Catch and Effort data and to the Observer data. It has been agreed that such information should be provided twice even if coming from the same source (e.g. haul dates and positions). The SC discussed the importance of linking information from the logbook and from the observers.

#### **Agenda item 5.6 Recommendations**

60. See agenda item 5.7.

#### **Agenda item 5.7 Advice to the MoP**

61. The SC **NOTED** the absence of catch and effort data submitted by Mauritius.

62. The SC **REQUESTS** that the MoP consider mechanisms to ensure that all required catch and effort data are collected and submitted by CCPs, including for previous years where the data submitted were incomplete.
63. The SC **NOTED** the lack of scientific observer data submitted by Comoros and Mauritius.
64. The SC **REQUESTS** that the MoP consider mechanisms to ensure that all required scientific observer data are collected and submitted by CCPs, including for previous years where the data submitted were incomplete.
65. The SC **REQUESTS** that CCPs distinguish between missing observations and zero observations when submitting data to the Secretariat.
66. The SC **AGREED** to hold further discussions on the introduction of e-monitoring schemes via an intersessional working group.
67. The SC **RECOMMENDS** that, upon receiving the draft reports of catch and effort data submissions and observer data submissions, CCPs discuss with the Secretariat the reasoning behind their data provision ratings and ways to improve their ratings in the future.
68. The SC **RECOMMENDS** that the MoP endorse the proposed revisions to CMM 2019/02 (Data Standards; **Annex E**), while noting:
  - that SIOFA and IOTC are discussing the development of a bilateral cooperative arrangement for understanding species which are taken as bycatch in the IOTC Area of Competence and vice versa,
  - the potential difficulty of vessel crew members to correctly identify rare bycatch species, and
  - the need to define 'main' bycatch species (see paragraphs 144 to 146).
69. The SC **NOTED** paper SC-06-16 on improvement of data submission by France (Territories) and **REQUESTS** the Secretariat to update the data submission templates according to the recommendations provided in this document.
70. The SC **AGREED** to create an intersessional working group to discuss harmonisation of observer programmes by CCPs and the evaluation process to improve data quality.
71. The SC **RECOMMENDS** that the MoP commission an independent audit of SIOFA's data security systems and protocols in relation to the databases, to ensure that data are held in a secure manner and only released to those with authorised access at the time required. The SC **REQUESTS** the Secretariat to work with CCPs to determine the criteria and process for conducting such an audit.
72. The SC **RECOMMENDS** that the MoP task the Secretariat with developing a toothfish tagging protocol for the SIOFA Area and ensuring that the protocol is consistent with that of CCAMLR.

## **Agenda item 6 – Report from the PAEWG3**

### **Agenda item 6.1 Vulnerable Marine Ecosystems**

73. The Chair of the Protected Area and Ecosystems Work Group (PAEWG) summarised the related discussions and advice of the PAEWG under the relevant agenda items.

#### **Agenda item 6.1.1 VME taxa list**

74. The SC considered the PAEWG's discussions and endorsed its advice.
75. The CCAMLR Secretariat welcomed the opportunity to collaborate with the SIOFA Secretariat on the VME guide and noted that continuing this collaboration would be useful for improving and harmonising the identification of VME taxa in SIOFA and CCAMLR fisheries.
76. The SC **NOTED** that collaboration with other fisheries management organisations would also be useful.

#### **Agenda item 6.1.2 VME encounter thresholds**

77. The SC considered the PAEWG's discussions and endorsed its advice.
78. DSCC pointed out that the South Pacific Regional Fisheries Management Organisation (SPRFMO) recently reduced its threshold for sponges from 50 kg to 25 kg.

#### **Agenda item 6.1.3 VME Mapping (consultancy)**

79. The SC considered the PAEWG's discussions.

#### **Agenda item 6.2 Bottom Fishing Impact Assessment**

##### **Agenda item 6.2.1 Trawl cumulative BFIA (consultancy)**

##### **Agenda item 6.2.2 Longline cumulative BFIA (consultancy)**

80. The SC considered the PAEWG's discussions and endorsed most of the PAEWG's advice. However, upon considering paper SC-06-28 (presented under agenda item 6.5), the SC did not support the PAEWG's observation on the expansion of the trawl and longline footprints. The SC **NOTED** that as shown in the ongoing consultancy work, this could be not only due to the addition of data from CCPs that newly acceded to SIOFA in the later years of the study period, as well as the limited availability of historical fishing data.
81. SIODFA noted that there could be some uncertainties in the assumed parameters in the draft consultancy report and requested that these be verified and related sensitivity analyses be conducted before the report is finalised. Specifically, the value of the relative frequency of mid-water and demersal trawl tows should be checked and the appropriate measure of the width of a trawl be confirmed as errors in these measures would have a major effect on the results of the analysis.
82. The consultant provided the rationale for the parameters but agreed to work with the industry to develop more appropriate parameters for trawl and other related parameters.
83. SC-06-INFO-05, which provided an update (2021) to the preliminary BFIA for the EU fisheries in the SIOFA Area, was taken as read. The SC thanked the EU for updating its BFIA.

##### **Agenda item 6.2.3 Advice to the MoP**

84. See agenda item 6.7.

### Agenda Item 6.3 Protocols for interim Protected Areas and review of protected areas proposals in SIOFA

### Agenda Item 6.4 Advice on management and/or research plans in the proposed and/or validated protected zones

### Agenda Item 6.5 SIOFA Fishing Footprint

85. The Data Manager presented SC-06-28, which described four new sets of SIOFA fishing footprints (SFFPs) based on the additional specifications provided by the PAEWG to prepare footprints that encompass the maximum available data, to consider all gears together and to not exclude deep areas. The specifications of the four footprints are as follows: fine resolution (haul-by-haul to 20-minute) and historical data (up to 2015); fine and coarse resolution (haul-by-haul to 1-degree) and historical data (up to 2015); fine resolution (haul-by-haul to 20-minute), and historical and recent data (up to 2019); and fine and coarse resolution (haul-by-haul to 1-degree), and historical and recent data (up to 2019). Including the coarse resolution data into the footprint doubled the footprint area, and the use of recent data increased the area by about 10%. The Data Manager explained that the SFFPs encompass the maximum available data, explained that variation in data selection and methods result in different footprint outputs, and recommended that the SC present these SFFPs to the MoP, and that the MoP could consider one of them as a basis for further advice and recommendations.
86. The SC considered the PAEWG's discussions and advice, as well as the information in SC-06-28.
87. The SC discussed the intended purposes/roles of footprints within CMM 2020/01 (interim management of bottom fishing), specifically paragraphs 7 and 10.

### Agenda item 6.6 Recommendations

88. See agenda item 6.7.

### Agenda item 6.7 Advice to the MoP

89. The SC **RECOMMENDS** that the MoP adopt the draft VME taxa list (PAEWG3 Report, Annex D) for distribution to the fishing authorities and on-board bottom fishing vessels for improving VME taxa identification. The SC **NOTED** that the list has been adapted from that of CCAMLR and **AGREED** on the need to investigate other taxa that do not occur in the CCAMLR Area, including possible VME indicators in fishing grounds in the SIOFA Area north of 45° south. The SC **AGREED** to update the list, if required, each year, and noted the possibility of including VME taxa from the lists of other RFMOs.
90. Regarding VME encounter thresholds, the SC **NOTED** that it would be worthwhile to consider the thresholds, or the processes to agree thresholds, adopted by other RFMOs, such as those described in SPRFMO-SC6-DW06 (Methods development for spatially explicit bottom fishing impact evaluation within SPRFMO). The SC **REQUESTS** the PAEWG to work intersessionally to conduct such a review and **RECOMMENDS** that the MoP consider a consultant to assist with this work.
91. Regarding VME mapping, the SC **NOTED** the ongoing work by the consultancy project to map bioregions based on VME indicator taxa distribution data.
92. Regarding the ongoing trawl and longline cumulative BFIA consultancy, the SC:
  - **NOTED** the ongoing work to develop a BFIA for trawl and longline gears in SIOFA.



- **RECOMMENDS** that fine-scale location data be made available prior to updating the ongoing trawl and longline BFIA analyses, subject to approval by CCPs.
  - **RECOMMENDS** that the bottom impact of trawl and longline gear be recalculated at fine scale with a range of parameters combining trawl and longline impacts, for a range of VMEs.
  - **RECOMMENDS** that an attempt be made to calculate the actual population status of a range of VMEs once spatial distribution maps are available.
  - **RECOMMENDS** that all future fishing effort be recorded on a haul-by-haul basis, including start and end positions, distance trawled, trawl width and longline length, if possible.
  - **NOTED** the importance of using finer-scale location data while recognising that some CCPs have not collected such data.
  - **NOTED** that the work done so far shows that the trawl and longline footprints are expanding.
93. The SC **NOTED** that the updated EU BFIA meets the appropriate standards in light of the SIOFA BFIA Standard.
94. The SC **NOTED** that SC-06-28 showed an expansion of the SIOFA footprint that could not be solely explained by the addition of data from CCPs that newly acceded to SIOFA in the later years of the study period, as well as the limited availability of historical fishing data.
95. Three papers were presented to the PAEWG3 (PAEWG-03-05, PAEWG-03-06, PAEWG-03-08) and one paper to the SC6 (SC-06-28). While each investigates different aspects of fisheries footprints, benthic impacts or benthic vulnerability to impacts, they overlap in some technical aspects and may all have similar applications. When considering management advice that is formulated based on these papers the work should be collated where possible, and where this is not possible, the analysis with the most fine-scale data, highest level of scientific analysis and that which is best suited to the management questions should be considered preferable.
96. In respect of Para 7 of CMM 2020/01 which pertains to the development of an appropriate SIOFA bottom fishing footprint and a SIOFA BFIA, the SC **REQUESTS** that the MoP provide guidance on the following:
- Whether the above mentioned (para 7) footprints are intended for use in the BFIA? For this science purpose the footprints should represent the best available spatial resolution and be regularly updated to include the most recent years. For science purposes, SC **NOTES** that the footprint would also need to contain the level of effort within each grid cell across a fixed grid size (see PAEWG-03-08).
  - Whether the abovementioned (para 7) footprints are also intended for use as a management tool to constrain overall SIOFA bottom fishing expansion? For this management purpose footprints will require a different specification as follows: represent the best available spatial resolution (or mix of spatial resolutions as dictated by CCP data availability) and be fixed to an historical period (not regularly updated with recent years; see SC-06-28).
97. In respect of Para 10 of CMM 2020/01 which pertains to specific interim measures for each CCP to limit the level and spatial extent of the bottom fishing effort applied, and specifically Para 10.1.a.ii (“constraints on the spatial distribution of its bottom fishing effort, excluding line and trap methods, to recently fished areas to prevent any

expansion of such fishing activities”), the SC **REQUESTS** that the MoP discuss the following assumptions:

- That footprints developed by CCPs for the above (Para 10.1.a.ii) purpose are designed to constrain the spatial distribution of effort of each CCP separately.
- As such, these CCP footprints are intended for management purposes and should therefore represent the best available spatial resolution and be fixed to an historical period (not regularly updated with recent years).

## **Agenda item 7 – Report from the SERAWG3**

98. The Chair of the Stock and Ecological Risk Assessment Working Group (SERAWG) summarised the related discussions and advice of the SERAWG under the relevant agenda items.

### **Agenda item 7.1 Alfonsino**

#### **Agenda item 7.1.1 Update on the fishery**

99. SIODFA introduced SC-06-INFO-10 on the possible use of tags for research on alfonsino fisheries. SIODFA was of the view that tagging of alfonsino taken by commercial fishing would not be feasible as the fish will be dead or near dead at the time of tagging. Consideration should be given to using research vessels instead.
100. CITEB suggested electronic tagging with pop-up satellite archival tags as a quicker alternative to conventional tagging, which can take several years to produce results and provide little information about the movement of the tagged fish. Electronic tagging are operational with small fish and can track fish immediately, providing information about survival, habitat, and daily movement.
101. SIODFA introduced SC-06-INFO-09 and outlined the shortcomings of acoustic and trawl surveys for the management of alfonsino fisheries. It believes that neither trawl nor acoustic surveying were feasible methods for assessing alfonsino stocks.
102. SIODFA introduced SC-06-INFO-08 on the imprecise nature of the term ‘data-poor’. SIODFA recommended that the term, when used, also have the specific cause of concern be described.
103. For stock assessment purposes, ‘data poor’ is commonly used terminology in situations where good data exist but are not good enough for assessment purposes e.g. data are available only for the recent period or limited in their spatial extent, thereby limiting their applicability for assessment models. For stock assessment purposes ‘data poor’ is an appropriate term that is widely used in science.

#### **Agenda item 7.1.2 Consideration of advice from SERAWG3**

104. The SC considered the discussions of the SERAWG and endorsed its advice.

#### **Agenda item 7.1.3 Advice to the MoP**

105. Regarding alfonsino growth, length and maturity estimates, the SC **RECOMMENDS** that:
- in addition to the current sampling procedure, stratified otolith sampling protocols should be conducted to ensure that otoliths get collected across the full size-range of fish.

- future assessments use the updated maturity schedule and the revised growth curve, then consider estimating a size/age specific natural mortality.
  - observers continue collecting biological data including otoliths, length and maturity information, and SIOFA consider standardising data collection protocols between fleets, including length measurement units and gonad staging.
  - CCPs' historical data be provided to the Secretariat according to the specifications of CMM 2019/02 (Data Standards).
106. The SC **REQUESTS** CCPs to present proposals for random length and stratified otolith sampling protocols and develop a standardised data collection protocol at SERAWG4.
107. The SC **REQUESTS** SERAWG4 to revise alfonsino maturity staging classifications, replacing GSI as a means to allocate a maturity stage to a gonad, for use in all SIOFA fleets.

## Agenda item 7.2 Patagonian toothfish

### Agenda item 7.2.1 Update on the fishery

#### Agenda item 7.2.2 Consideration of advice from SERAWG3

108. The SC considered the discussions of the SERAWG and endorsed its advice.
109. With regard to the SERAWG's recommendation that France (Territories) centralise and store photos collected in the SIOFA Area by scientific observers, France (Territories) suggested that this be done by the Secretariat instead, and that it can provide the necessary support to the Secretariat.
110. The Chair pointed out that while CMM 2020/15 (Management of Demersal Stocks) refers to collaborative and complementary arrangements between SIOFA and CCAMLR in relation to *D. eleginoides*, it is also possible that there may be *D. mawsoni* in the SIOFA Area and suggested that '*D. eleginoides*' be replaced by '*Dissostichus* spp.'.

#### Agenda item 7.2.3 Advice to the MoP

111. Regarding whale depredation, the SC **NOTED**:
- that mortality rates being abnormally high for juveniles and reproductive females suggests additive mortality, possibly caused by interactions with IUU fishing vessels.
  - the usefulness of programmes such as that described in the EU's Sentinel Program for monitoring efforts mitigating illegal, unreported and unregulated (IUU) fishing activities.
112. The SC **RECOMMENDS** that the MoP:
- adopt the protocol specified in SERAWG-03-06 for documenting all interactions with marine mammals and for collecting photo-identification data for all vessels.
  - encourage CCPs to adopt operational actions to mitigate such interactions.
113. Regarding the establishment of a SIOFA photo naming convention and tool, the SC:
- **NOTED** that the picture naming tool (PiNT) method of naming photos and the tool to facilitate this work has been made available to observers deployed in CCAMLR fisheries and could be adapted to the context of the SIOFA.

- **RECOMMENDS** that CCPs adopt and implement a common naming convention for images collected by scientific observers.
- **NOTED** that France (Territories) has offered to support the Secretariat in centralising and storing photos collected in the SIOFA Area by scientific observers.

114. Regarding CMM 2020/15 (Management of Demersal Stocks), the SC **RECOMMENDS** that:

- references to '*D. eleginoides*' be replaced by '*Dissostichus spp.*'.
- CCPs submit proposals with the aforementioned revisions to the MoP.

### **Agenda item 7.3 Orange roughy**

#### **Agenda item 7.3.1 Update on the fishery**

115. No updates were provided at SERAWG3 and SC6.

#### **Agenda item 7.3.2 Consideration of advice from SERAWG3**

#### **Agenda item 7.3.3 Advice to the MoP**

### **Agenda item 7.4 Other species**

116. The agenda item 'Other species' was not addressed at this year's SERAWG meeting due to the reduced format and was postponed to 2022.

#### **Agenda item 7.4.1 Update on the fishery**

#### **Agenda item 7.4.2 Consideration of advice from SERAWG3**

#### **Agenda item 7.4.3 Advice to the MoP**

### **Agenda item 7.5 Technical work to inform reference points and harvest strategy development**

#### **Agenda item 7.5.1. Report of the Harvest Strategy Standard (Project SER2020-01)**

117. The report on the development of harvest strategies for key target species in the SIOFA Area (SC-06-24; also presented at SERAWG3 as SERAWG-03-10) was taken as read. The report included a summary of the use of harvest strategies, and target and limit reference points used by other fishery organisations, a summary of the assessments available for the three major species under harvest in the SIOFA Area (alfonsino, orange roughy and Patagonian toothfish), possible harvest strategy approaches for the aforementioned three major species and the pros and cons of each, and possible ways to move towards developing assessments for the other major species and consequently reference points and harvest strategies based on those assessments.

#### **Agenda item 7.5.2 Consideration of advice from SERAWG3**

118. The SC considered the discussions of the SERAWG and endorsed its advice.

119. SIODFA noted its concern in regard to the lack of knowledge around the stock structure of alfonsino given the potential of depletion of spawning sub-populations. It suggested genomic studies be considered for investigating this potential problem.

120. DSCC pointed out the importance of setting precautionary reference points especially given the uncertainties around population trends.

#### **Agenda item 7.5.3 Advice to the MoP**

121. The SC **NOTED** the report SC-06-24 and that:

- The report suggested that for alfonsino, orange roughy and toothfish, the advantages and disadvantages (pros and cons) of three different harvest strategy approaches need to be considered by the SC:
    - i. Maintaining catches at present levels (unless there is evidence of a marked downward trend in the resource) until sufficient further data become available for meaningful improvements to the existing assessments
    - ii. Implementing an  $F_{\text{status-quo}}$  harvesting strategy, which varies catches up or down in proportion to the results from continued collection of some measure or index of abundance
    - iii. Implementing a harvest strategy based primarily on some multiple of a proxy value of  $F_{\text{MSY}}$ , where this in turn is based on a proxy value for a  $B_{\text{MSY}}$  reference point whose value is informed by the most recent assessment of the resource
122. The SC **NOTED** that for most other SIOFA species that are data limited, assessments and consequently reference points and harvest strategies are not yet possible to develop.
123. For these SIOFA species, the SC **NOTED** that approach i. could be the most viable at this time, but that this would need to be augmented by one or more precautionary provisions to check whether catches were sustainable and take corrective action in the event that there were persuasive indications to the contrary. The SERAWG **NOTED** that this approach could be implemented, for example, by application of risk assessment across a broad suite of species using, for example, the SAFE methodology. However, unless the spatial and temporal scale of the fishery is well known, this may not be possible and other options would need to be investigated.
124. The SC **RECOMMENDS** that the MoP note that an important associated priority is further data collection, especially more and better catch and effort information and the associated analyses of these data through space and time.
125. The SC **SUGGESTS** that:
- The utility and specifics of the three alternative approaches, as they may apply in each case, be examined before a decision on the best approach is determined.
  - The MoP considers interim reference points for orange roughy and alfonsino as follows: Target =  $B_{\text{MSY}}$  using a proxy of  $= 0.4 \cdot B_0$ , and a Limit =  $0.2 \cdot B_0$  (common surrogates used in other regions). These interim reference points could be considered for SC reporting purposes and would not necessarily be appropriate for management purposes.
  - With respect to toothfish, the MoP consider that CMM 2020/15 has an objective to “ensure collaborative and complementary arrangements are in place for *D. eleginoides* between SIOFA and the CCAMLR”. Accordingly, when setting reference points for toothfish, SIOFA consider the reference points adopted by CCAMLR: Target =  $0.5 \cdot B_0$ , and Limit =  $0.2 \cdot B_0$
  - The MoP consider fishing fleet behaviour and fish stock structure in the development of harvest strategies for each species.
126. The SC **RECOMMENDS** that the MoP:
- Undertake analyses to determine the applicability and trade-offs between the three proposed harvest strategy approaches for each of the three species concerned, to provide an objective basis to underpin final decision making. For some approaches this will require consideration of appropriate reference points.

- Consider developing a set of objectives, along with biological reference points where appropriate, to assist in the development of harvest strategies aimed at achieving those objectives. Stability of catch and stability of effort as well as avoiding undue risk to the stock are three important objectives that should be considered amongst others to be determined by the SC and the MoP.

#### **Agenda item 7.6 Ecological risk assessment**

##### **Agenda item 7.6.1. Deepwater chondrichthyans**

127. SIODFA introduced information papers SC-06-INFO-03 (a brief summary of information regarding deep water sharks collected by Paul Clerkin on the F.T. Will Watch in SIOFA waters in 2012 and 2014) and SC-06-INFO-04 (an introduction to research work being planned on deepwater sharks in the SIOFA Area by Paul Clerkin). SIODFA highlighted the extreme difficulty that can occur of identifying many deepwater chondrichthyan species and invited proposals for a system whereby CCPs send photos of caught deepwater chondrichthyan species to SIODFA for species identification.
128. The SC recognised the difficulty in identifying deepwater chondrichthyan species and encouraged CCPs to send identification photos to SIODFA. The SC encouraged further work that would help identify deepwater chondrichthyan species.
129. The SC recalled the discussion at SC5 on the merits and demerits of wire snoods versus nylon snoods (SC5 Report, paras 86-87) and encouraged CCPs to share any research that would provide further clarity on this matter.

##### **Agenda item 7.6.2. Teleosts and others**

##### **Agenda item 7.6.3 Consideration of advice from SERAWG3**

130. The SC considered the SERAWG's discussions and endorsed its advice.

##### **Agenda item 7.6.4 Advice to the MoP**

131. Regarding deepwater chondrichthyans, the SC:
- **NOTED** the lack of discussion at this year's SERAWG meeting.
  - **REQUESTS** that SERAWG4 include deepwater chondrichthyans in its agenda and note any additional work towards reviewing progress against CMM 2019/12 (Sharks) and potentially the development of precautionary bycatch limits.
132. Regarding seabirds, the SC **NOTED** that:
- Southern Territories are particularly important for albatross and petrel species.
  - overlap analysis highlights the particular importance of the SIOFA Area for seven species.
133. The SC **RECOMMENDS** that:
- The MoP task the SC with reviewing, by SC7, the seabird data collection and bycatch mitigation measures stipulated in CMM 2019/02 (Data Standards) and CMM 2019/13 (Mitigation of Seabirds Bycatch) against Agreement on the Conservation of Albatrosses and Petrels (ACAP) best practices, while taking into consideration SC-03-06.2 (05) (Vessel Seabird Management Plan, Cook Islands) to ensure that SIOFA's measures are effective and efficient.
  - The MoP, taking the distribution of all life-history stages of albatrosses and petrels into account, task the SC with conducting:

- i. an ERA based on overlap analysis.
- ii. a combined ERA or a joint future iteration of the global ERA by the tuna RFMOs.

**Agenda item 7.7 SIOFA stock assessment framework – implementation, including species categorisation and data characterisation, including refining SIOFA species list**

134. No papers were presented at SERAWG3 and SC6.

**Agenda item 7.7.1 Consideration of advice from SERAWG3**

**Agenda item 7.7.2 Advice to the MoP**

**Agenda item 7.8 Reinforcing the data collection, SIOFA data/bases systems, coding, and data processes**

135. The SC considered the discussions of the SERAWG and endorsed its advice.

**Agenda item 7.9 Review and update of the Scientific Committee workplan**

136. The SC reviewed and updated the SERAWG workplan.

137. With regard to the planned study of the stock structure of Patagonian toothfish, Australia pointed out that UK scientists are leading similar research that may be of use to the SC and suggested that the SC review this research before making a decision to hire a consultant.

138. SIODFA expressed concern about the usefulness of the results that would be obtained from an acoustic survey of alfonsino, highlighting issues with the statistical sampling process and behaviour of alfonsino.

139. The CCAMLR Secretariat noted that the workplan included items involving collaboration between SIOFA and CCAMLR and requested that SIOFA consider a mechanism for formally communicating such collaborative work to CCAMLR at an organisational level. Doing so will help ensure greater synergy between the two organisations.

140. The SC **NOTED** that the development of a project on the stock structure of alfonsino, toothfish and orange roughy would need to be discussed intersessionally with members of the SERAWG before terms of reference are developed.

141. The updated SERAWG workplan is included in the SC work plan (**Annex F**), which is discussed under agenda item 12.

**Agenda item 7.10 Advice to the MoP**

142. Regarding the reinforcement of data collection, SIOFA data/bases systems, coding, and data processes, the SC **NOTED** that it would be useful for the Secretariat to provide PAEWG, SERAWG and the SC with an annual paper summarising catch and effort trends in the SIOFA Area, covering overall catch by main species and effort by gear for the most recent year for which data are available and for past data. It should also contain coarse scale mapping or area-based summaries of catch and effort. Such information would better inform the SC and its advice to the MoP, particularly in the years between stock assessments.

143. The SC **REQUESTS** the Secretariat to compile an annual paper summarising catch and effort trends in the SIOFA Area, covering overall catch by main species and effort by gear for the most recent year and historically. The paper should also contain some coarse scale mapping or area-based summaries of catch and effort.

144. The SC **RECOMMENDS** that all target species, and bycatch species (or species groups) that comprise more than at least 5% (by weight or number, as appropriate, within each target species fishery) be considered 'main' species for the purposes of the analyses, but **NOTED** that the Secretariat should consult with the SC & WG Chairs to refine the criteria for 'main species' and for target fishery areas for consideration by SERAWG and SC in 2022.
145. The SC **NOTED** that the analyses should briefly summarise the species that would fall outside the definition of 5% (by weight or number, as appropriate).
146. The SC **NOTED** that similar analyses of other species of concern (e.g. elasmobranchs) in the SIOFA Area should also be undertaken in the future.

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

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

## **Agenda item 10 – Review and development of Conservation and Management Measures (CMMs)**

147. The SC **NOTED** the MoP's request to continue the work to develop a draft CMM on fishing research and exploratory fisheries. Due to time constraints, no related papers were presented at the meeting and the SC **AGREED** to progress this work intersessionally.

### **Agenda item 10.1 CMM 2020/01 Interim management of bottom fishing**

### **Agenda item 10.2 CMM 2016/03 Data Confidentiality**

### **Agenda item 10.3 CMM 2019/02 Data Standards**

148. The SC discussed CMM 2019/02 for the Collection, Reporting, Verification and Exchange of Data relating to fishing activities in the Agreement Area (Data Standards) under item 5 in order to propose several amendments to MoP8.

## **Agenda item 11 – Cooperation with other RFMOs and international bodies**

149. The Executive Secretary reported that the Secretariat has initiated discussions with the IOTC for concluding a bilateral cooperative arrangement, as recommended by MoP7. A draft agreement has been created to serve as a basis for further discussions, including on the species and competencies of SIOFA and IOTC in the SIOFA Area, and ensuring the confidentiality of sensitive data.



### Agenda item 11.1 ABNJ Deep Sea Project

150. The Food and Agriculture Organization (FAO) of the United Nations presented SC-06-INFO-01, which provides an update on the development of the FAO ABNJ Deep-Sea Fisheries (DSF) Project. Some aspects of the project that may be of particular relevance to SIOFA include data collection; data-limited stocks, such as alfonsino; deepwater sharks; bottom fishing measures and VMEs; collaboration and coordination, across RFMOs, industry, other stakeholders, and BBNJ negotiations; and an ecosystem approach including economic and human pillars.
151. The SC **RECOMMENDS** to the MoP that SIOFA joins as a partner to the project, following on from the arrangements made in the first phase for 2014-2019.

### Agenda item 11.2 FIRMS

152. The Executive Secretary reported that SIOFA signed the FIRMS-Partnership Agreement on 21 August 2020.

### Agenda item 11.3 CCAMLR

153. The Executive Secretary outlined cooperation undertaken between SIOFA and CCAMLR in 2020, and next steps, as described in SC-06-INFO-07.
154. The Executive Secretary reported that the Secretariat is drafting a letter based on the SERAWG Working Plan in order to consider the integration of the exchanges between SIOFA and CCAMLR scientists on Patagonian toothfish research into the collaboration between the two organisations.
155. The SC **RECOMMENDS** that the MoP give consideration to establishing an annual exchange of toothfish (*Dissostichus* spp.) data between CCAMLR and SIOFA.
156. In this regard, the SC **RECOMMENDS** a joint SIOFA-CCAMLR Workshop on data and related information exchange in respect of Patagonian toothfish fisheries. The workshop will seek to give effect to data exchanges on toothfish fisheries consistent with part 2 'areas of cooperation' element ii (c) and (iii), (iv) and (v) of 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*.
157. The workshop would include CCPs involved in the SIOFA toothfish fishery that fish the CCAMLR boundary area, as well as the SIOFA and CCAMLR Secretariats.
158. The workshop would develop the specification for annual exchange of toothfish (*Dissostichus* spp.) data between CCAMLR and SIOFA. This would initially include exchange of the following data between the Secretariats:
  - Toothfish tags released and recaptured where either the tagging or the recapture occurred in the SIOFA Area. Data to include date, Location (lat./long.), depth, tag information details (colour, text, number, inscription), biological data including length, sex and maturity.
  - Total toothfish catch summaries across the following areas:
    - i. CCAMLR: Subareas 58.7 and 58.6, Divisions 58.5.1, 58.5.2, 58.4.3b and 58.4.1.
    - ii. SIOFA: Area 3b except Del Cano Rise, Del Cano Rise (as defined in CMM 2019/15), Area 6, Area 7 except William's Ridge and William's Ridge (as defined in CMM 2019/15).
159. The workshop would also determine the timing of such data exchange consistent with the respective data provision rules of SIOFA and CCAMLR. The intent will be for these

data to be made available to CCPs and/or Members upon request to the respective Secretariat.

160. The CCAMLR Science Manager informed the SC that the CCAMLR website has a page where it is possible to order tags and tagging equipment (<https://www.ccamlr.org/en/science/tag-ordering-information>).
161. The SC tasked the Secretariat with providing a link on the SIOFA website to the CCAMLR page for ordering tags and tagging equipment.
162. The SC **REQUESTS** the MoP recommend that CCPs use CCAMLR tags and the CCAMLR tagging protocol when tagging toothfish in the SIOFA Area.

#### **Agenda item 11.4 ACAP**

163. ACAP presented SC-06-INFO-02, which provided ACAP's updated advice on the conservation status of albatross and petrel species, areas for potential collaboration between ACAP and SIOFA, advice on best practices for mitigation and data collection/analysis, and ACAP resources for fisheries managers. In particular, ACAP highlighted its concern over the continuing conservation crisis facing albatrosses and petrels, with bycatch in fisheries being one of the greatest threats they face, and the need for urgent and increased efforts to counter this crisis.
164. ACAP welcomed the SC's plans to review its seabird data collection and bycatch mitigation measures against ACAP best practices.

## **Agenda item 12 – Scientific Committee Work Plan**

### **Agenda item 12.1 Work plan to realise the General Objectives relating to the 2020 EU Grant Report of the consultancy to coordinate, plan, and assist implementation of science consultancies to support the SIOFA scientific working plan (Project SCM2021-01)**

165. The Chair outlined the EU grant for supporting the scientific work of SIOFA on key stocks, ecosystems and data as described in SC-06-INFO-06 rev 1, and reported on the consultancy to coordinate, plan, and assist implementation of science consultancies to support the SIOFA scientific working plan (Project SCM2021-01) on behalf of the consultant, Gary Morgan. The consultant will help SIOFA commission a suite of four projects that are consistent with the EU's Funding Agreement Objectives and implementation plan. Each project's objectives and scheduling are arranged so that each project is a 'stand-alone' activity that does not impact on other projects. However, each project will be cross-linked and integrated with other ongoing projects and the work of the SC and its WGs. Project objectives will form the basis of the Terms of Reference for each project so they can be used in a call for proposals from interested contractors. Linkages with existing SIOFA structures and operational work plans should be included in the 'project priorities' of each project.
166. The SC expressed its appreciation to the EU for providing the grant, which will significantly assist the SC in its work to provide scientific advice to the MoP.
167. The SC **AGREED** to the project priorities for each of the Five General Objectives as described in SC-06-INFO-06 rev 1.
168. The SC **AGREED** in general to the timetable for each of the Five General Objectives as described in SC-06-INFO-06 rev 1, while **NOTING** that, due to the timing of the SC6 meeting, the start of the process has been delayed by a few months.

### **Agenda item 12.2 Review and update of the Scientific Committee workplan and budget 2021–2023**

169. The Executive Secretary presented the updated research activities and budget (SC6-Info 11). The SC discussed the progress against the operational work plan 2019-2022 (SC5 Report, Annex I) and adopted an updated operational work plan 2021-2023 (**Annex F**). The updated operational work plan includes updates from the PAEWG and SERAWG.
170. The SC reviewed and revised the list of proposed research activities with estimated budgets and potential funding sources (**Annex G**).

### **Agenda item 12.3 Advice to the MoP**

171. The SC **RECOMMENDS** that the MoP consider the research activities described in **Annex G** for inclusion in the SIOFA budget.

## **Agenda item 13 – Future meeting arrangements**

172. The SC **RECOMMENDS** that the next meetings of the SC and its WGs take place in March 2022.
173. The SC **NOTED** that, due to unpredictable impact of the global pandemic, it is not yet clear if these meetings should be held in person or virtually.
174. If in-person meetings become possible, the SC **REQUESTS** CCPs interested in hosting the meetings to contact the Secretariat.

## **Agenda item 14 – Other business**

### **Agenda item 14.1 Elections of SC Chairperson, Vice Chairperson, and Co-Chairs for the PAEWG**

175. The Executive Secretary noted that the term of the SC Chair would come to an end following MoP8.
176. As there were no nominations for a new SC Chair from among CCPs and recognising the hard work and leadership he has demonstrated, the SC **RECOMMENDS** that the MoP extend the term of the current SC Chair for one year. The SC Chair thanked the SC for its cooperation and participation in the meeting and looked forward to being considered for a further term.
177. There were no nominations for the positions of PAEWG Co-Chair and SERAWG Co-Chair. The SC **REQUESTS** the Secretariat work intersessionally towards the election of a PAEWG Co-Chair and a SERAWG Co-Chair, in line with the SC Rules of Procedure.
178. The SC thanked Patrice Pruvost, Chairperson of the PAEWG, for the valued report made and his advice provided throughout the week.
179. The SC also thanked Tom Nishida, Chair of the SERAWG, for his appreciated supervision of the full report and the updates and advice provided this week. The SC thanked Lee Georgeson for his contribution as the SERAWG Co-Chair in previous years.
180. The SC thanked Alistair Dunn, the Scientific Chair, for facilitating the meeting and making it run smoothly.

181. The SC thanked the Secretariat for its hard work and facilitating and providing the work that enabled the SC to undertake its business.
182. The SC thanked Alex Meyer for his role as rapporteur of the meeting.

**Agenda item 14.2 Recommendation for SC circulars**

183. SC-06-23 on the establishment of a new formal circular, named SIOFA Scientific Committee Circulars (SC-Circulars), was taken as read.
184. The SC **ENDORSED** the recommendation in SC-06-23 and **REQUESTS** that the SIOFA Secretariat implement a new formal circular, named SIOFA SC-Circulars, for formal communications between the Secretariat, Chairperson of the Scientific Committee and its Working Groups, Heads of Delegations to the Scientific Committee and its Working Groups, and official Scientific Committee Observers.

**Agenda item 15 – Adoption of the meeting report**

185. The report of the 6th meeting of the SIOFA SC was adopted at 9:28 a.m. (UTC), 26 March 2021.

**Agenda item 16 – Close of meeting**

186. The meeting was closed at 9:30 a.m. (UTC), 26 March 2021.

## ANNEX A: LIST OF REGISTERED PARTICIPANTS

Delegation	Title	Name	Function	Contact
<b>MEETING CHAIRPERSON</b>				
	Mr	Alistair Dunn	SC Chairperson	alistair.dunn@oceanenvironmental.co.nz
<b>SIOFA CCPs</b>				
Australia	Mr	James Larcombe	Head of Delegation	james.larcombe@agriculture.gov.au
Australia	Mr	Rhys Arangio	Delegate	rarangio@australfisheries.com.au
Australia	Dr	Philippe Ziegler	Delegate	philippe.ziegler@awe.gov.au
Australia	Mr	Brodie Macdonald	Delegate	brodie.macdonald@afma.gov.au
Australia	Dr	Tim Emery	Delegate	tim.emery@awe.gov.au
Australia	Ms	Steph Blake	Delegate	Steph.Blake@agriculture.gov.au
Australia	Ms	Kerrie Robertson	Delegate	kerrie.robertson@awe.gov.au
China	Dr	Heng Zhang	Head of Delegation	zhangh1@ecsf.ac.cn
China	Mr	Tianfei Cheng	Alternate	chengtf@ecsf.ac.cn
China	Mr	Yongchuang Shi	Alternate	syc13052326091@163.com
China	Mr	Chong Sun	Alternate	admin1@tuna.org.cn
China	Dr	Zhou Fang	Alternate	zfang@shou.edu.cn
Cook	Ms	Chloe-Ane Wragg	Head of Delegation	c.wragg@mmr.gov.ck
Cook	Dr	Stephen Brouwer	Advisor	steve@saggitus.co.nz
European Union	Dr	Sebastian Rodriguez Alfaro	Head of Delegation	sebastian_chano@hotmail.com
France Territories	Mr	Patrice Pruvost	Head of Delegation	patrice.pruvost@mnhn.fr
France Territories	Mr	Alexis Martin	Alternate	alexis.martin@mnhn.fr
France Territories	Dr	Jules Selles	Alternate	jules.selles@mnhn.fr
France Territories	Mr	Nicolas Gasco	Expert	nicolas.gasco@mnhn.fr
France Territories	Dr	Paul Tixier	Expert	paul.tixier@mnhn.fr
France Territories	Dr	Felix Massiot Granier	Expert	felix.massiot-granier@mnhn.fr
France Territories	Mrs	Karine Delord	Expert	karine.delord@mnhn.fr
France Territories	Mr	Matthieu Piron	Expert	matthieu.piron@agriculture.gouv.fr
France Territories	Mrs	Charlotte Chazeau	Expert	charlotte.chazeau@mnhn.fr
Japan	Dr	Tsutomu Nishida	Head of Delegation	aco20320@par.odn.ne.jp
Japan	Dr	Takehiro Okuda	Alternate	okudy@affrc.go.jp
Japan	Mr	Naohisa Miyagawa	Advisor	n-miyagawa@maruha-nichiro.co.jp
Japan	Mr	Shogo Ueki	Advisor	s-ueki@maruha-nichiro.co.jp
Japan	Mr	Toshiharu Muraoka	Advisor	t-muraoka@maruha-nichiro.co.jp
Japan	Mr	Sachio Hagiya	Advisor	s-hagiya@maruha-nichiro.co.jp
Japan	Mr	Fumiya Sato	Advisor	f-sato@maruha-nichiro.co.jp
Korea	Dr	Seok-Gwan Choi	Head of Delegation	sgchoi@korea.kr
Korea	Dr	Kyum Joon Park	Alternate	mogas@korea.kr
Korea	Mr	Sanggyu Shin	Adviser	gyuyades82@gmail.com

Delegation	Title	Name	Function	Contact
Korea	Mr	Kunwoong Ji	Adviser	jkw@jeongilway.com
Korea	Mr	Hojeong Jin	Adviser	jackiejin@kosfa.org
Korea	Mr	Seongju Cho	Adviser	csj@kosfa.org
Korea	Mr	Dongwhan Choe	Adviser	dhchoe@kosfa.org
Seychelles	Mr	Rodney Govinden	Head of Delegation	rgovinden@sfa.sc
Seychelles	Ms	Sabrina Lawrence	Alternate	slawrence@sfa.sc
Chinese Taipei	Dr	Ching-Ping Lu	Head of Delegation	michellecplu@gmail.com
Chinese Taipei	Mr	Ren Fen Wu	Alternate	fan@ofdc.org.tw
Chinese Taipei	Mr	Chia Chun Wu	Adviser	jiachun@ms1.fg.gov.tw
Chinese Taipei	Mr	Wei-Chen Hung	Adviser	weichen0506@ms1.fg.gov.tw
Thailand	Mr	Pavarot Noranarttragoon	Head of Delegation	pavarotn@gmail.com
Thailand	Mr	Weerapol Thitipongtrakul	Alternate	weerapol.t@gmail.com
<b>OBSERVERS</b>				
DSCC	Ms	Lyn Goldsworthy	Representative	Lynda.goldsworthy@utas.edu.au
DSCC	Mr	Barry Weeber	Representative	baz.weeber@gmail.com
DSCC	Mr	Duncan Currie	Adviser	duncanc@globelaw.com
SIODFA	Mr	Charles Heaphy	Advisor	charles.heaphy@sealord.co.nz
SIODFA	Mr	Brian Flanagan	Alternate	brian@theflanagans.co.za
SIODFA	Dr	Ross Shotton	Head of Delegation	r_shotton@hotmail.com
ACAP	Dr	Igor Debski	Representative	idebski@doc.govt.nz
CITEB	Dr	Evgeny Romanov	Representative	evgeny.romanov@citeb.re
FAO-ABNJ	Dr	Anthony Thompson	Representative	anthony.thompson@fao.org
CCAMLR Secretariat	Dr	Keith Reid	Representative	keith.reid@ccamlr.org
<b>CONSULTANTS</b>				
MARAM	Prof	Doug Butterworth	Consultant	doug.butterworth@uct.ac.za
MARAM	Dr	Susan Holloway	Consultant	susan.holloway@uct.ac.za
MARAM	Dr	Anabela Brandao	Consultant	anabela.brandao@uct.ac.za
SOFISH	Dr	Sophie Mormède	Consultant	sofishconsulting@gmail.com
MNHN	Dr	Berta Ramiro Sanchez	Consultant	berta.ramiro-sanchez@mnhn.fr
MNHN	Dr	Boris Leroy	Consultant	boris.leroy@mnhn.fr
<b>SIOFA SECRETARIAT AND ASSISTANTS</b>				
SIOFA	Mr	Thierry Clot	Executive Secretary	thierry.clot@siofa.org
SIOFA	Mr	Chumnarn Pongsri	MoP Chairperson	chumnarnp@gmail.com
SIOFA	Mr	Pierre Périès	Data Manager	pierre.peries@siofa.org
SIOFA	Mr	Thibault Pivetta	Assistant	thibault.pivetta@siofa.org
SIOFA	Mr	Alex Meyer	Rapporteur	meyer@urbanconnections.jp

Delegation	Title	Name	Function	Contact
SIOFA	Mr	Gary Morgan	Consultant	garymorg@hotmail.com

## ANNEX B: AGENDA

*Red: High priority, must be treated in session, by correspondence and video conference*

*Black: Urgent, may be treated in session or by correspondence depending on time*

*Grey: Will not be addressed this year due to the reduced format and postponed to 2022*

### 1. Opening

- 1.1 Opening statement from the Chair
- 1.2 Introduction of participants

### 2. Administrative arrangements

- 2.1 Adoption of the agenda
- 2.2 Confirmation of meeting documents
- 2.3 Appointment of rapporteurs
- 2.4 Review of functions and terms of reference
- 2.5 Advice to the MoP

### 3. Annual National reports

- 3.1 Discussion and questions for each annual national report
- 3.2 Recommendations
- 3.3 Advice to the MoP

### 4. Current and historical status of fishing activities

- 4.1 Spatial Extent of Historic Catch Data, Bottom Fishing Footprint
- 4.2 Overview of SIOFA fisheries 2020
- 4.3 Recommendations
- 4.4 Advice to the MoP

### 5. Scientific data standards

- 5.1 Templates for data submission
- 5.2 Historical Catch and Effort Data
- 5.3 Annual Catch and Effort Data
- 5.4 Scientific Observer Data
  - 5.4.1 Impact of reduced observer coverage due to responses to the global pandemic
- 5.5 CMM 2019/02 Data Standards
- 5.6 Recommendations
- 5.7 Advice to the MoP

### 6. Report of the Protected Areas and Ecosystems Working Group (PAEWG3)

- 6.1 Vulnerable Marine Ecosystems
  - 6.1.1 VME taxa list
  - 6.1.2 VME encounter thresholds (WG report)
  - 6.1.3 VME mapping (ongoing consultancy from BOREA Laboratory, Biology of Aquatic Organisms and Ecosystems)
- 6.2 Bottom Fishing Impact Assessments (BFIA)
  - 6.2.1 Trawl cumulative BFIA. Report of consultancy (Project PAE2020-01).
  - 6.2.2 Longline cumulative BFIA. Report of consultancy (Project PAE2020-01).



- 6.2.3 Advice to the MoP
  - 6.3 Protocols for interim Protected Areas and review the protected areas proposal in SIOFA.
  - 6.4 Advice on management and/or research plans in the proposed and/or validated protected zones
  - 6.5 SIOFA Fishing footprint
  - 6.6 Recommendations
  - 6.7 Advice to the MoP
- 7. Report of the Stock and Ecological Risk Assessment Working Group (SERAWG3)**
- 7.1 Alfonsino
    - 7.1.1 Update on the fishery
    - 7.1.2 Consideration of advice from SERAWG3
    - 7.1.3 Advice to the MoP
  - 7.2 Patagonian toothfish
    - 7.2.1 Update on the fishery
    - 7.2.2 Consideration of advice from SERAWG3
    - 7.2.3 Advice to the MoP
  - 7.3 Orange roughy
    - 7.3.1 Update on the fishery
    - 7.3.2 Consideration of advice from SERAWG3
    - 7.3.3 Advice to the MoP
  - 7.4 Other species
    - 7.4.1 Update on the fisheries
    - 7.4.2 Consideration of advice from SERAWG3
    - 7.4.3 Advice to the MoP
  - 7.5 Technical work to inform reference points and harvest strategy development -
    - 7.5.1 Report of the Harvest Strategy Standard (Project SER2020-01)
    - 7.5.2 Consideration of advice from SERAWG3
    - 7.5.3 Advice to the MoP
  - 7.6 Ecological risk assessment
    - 7.6.1 Deepwater chondrichthyans
    - 7.6.2 Teleosts and others
    - 7.6.3 Consideration of advice from SERAWG3
    - 7.6.4 Advice to the MoP
  - 7.7 SIOFA stock assessment framework – implementation, including species categorisation and data characterisation, including refining SIOFA species list.
    - 7.7.1 Consideration of advice from SERAWG3
    - 7.7.2 Advice to the MoP
  - 7.8 Reinforcing the data collection, SIOFA data/bases systems, coding and data processes
  - 7.9 Review and update of the Scientific Committee workplan
  - 7.10 Advice to the MoP
- 8. Proposals to bottom fish in the Agreement Area in a manner at variance with established measures**
- 9. Scientific impact assessments**
- 10. Review and development of Conservation and Management Measures (CMMs)**
- 10.1 CMM 2019/01 Interim Management of Bottom Fishing
  - 10.2 CMM 2016/03 Data Confidentiality

## **11. Cooperation with other RFMOs and international bodies**

- 11.1 ABNJ Deep Sea Project
- 11.2 FIRMS
- 11.3 CCAMLR
- 11.4 ACAP

## **12. Scientific Committee Work Plan**

- 12.1 Work plan to realise the General Objectives relating to the 2020 EU Grant Report of the consultancy to coordinate, plan, and assist implementation of scienceconsultancies to support the SIOFA scientific working plan (Project SCM2021-01)
- 12.2 Review and update of the Scientific Committee workplan and budget 2021–2023
- 12.3 Advice to the MoP

## **13. Future meeting arrangements**

### **14. Other business**

- 14.1 Elections of SC Chairperson, Vice Chairperson, and Co-Chairs for the PAEWG
- 14.2 Recommendation for SC Circulars

## **15. Adoption of the meeting report**

## **16. Close of meeting**

## ANNEX C: TABLE OF AGENDA ITEMS AND RELATED PAPERS

Agenda Item	Related Papers	By
<b>1. Opening</b> 1.1 Opening statement from the Chair 1.2 Introduction of participants		
<b>2. Administrative arrangements</b> 2.1 Adoption of the Agenda 2.2 Confirmation of Meeting Documents  2.3 Appointment of rapporteurs 2.4 Review of functions and terms of reference 2.5 Advice to the MoP	SC-06-01 Provisional Agenda SC-06-04 Table of agenda items and related papers (this) SC-06-22 List of participants to SC6	SEC   SEC
<b>3. Annual National Reports</b> 3.1. Discussion and questions for each annual national report         3.2. Recommendations 3.3. Advice to the MoP	SC-06-09 National Report Japan SC-06-10 National Report Seychelles SC-06-11 National Report Thailand SC-06-12 National Report China SC-06-14 National Report Australia SC-06-15 National Report French Territory SC-06-19 National Report Korea SC-06-20 National Report Chinese Taipei SC-06-21 National Report European Union SC-06-25 Annual National Report Comoros SC-06-27 Annual National Report Cook Islands	JPN SEY THA CHN AUS FR-OT KOR CT EU COM COK
<b>4. Current and historical status of fishing activities</b> 4.1. Spatial Extent of Historic Catch Data, Bottom Fishing Footprint 4.2. Overview of SIOFA fisheries 2020 4.3. Recommendations 4.4. Advice to the MoP	SC-06-13 Japan's comments on footprint and scientific research SC-06-26 (Draft) overview of SIOFA Fisheries 2020	JPN SEC
<b>5. Scientific data standards</b> 5.1. Templates for data submission 5.2. Historical Catch and Effort Data 5.3. Annual Catch and Effort Data 5.4. Scientific Observer data 5.4.1. Impact of reduced observer coverage on trawls due to pandemic 5.5. Data Standards (see 10.3)   5.6. Recommendations 5.7. Advice to the MoP	SC-06-17 2019 Catch and effort data submission SC-06-18 2019 Observers data submission   SC-06-07 Revision of CMM 2019-02 data standards SC-06-08 Proposal from Chinese Taipei to include pelagic longline for CMM 2019-02 on Data Standards SC-06-16 Improvement of data submission	SEC SEC  SEC  CT  FR-OT

<b>Agenda Item</b>	<b>Related Papers</b>	<b>By</b>
<b>6. Report from the PAEWG3</b>	PAEWG3 Report	PAEWG
6.1. Vulnerable Marine Ecosystems 6.1.1 VME taxa list 6.1.2 VME encounter thresholds 6.1.3 VME Mapping (consultancy)		
6.2. Bottom Fishing Impact Assessment 6.2.1. Trawl cumulative BFIA (consultancy) 6.2.2. Longline Cumulative BFIA (consultancy) 6.2.3. Advice to the MoP	SC-06-INFO-05 European Union BFIA update	EU
6.3. Protocols for interim Protected Areas and review of protected areas proposals in SIOFA		
6.4. Advice on management and/or research plans in the proposed and/or validated protected zones		
6.5. SIOFA Fishing Footprint	SC-06-28 SIOFA Fishing Footprint	
6.6. Recommendations		
6.7. Advice to the MoP		
<b>7. Report from the SERAWG3</b>	SERAWG3 Report	SERAWG
7.1. Alfonsino 7.1.1. Update on the fishery 7.1.2. Consideration of advice from SERAWG3 7.1.3. Advice to the MoP	SC-06-INFO-08 Alfonsino fisheries - data poor or not SC-06-INFO-09 Use of Survey for the management of Alfonsino fishery SC-06-INFO-10 Tagging Alfonsino SC-06-INFO-12 Alfonsino Otolith Protocol	SIODFA SIODFA SIODFA SIODFA
7.2. Patagonian toothfish 7.2.1 Update on the fishery 7.2.2 Consideration of advice from SERAWG3 7.2.3 Advice to the MoP		
7.3. Orange roughy 7.3.1. Update on the fishery 7.3.2. Consideration of advice from SERAWG3 7.3.3. Advice to the MoP		
7.4. Other species 7.4.1. Update on the fisheries 7.4.2. Consideration of advice from SERAWG3 7.4.3. Advice to the MoP		
7.5. Technical work to inform reference points and harvest strategy development 7.5.1. Report of the Harvest Strategy Standard (Project SER2020-01) 7.5.2. Consideration of advice from SERAWG3 7.5.3. Advice to the MoP	SC-06-24 SIOFA harvest strategy report -revised	Consultant
7.6. Ecological risk assessment 7.6.1. Deepwater chondrichthyans  7.6.2. Teleosts and others 7.6.3. Consideration of advice from SERAWG3	SC-06-INFO-03 A preview of an account of Deepwater Sharks.pdf SC-06-INFO-04 Southern Oceans Deep-sea Elasmobranch Exploration Project (SO-DEEP)	SIODFA SIODFA

Agenda Item	Related Papers	By
7.6.4. Advice to the MoP		
7.7 . SIOFA stock assessment framework – implementation, including species categorisation and data characterisation, including refining SIOFA species list. 7.7.1. Consideration of advice from SERAWG3 7.7.2. Advice to the MoP		
7.8. Reinforcing the data collection, SIOFA data/bases systems, coding, and data processes		
7.9. Review and update of the Scientific Committee workplan		
7.10. Advice to the MoP		
<b>8. Proposals to bottom fish in the Agreement Area in a manner at variance with established measures</b>		
<b>9. Scientific impact assessments</b>		
<b>10. Review and development of Conservation and Management Measures (CMMs)</b> 10.1. CMM 2020/01 Interim management of bottom fishing 10.2. CMM 2016/03 Data confidentiality 10.3. CMM 2019/02 Data Standards	SC-06-07 Revision of CMM 2019-02 data standards SC-06-08 Proposal from Chinese Taipei to include pelagic longline for CMM 2019-02 on Data Standards SC-06-16 Improvement of data submission	SEC C.T FR-OT
<b>11. Cooperation with other RFMOs and international bodies</b> 11.1. ABNJ Deep Sea Project 11.2. FIRMS 11.3. CCAMLR 11.4. ACAP	SC-06-INFO-01 FAO DSF Project  SC-06-INFO-07 Cooperation facts between CCAMLR and SIOFA SC-06-INFO-02 ACAP paper SIOFA	FAO  SEC ACAP
<b>12. Scientific Committee Work Plan</b> 12.1. Work plan to realise the General Objectives relating to the 2020 EU Grant Report of the consultancy to coordinate, plan, and assist implementation of science consultancies to support the SIOFA scientific working plan (Project SCM2021-01) 12.2. Review and update of the Scientific Committee workplan and budget 2021–2023 12.3. Advice to the MoP	SC-06-INFO-06 EU Grant actions description  SC-06-INFO-11 Update on Research Activities (draft)	SEC  SEC
<b>13. Future meeting arrangements</b>		
<b>14. Other business</b> 14.1. Elections of SC Chairperson, Vice Chairperson, and Co-Chairs for the PAEWG 14.2. Recommendation for SC circulars	SC-06-23 2021 Recommendation for SC Circulars	SC chair
<b>15. Adoption of the meeting report</b>		
<b>16. Close of meeting</b>		



## Draft overview of SIOFA Fisheries 2020

rev2: update in effort table (table3)

The information presented below has been extracted from the National Reports submitted to Scientific Committees. Where fisheries statistical information from the national reports is insufficient, data has been extracted from SIOFA databases.

The figures are incomplete as some CCP did not provide a National Report about their fishing activities in 2020. In addition, final 2020 catch, effort and observers' data are scheduled to be submitted by 31 May 2021.

### 1. Active Fleet Composition

Table 1: Summary of active vessels operating by flag/gear and by year in the SIOFA area

		Year						
CCP*	Gear	2014	2015	2016	2017	2018	2019	2020
AUS	Multipurpose	0	1	1	0	0	1	1
	Longlines	0	0	0	0	1	0	0
	Trawls	1	0	0	0	0	0	0
CHN	Longlines	0	0	0	0	0	0	0
	Seine nets	6	6	8	5	0	0	0
COOK	Trawls	2	2	2	2	2	2	2
COM	Handlines	?	?	?	?	2	1	1
EUF	Longlines	1	0	1	1	0	0	0
EUS	Gillnets	1	1	0	0	0	0	0
	Longlines	0	1	1	1	2	1	1
FR-OT	Pots/Traps	0	0	1	0	1	0	0
	Longlines	2	2	0	2	0	1	2
JPN	Longlines	0	0	0	1	0	0	0
	Trawls	1	2	2	2	1	1	1
KOR	Longlines	0	0	0	0	0	0	0
	Trawls	0	0	0	0	0	0	0
MUS		?	?	?	?	?	?	?
SYC		0	0	0	0	0	0	0
CT	Pel. Longlines	?	21	40	45	35	42	51
THA	Pots/Traps	0	1	2	0	0	0	0
	Multipurpose (trawl/handline)	0	56	60	13	0	2	3
	Total	14	93	118	72	44	51	62

\*CCP stands for Contracting Parties, Non-Contracting Participating Parties and Participating Fishing Entities  
 ? no information provided.

Notes: Thailand fleet was mainly composed of small tonnage vessels. Comoros fleet is composed of 1 mother vessel for a fleet of many small boats operated by 2-3 fishermen. Chinese Taipei fleet are tuna longliners fishing also for oilfish. Korea has no active vessels since 2014.

## 2. Main fisheries operating in the SIOFA area

Table 2. SIOFA fisheries

Key species	Gear	Participants (reported in national reports between 2000 and 2019)	Area
Patagonian toothfish	Demersal longline Traps	EU-Spain, France (Territories), Japan, Korea	SIOFA subareas 3b, 7
Orange roughy	Demersal trawl	Australia, Cook Islands, China (2000-02)	Associated with seafloor features
Alfonsino	Midwater trawl	Australia, Cook Islands, Japan, Korea	Associated with seafloor features
Saurida and scads	Demersal trawl	Thailand	SIOFA subarea 8, Saya de Malha Bank
Shallow-water (<200m) snappers, emperors and groupers	Demersal longline Hook and line Demersal trawl Traps	EU-France, Mauritius (?) Thailand, Comoros	SIOFA subarea 8, Saya de Malha Bank
Deeper water snappers, lutjanids, Hapuku	Demersal longline Dropline	Australia China EU	
Deepwater sharks – Portuguese dogfish	Demersal longline	EU-Spain	SIOFA subarea 2
Mackerel and <i>Brama</i> spp	Purse seine with lights	China	
Oilfish	Pelagic longline	Chinese Taipei	south-west Indian Ocean



### 3. Fishing Effort

Table 3. Fishing effort by CCP, main gear and year.

Flag	Gear	Effort unit	Year						
			2014	2015	2016	2017	2018	2019	2020
AUS	Trawl	hours	106	15	26	0	0	0	0
	Longline/Vertical line	x1000 hooks	0	2	40	0	28	54.2	173
CHN	Seine net	hours	4500	10000	4000	300	0	0	0
	Longline	x1000 hooks	0	0	0	0	0	0	0
COK	Trawl	shots	1971	2729	1985	2230	1667	1468	1922
EU-ESP	Gillnet	Km	5000	1200	0	0	0	0	0
	Longline	x1000 hooks	0	2300	3200	3200	5432	3440	2551
EU-FRA	Longline	x1000 hooks		0	np	np	0	0	0
FR-OT	Longline/Vertical line	sets	103	66	13	33	30	40	46
	Longline	x1000 hooks	634.6	443.5	1.2	150.7	2.6	200	127
	Pot/Trap	number			40		50	0	0
JPN	Trawl	hours	750	2250	2500	3250	1091	1512	689
	Longline	x1000 hooks				64	0	0	0
KOR	Longline	hooks	0	0	0	0	0	0	0
	Trawl	hours	0	0	0	0	0	0	0
MUS			?	?	?	?	?	?	?
SYC	<i>no fishing</i>		0	0	0	0	0	0	0
CT	Longline	x1000 hooks		11501	22083	26557	20773	23145	21830
THA	Trawl	shots	0	4090	4552	795	0	176	464
	Handline	days						110	133
	Pot/Trap	number	0	0	8	10	0	0	0
COM	Handline	days	?	?	?	?	?	?	64
TOTAL	longline *	hooks (x1000)	634	14244	25324	29940	26204	26840	24683
	trawl **	shots	2827	9084	9063	6275	1667	1644	2386
		hours	856	2265	2526	3250		1512	[689]

\* does not include potential hooks number from sets

\*\* total trawl effort should consider shots number and hours.

? no information provided.

Note: 2020 fishing efforts are incomplete as some information has not yet been provided by 2 CCPs. Handline effort is not reported by hooks number but by day. Chinese Taipei effort include all effort, comprising effort targeted at tuna.

## 4. Catches

### 4.1. Total catches

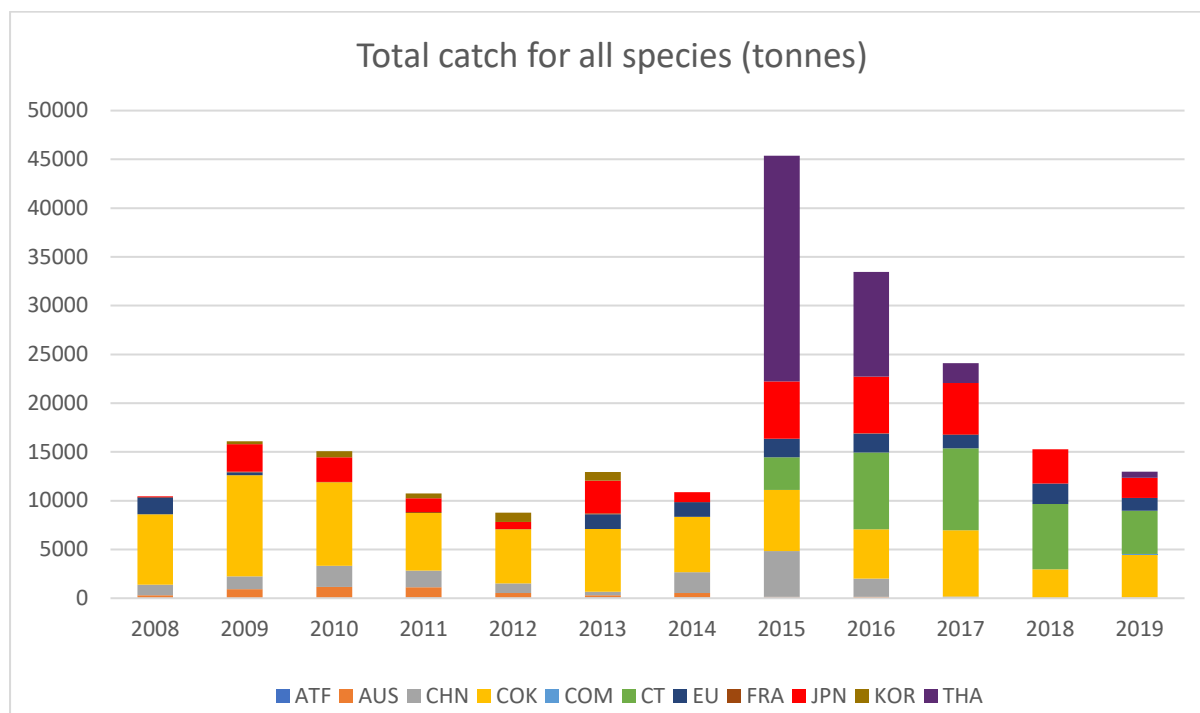


Figure 1: total yearly catch (tonnes) in SIOFA area

The increase in reported catch since 2015 was contributed by the reported catch from Thailand (THA) (2015-17) and Chinese Taipei (CT) catches. Thailand catches were mostly made from squads (*Decapterus sp.*) and lizardfish (*Saurida sp.*) and Chinese Taipei are oilfish catch from its tuna fishery. The 2020 catch is not displayed as the complete data is not available at the date the report was produced.

### 4.2 Catch Composition

The catch of trawl vessels is predominantly alfonsino (figure 2) and orange roughy (figure 3). Species also caught by trawling include pelagic armourhead, bluenose warehou, violet warehou, ocean blue-eye trevalla and oreo dories, cardinal fish, hapuku wreckfish.

The addition of Thailand's fishery added Lizardfish and scads as a major catch from small trawlers since 2015.

The catch of longline vessels differs between three groups. There are longline vessels (reported by EU, Japan, Korea and France Overseas Territories) that catch Patagonian toothfish (figure 4) and associated species, such as blue antimora. The second group catch hapuku wreckfish and ocean blue-eye trevalla, pelagic armourhead, deep-water sharks (*Squalidae*, figure 5), rubyfish and common mora. The third group is the Chinese Taipei tuna longline fleet that catch oilfish (figure 6).

The catch of the gillnet vessels was predominantly deep-water sharks (figure 5).

China's light seining fishery targetted mackerel and *Brama* species (such as *Brama japonica*) and its bottom longline fishery targeted ruby snapper and other species in the Lutjanid family.

### Alfonsinos (*Beryx* sp.)

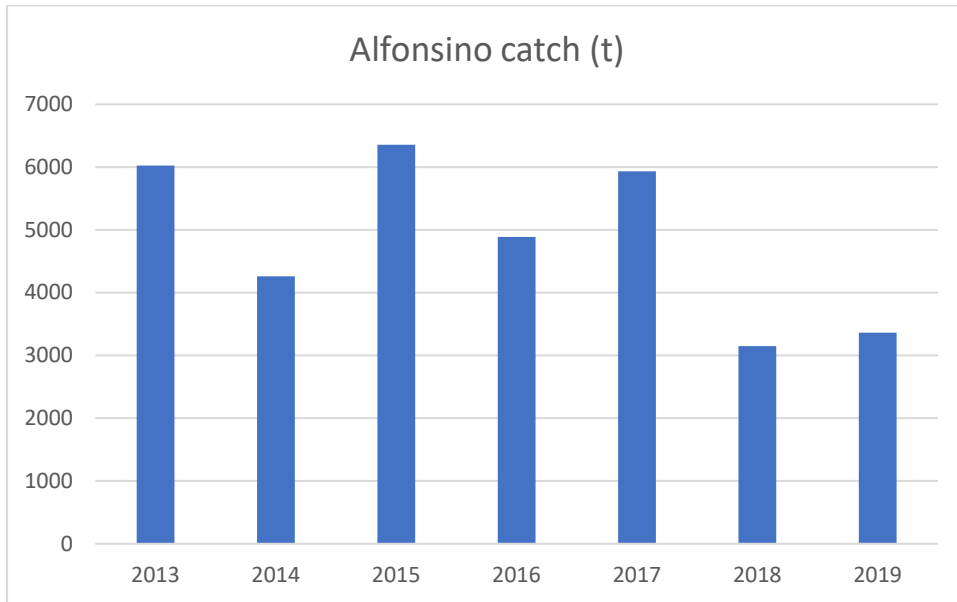


Figure 2: Total annual catch of alfonsinos (tonnes)

### Orange roughy (*Hoplostethus atlanticus*)

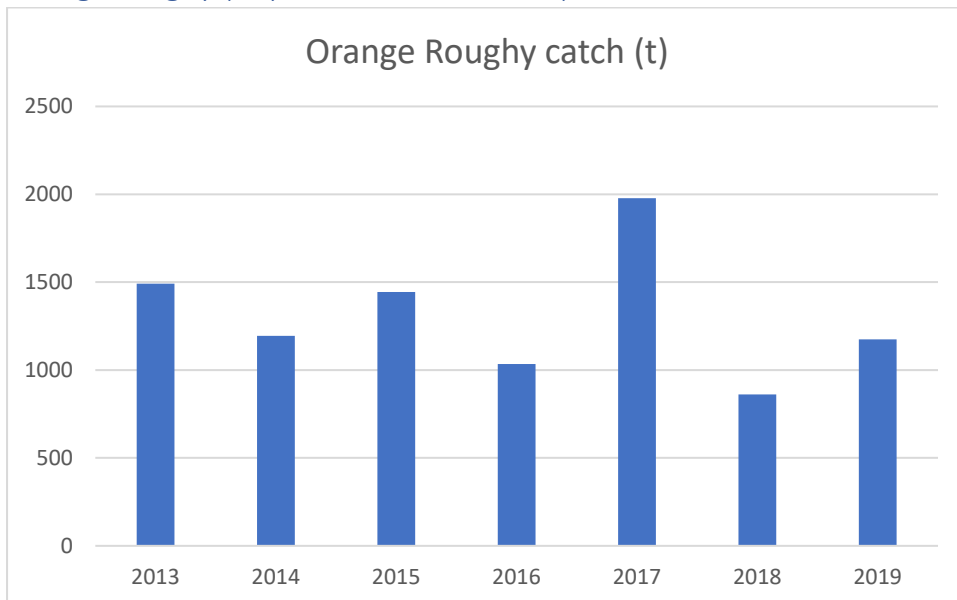


Figure 3: Total annual catch of orange roughy (tonnes)

Patagonian toothfish (*Dissostichus eleginoides*)

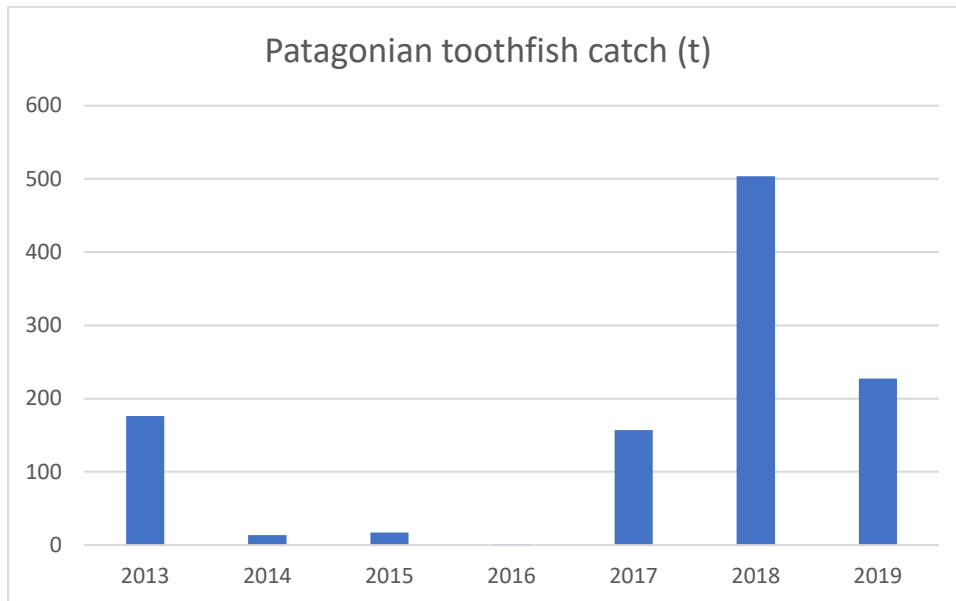


Figure 4: Total annual catch of Patagonian toothfish (tonnes)

Deep-water sharks catch by species (t)

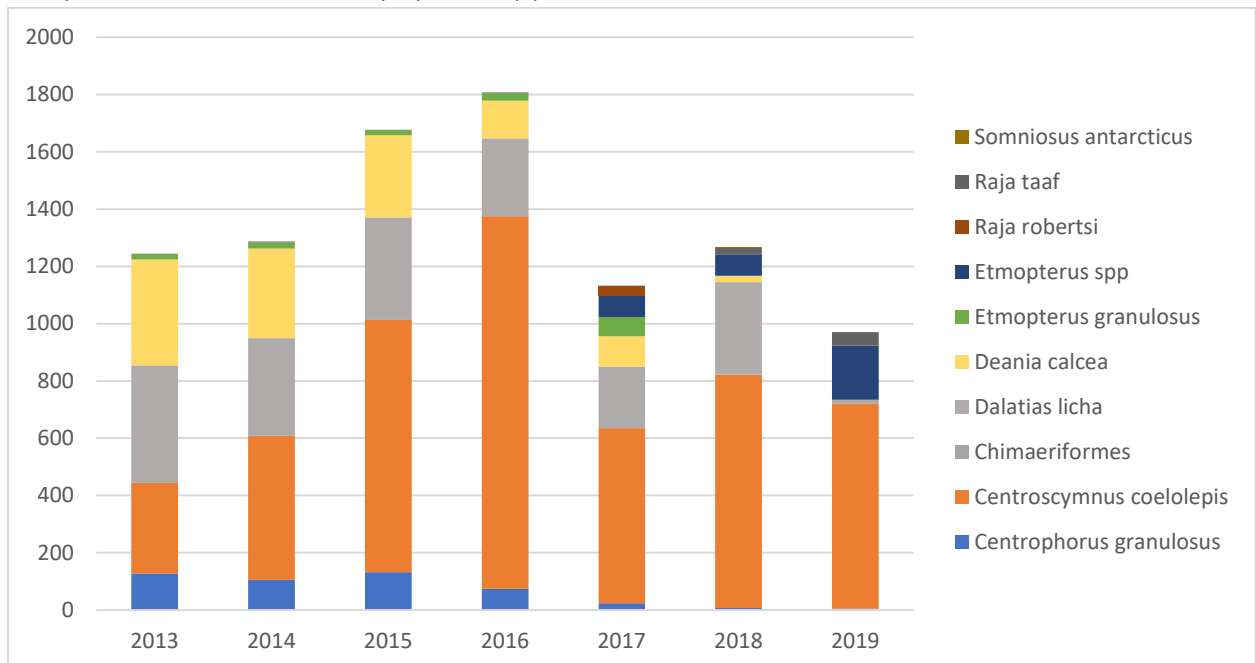


Figure 5: Total annual catch of deep-water sharks species (tonnes)

Oilfish (*Ruvettus pretiosus* and *Lepidocybium flavobrunneum*) catch (t)

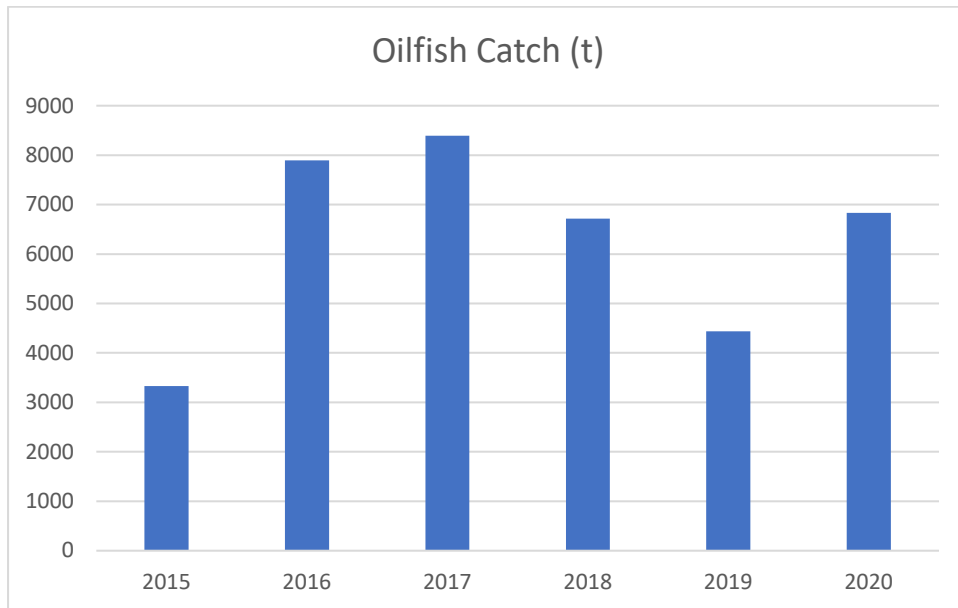


Figure 6: Oilfish Catch (tonnes)

## 5. Vulnerable Marine Ecosystems (VME)

### 5.1. Benthos organisms bycatch summary

Table 4 summarizes the weight of benthos organisms' bycatch reported to the Secretariat in the catch and efforts data and observer's data submission in 2019 (2020 data are not available at the date of processing this document)

Table 4: Weight (kg) of benthic bycatch reported, 2019

Code	Scientific Name <u>red=VME taxon</u>	Weight (kg)									
		AUS*	COK*	COM	EUS**	FR-OT*	JPN	KOR	MUS	SYC	THA*
ADQ	Antipathes dichotoma										1.3
<u>AJZ</u>	<u>Alcyonacea</u>					0.12					
AQZ	Antipatharia		7.91		0.32						
<u>ATX</u>	<u>Actiniaria</u>				0.89						
<u>AZN</u>	<u>Anthoathecataea</u>				0.12						
<u>BZN</u>	<u>Bryozoa</u>				0.26	0.44					
CNI	Cnidaria					0.92					5.3
CSS	Scleractinia	4.13	908.60*		5.05						
<u>CVD</u>	<u>Cidaridae</u>				0.02						
<u>CWD</u>	<u>Crinoidea</u>				1.66						
DMO	Demospongiae				4.89	0.5					
GGW	Gorgoniidae		0.2		11.73						
<u>HXY</u>	<u>Hexactinellida</u>		2.85		0.06						
KRH	Cirrhipathes spp										0.1
<u>NTW</u>	<u>Pennatulacea</u>		0.05		0.53						
NYZ	Nephtheidae										0.1
OEQ	Euryalida				0.04	0.52					
PFR	Porifera		6								590
<u>SPO</u>	<u>Spongiidae</u>		24.61								
<u>SZS</u>	<u>Serpulidae</u>				1.14						
<b>Total number of operations (sets, tows, including 0 benthos catch)</b>		65 sets	1777 tows	64 HL days	351 sets	40 sets	379 tows	0	?	0	176 tows 110 HL days
<b>Total (Kg)</b>		4.13	950.23	0	26.71	2.5	0		?		596.8

\* source: observers' data

\*\* source: catch and effort data + observers' data.

\* Excludes coral rubbles. Note that this does not seem to reconcile with CK data submitted to SIOFA (376.807 kg Scleractinia, 700 kg coral rubble) and SIOFA database, these figures will be revised after further investigations.

## 5.2. VME management rules

One of the tools SIOFA implements to manage impacts on Vulnerable Marine Ecosystems (VME) from fishing is the application of move-on rules when thresholds of VME indicators are reached. Table 5 summarises the thresholds and move-on rules applied by each CCP.

Table 5: Summary of VME thresholds and move-on rules, from National Reports

Flag	Threshold	Response and Management	Encounter
AUS	Australian-flagged vessels observe the thresholds and move-on rules specified in CMM 2019/01. Australian-flagged vessels are required to record any evidence of a Vulnerable Marine Ecosystem (VME) such as coral or sponges encountered in a fishing shot in logbooks.	Australian-flagged vessels observe the thresholds and move-on rules specified in CMM 2019/01. Australian-flagged vessels are required to record any evidence of a Vulnerable Marine Ecosystem (VME) such as coral or sponges encountered in a fishing shot in logbooks.	No thresholds were triggered by any Australian-flagged vessels in 2019.
COK	VME encounter threshold established in the interim CMM 19/01 section 12(b): More than 60 kg of live corals and/or 300 Kg of sponges in any tow.	For bottom or mid-water trawling, or fishing with any other net – two miles either side of a trawl track extended by two (2) nautical miles at each end;	Based on provisional data from observer reports no shots breached the VME threshold
EU	Follow CMM 2019/01	longline: stop fishing and will be separated at least 1 nautical mile from the midpoint of the operation	no threshold triggered in 2020
JPN	From the middle of the 2019 fishing season, Japanese fishing vessel have applied Article 12, CMM 2019/01, which establish VME thresholds and the move-on-rule in the encounter protocol, i.e., for trawl fisheries, it is 60 kg of live corals and/or 300 kg of sponges and for the bottom longline fisheries, it is 10 or more VME-indicator units.	If by-catch amount of VME indicators reached the threshold values, Japanese fishing vessels will follow the protocols stipulated in Article 12 to 19, CMM 2019/01, i.e., fishing vessels will move away 2 and 1 nm for trawl and longline fisheries respectively then report to the Secretariat.	No VME bycatch in 2020
FR-OT	Crew must collect and retain all benthic organisms for each segment in numbered buckets, those buckets will be made available for observers. The observers record benthic organisms composition and abundance for each set. This information is also recorded in a digital logbook and transferred to the MNHN fishing database “PECHEKER”.	No VME indicator thresholds were triggered for the period 2011-2020. The move-on protocol didn’t need to be applied.	No interactions with threatened, endangered and protected species were reported in 2020.
KOR	Korea established a procedure to protect Vulnerable Marine Ecosystems from bottom fishing in the high seas, in accordance with UNGA Resolution 61/105, adopted in 2006, and 64/72, adopted in 2009. Korean domestic laws request all Korean bottom fishing vessels clearly mark the start and end of each haul on each fishery, and monitor all hauls to	If the amount of VME that exceeds the weight specified in the criteria, the vessel shall apply a 2 nmiles move-on rule to resume its fishing operation.  Furthermore, the vessel shall relocate its fishing position until it reaches a point where no VMSs are confirmed.	no fishing in 2020



Flag	Threshold	Response and Management	Encounter
	<p>record the quantity of VME indicator organisms recovered during that haul.</p> <p>The fishing vessel, during its operation, shall submit the information with regard to its operation (e.g. position, date) to NIFS if it was confirmed that the vessel encountered VMEs. The threshold of the encounter of VMEs is over 60kg of coral per set or over 800kg of sponges per set.</p>		
MUS	no information provided	no information provided	no information provided
SEY	no fishing in SIOFA area		
CT	no bottom fishing in SIOFA area		
THA	<p>Trawler: Stop fishing when catching living corals more than 60 kg of corals or 300 kg of sponges per one time of operation.</p> <p>Longliner: Stop fishing when catching living corals or sponges more than 10 kg per 1,000 hooks or per 1,200 meters of longline.</p> <p>Fish trap vessel: Stop fishing when catching living corals or sponges more than 10 kg per single trap or 1,200 meters of main line.</p>	<p>Trawler: move at least 2 nautical miles from that area .</p> <p>Longline: move at least 1 nautical mile from the center of the line segment.</p> <p>Fish trap vessel: move at least 1 nautical mile from that area .</p>	

## 6. Observers and port sampling programs

CMM 2019/01 require CCPs to implement scientific observer programs. Table 6 provides a summary of the observer programs implemented by each CCP and information on port sampling.

Table 6. Summary of Observers and Ports Sampling programs in 2020.

Flag	Item	Description
Australia	Coverage	Since 2010, Australian permit conditions for bottom fishing in the SIOFA area have required 100 per cent observer coverage on all vessels permitted to use trawl gear, with this coverage being expressed as the percentage of hauls observed. A target of 20 per cent observer coverage is required for vessels using non-trawl fishing methods, with this coverage being expressed as the number of hooks observed. Observer coverage requirements were met in 2020.
	Training	AFMA recruits and trains the observers. Observers have a scientific background and/or experience in the fishing industry or other maritime industries and must demonstrate skills in collecting biological data at sea, fisheries research methodologies and collection of associated scientific data. Observers also hold a sea safety certificate and medical certificate, and have completed an AFMA observer training course. Some observers hold a marine radio operators certificate of proficiency (or similar qualifications).
	Collection	Observers collect a range of data on vessel characteristics, fishing activity, catch composition, discarding and bycatch. Observer data are provided to the SIOFA Secretariat in accordance with CMM 2019/02.
	Port sampling	Australia does not have a port sampling program for vessels that fish in the SIOFA area.
China	Coverage	China has established an observer program for the overseas fisheries. The observers are trained by SHOU and coordinated by COFA to dispatch them on board each year. With reference to the conservation and management measures (CMM) of some regional fisheries management organization (RFMO), the regulations are adopted to ensure the safety of observer and smooth collection of data. China did not conduct an observer program for demersal trawling from 2000 to 2002 in the Indian Ocean. Neither did China for Light seining from 2014 to 2017. Since 2005 China has been conducting an observer program for bottom longlining.
	Training	
	Collection	
	Port sampling	
Comoros		Since the Diego Star 2 is a mother boat, it is difficult to take an observer on board and to find reliable data therefore it is the small motorized boats which carry out the fishing activities. The main difficulty arises in making observers available for each boat, of which there are 19 today.
Cook is.	Coverage	In 2020, The Cook Islands National Observer Programme (CINOP) was unable to maintain 100% observer trip coverage due to the global impact of Covid-19. 50% trips covered and 52% haul coverage. The Cook Islands National Observer Programme (CINOP) was unable to maintain 100% observer trip coverage due to the global impact of Covid-19. 50% trips covered and 52% haul coverage. However in absence of 100% observer coverage as a result of the derogation of CMM 2019-01, para 39a, the Cook Islands made best efforts to collect data by alternate means through vessel officers and crew.
	Training	

Flag	Item	Description
	Collection	Despite not maintain a 100% observer coverage as a result of derogation of CMM 2019-01, para 39a, the Cook Islands' continued to a wide range of data through vessel officers and crew including fishing activities, catch composition, discards, bycatch, seabird, mammal, vessel sightings, biological data, otoliths and VME encounters.
	Port sampling	The Cook Islands does not have a port sampling programme as sampling is conducted onboard the vessel by the observer.
EU France	Coverage	<i>No fishing in 2020</i>
	Training	
	Collection	
	Port sampling	
EU Spain	Training	The scientific observers (Biologist or Marine Science degree) are part of the personnel trained at the Instituto Español de Oceanografía, specific training is also adapted for all fleets that are monitored.
	Collection	
	Coverage	100%
	Port sampling	EU-Spain do not have a port sampling program for vessels fishing within the SIOFA CA.
France Oversea Territories	Port sampling	Landed box of catch are weighted in port
	Coverage	All the licensed French Territories vessels have on-board a fishing observer to cover 100% of the fishing activities
	Collection	The data collection occurs at two different levels: -Skipper level: have to collect all detailed information on fishing events and catches-Observer level: independently, fishery observer (covering 100% of gear deployment)collect data on a fourth of the set to monitor catches
	Training	
Japan	Training	The observer trainings have been held annually since 2016. The scientific observer scheme and manuals have been improved based on information and feedback from the scientific observers through the debriefing held during the scientific observer trainings. From 2017, there is no major improvement for Japanese scientific observer scheme for trawl fisheries.
	Collection	According to CMM2018/02 for trawl fisheries. Use CCAMLR template for longline fisheries.
	Coverage	100% coverage.
	Port sampling	There are no port sampling programs.
Korea	Training	Korean scientific observer program for distant water fisheries started in 2002. National Institute of Fisheries Science (NIFS) is responsible for implementing and developing the observer program. The qualification for a person to be an observer is: a person who is a college graduate whose major field is nature science, or else, a fisheries high school graduate who accompanies at least 2-year experience on board having a certificate of qualification to deck officer. Candidates for observer who have passed the paper review (including medical check-up) and oral interview have to take training programs for 3 weeks. Observer training programs include basic safety training for seafaring, operations of navigation devices, biological information training for target and non-target species and data collection method for fishing activities. During the training program they have two types of test. One is the test on a technical term of fisheries and biology, and the other is the test on species identification. The person who scored above 70 in both tests and attended 100% of the course timetable can be qualified and deployed on board as a scientific observer. NIFS trains observers again before dispatching them to each RFMO area. The training includes the conservation and management measure of each RFMO, how to collect the data and sample, specific task needs to be done and more.
	Coverage	No fishing in 2020

Flag	Item	Description
Mauritius		<i>no information provided</i>
Seychelles		<i>no fishing</i>
Chinese Taipei	Training	For purposes of collecting fisheries data and bycatch data, Chinese Taipei launched the pilot observer program in 2001 and deployed observers on vessels fishing in the Indian Ocean commenced in 2002. Our observer program had received interim authorization in 2009 and received full authorization after auditing in November 2011 and October 2017, respectively.
	Collection	The forms used in our observer program are fully conformed to the standards set by WCPFC which include the fishing activities, catch number and weight, species identification, bycatch species and status. In addition, length frequency of major species and the sighting and incidental catch of ecological species were recorded, and biological samplings were collected for biological research.
	Coverage	4.71% in 2020 (preliminary). Note: No bottom fishing for CT. Observers coverage not set within SIOFA CMMs
	Port sampling	A port sampling program has conducted in domestic ports aims at collecting the size data of tuna and tuna-like species.
Thailand	Training	The training course for observer contained 11 modules of essential fisheries observer principle based on the FAO Guidelines for Developing an at-Sea Fisheries Observer Program. These included the Basic Training of Seaman, Fisheries Management, Legal and Policy Framework, Health and Safety, Code of Conduct for Observers, Fishing Vessels and Gears, Data Collection, Recording Forms and Documents, Navigation, Radio Communication and Shipboard Training.
	Coverage	100% on trawls, 20% on handlines
	Collection	Observe and collect biological information, including catch composition sampling of the transhipped aquatic animal, and other activities such as sorting, processing, or observe several parts onboard the vessel, fish hold, wheel house and technology of fishing gears.
	Port sampling	Port inspector will inspect the documentation and physical checks on board for port in –port out permission and the video recorded by the EM will be inspected by port inspector prior to authorize to unloading. Besides, the Thai authorities will also carry out the catch landing inspection when porting in for reliability and accuracy of information on landed fish before entering the supply chain. During this process, catch weight is verified with landing declaration documents, such as fishing logbook, fishing gears and Marine Catch Transshipment Document (MCTD) in the case of transshipments.

## 7. Summary of biological sampling

Table 8 summarizes the number of fish sampled in 2019 by on-board observers on CCP fishing vessels. Biological sampling ranges from simple length measurement to complete individual investigation (weight, sex, maturity, etc.).

Table 8: Summary of biological sample collection by scientific observers, total number of samples made in 2019

Code	English Name	Scientific Name	FR-OT	AUS	COK	EU-SP	JPN	THA
ANT	Blue antimora	<i>Antimora rostrata</i>	79			594		
AVR	Green jobfish	<i>Aprion virescens</i>						517
BAR	Barracudas nei	<i>Sphyræna spp</i>						76
BAT	Batfishes	<i>Platax spp</i>						44
BEA	Eaton's skate	<i>Bathyraja eatonii</i>				53		
BRF	Blackbelly rosefish	<i>Helicolenus dactylopterus</i>				105		
BYS	Splendid alfonsino	<i>Beryx splendens</i>			11909		20316	
COX	Conger eels, etc. nei	<i>Congridae</i>				99		
CYO	Portuguese dogfish	<i>Centroscymnus coelolepis</i>				4000		
DCC	Shortfin scad	<i>Decapterus macrosoma</i>						3052
DCK	Redtail scad	<i>Decapterus kurroides</i>						606
EMN	Marbled coralgroupers	<i>Plectropomus punctatus</i>						96
ETM	Southern lanternshark(Lucifer)	<i>Etmopterus granulosus</i>				2399		
FIT	Flutemouth	<i>Fistularia spp</i>						218
GOX	Goatfishes	<i>Upeneus spp</i>						432
GUP	Gulper shark	<i>Centrophorus granulosus</i>				162		
GUQ	Leafscale gulper shark	<i>Centrophorus squamosus</i>				272		
HOL	Chimaeras, etc. nei	<i>Chimaeriformes</i>				42		
HYD	Ratfishes nei	<i>Hydrolagus spp</i>				58		
IWX	Coralgroupers nei	<i>Plectropomus spp</i>						121
KZJ	Delagoa threadfin bream	<i>Nemipterus bipunctatus</i>						5803
LIB	Brushtooth lizardfish	<i>Saurida undosquamis</i>						6057
LJB	Two-spot red snapper	<i>Lutjanus bohar</i>						205
LJG	Humpback red snapper	<i>Lutjanus gibbus</i>						198
LJL	Bigeye snapper	<i>Lutjanus lutjanus</i>						44
LZX	(blank)	<i>Lethrinus spp</i>						201
MCH	Bigeye grenadier	<i>Macrourus holotrachys</i>				1312		
NGU	Yellowspotted trevally	<i>Carangoides fulvoguttatus</i>						234
NGX	(blank)	<i>Carangoides spp</i>						1851
ORY	Orange roughy	<i>Hoplostethus atlanticus</i>			9746			
RFA	Whiteleg skate	<i>Amblyraja taaf</i>				505		

RIB	Common mora	<i>Mora moro</i>				687		
RUS	Indian scad	<i>Decapterus russelli</i>						8457
SEY	Violet warehou	<i>Schedophilus velaini</i>		59				
SHL	Lanternsharks nei	<i>Etmopterus spp</i>				1654		
SVY	Cutthroat eels nei	<i>Synaphobranchidae</i>				90		
SYW	Variegated lizardfish	<i>Synodus variegatus</i>						101
TOP	Patagonian toothfish	<i>Dissostichus eleginoides</i>	358			4227		
UPM	Goldband goatfish	<i>Upeneus moluccensis</i>						61
WRF	Wreckfish	<i>Polyprion americanus</i>				105		

Notes: many other species from the Thailand fisheries have been sampled but account for less than 40 individuals per species. This data has not been summarized in the table.

## Appendix A

### FAO species codes and common names

FAO common name	FAO code	Scientific name	Alternative common name
Alfonsinos	ALF	<i>Beryx</i> spp.	Alfonsino
Splendid alfonsino	BYS	<i>Beryx splendens</i>	Alfonsino
Bluenose warehou	BWA	<i>Hyperoglyphe antarctica</i>	Blue-eye trevalla, Antarctic butterfish
Orange roughy	ORY	<i>Hoplostethus atlanticus</i>	
Violet warehou	SEY	<i>Schedophilus velaini</i>	Indian Ocean trevalla
Pelagic armourhead	EDR	<i>Pentaceros richardsoni</i>	Southern boarfish
Patagonian toothfish	TOP	<i>Dissostichus eleginoides</i>	
Common mora	RIB	<i>Mora moro</i>	Ribaldo
Wreckfish	WRF	<i>Polyprion americanus</i>	
Portuguese dogfish	CYO	<i>Centroscymnus coelolepis</i>	
Hapuka	HAU	<i>Polyprion</i> spp.	
Rubyfish	RYG	<i>Plagiogeneion rubiginosum</i>	
Smooth oreo dory	SSO	<i>Pseudocyttus maculatus</i>	
Spiky oreo	ONV	<i>Neocyttus rhomboidalis</i>	
Blue antimora	ANT		
Hapuku wreckfish	WHA	<i>Polyprion oxygeneios</i>	Hapuku
Cardinalfishes nei	APO	<i>Apogonidae</i>	
Cardinal fishes nei	CDL	<i>Epigonus</i> spp	Deepwater cardinalfishes
Oreo dories nei	ORD	<i>Oreosomatidae</i>	
Black bellied rosefish	BRF	<i>Helicolenus dactylopterus</i> (fam. <i>Sebastidae</i> )	
Lizardfish	SZX	<i>Saurida</i> spp. <i>Saurida undosquamis</i> (fam. <i>Synodontidae</i> )	
Scads	SDX	<i>Decapterus russelli</i>	Round scad
Ruby snapper	ETC	<i>Etelis coruscan</i>	
Oilfish	OIL	<i>Ruvettus pretiosus</i>	
	LEC	<i>Lepidocybium flavobrunneum</i>	Escolar

**CMM 2019/02<sup>1</sup>**

**Conservation and Management Measure for the Collection, Reporting, Verification and Exchange of Data relating to fishing activities in the Agreement Area (Data Standards)**

**The Meeting of the Parties to the Southern Indian Ocean Fisheries Agreement;**

*RECALLING* that Article 6(1) (f) of the *Southern Indian Ocean Fisheries Agreement* (the Agreement) calls on the Meeting of the Parties to develop rules for the collection and verification of scientific and statistical data, as well as for the submission, publication, dissemination and use of such data;

*FURTHER RECALLING* that Articles 10(1)(c) and 11(3) set out the duties relevant to the collection and provision of data and related processes for Contracting Parties and flag States respectively;

*RECOGNISING* the importance of developing comprehensive arrangements for data collection, reporting, verification and exchange of data to assist the Scientific Committee in performing its functions as outlined in Article 7 of the Agreement;

*NOTING* the relevance of Articles 10(e) and 14 of the *Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks* (UNFSA) which call on States to cooperate through regional fisheries management organisations to agree on the standards for the collection, reporting, verification and exchange of data on fisheries for the stocks, and the specifications and format for the data to be provided and to cooperate in their scientific research;

*CONSIDERING* the provisions set forth in the *Resolution on data collection concerning the high seas in the Southern Indian Ocean*, adopted by the Conference on the Southern Indian Ocean Fisheries Agreement in the Seychelles from 13-16 July 2004;

*NOTING* the importance of data collection and catch reporting for the purposes of ensuring scientific stock assessment and implementing an ecosystem approach to fisheries management;

*NOTING* the recommendation by the Third meeting of the Scientific Committee to improve the collection of sharks catch information and the submission of scientific observer data; and

*FURTHER NOTING* that the Meeting of Parties has adopted policies and procedures for the maintenance of data confidentiality (CMM 2016/03);

**ADOPTS the following conservation and management measure (CMM) in accordance with Article 6 of the Agreement:**

**Application**

1. This CMM applies to all Contracting Parties, cooperating non-Contracting Parties and participating fishing entities (CCPs).
2. This CMM prescribes the standards for the collection, reporting, verification and exchange of data related to fishing activities by vessels fishing in the SIOFA Area of Application (the Agreement Area) that are flying the flag of a CCP.

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<sup>1</sup> CMM 2019/02 (Data Standards) supersedes CMM 2018/02 (Data Standards)



These data standards shall assist the Meeting of the Parties to fulfil its objectives under the Agreement insofar as it relates to assessing the state of the fisheries within SIOFA's competence, including the status of target and non-target species and the impact of fishing on the marine environment.

### Terminology

3. The following definitions apply to this CMM including its annexes:
  - a. 'other species of concern' means those species as may be defined by the Scientific Committee from time to time.
  - b. 'National Report' means the report defined in paragraph-9 of this CMM.

### Vessel Catch and Effort Data

#### *Collection of data*

4. CCPs shall ensure that data on fishing activities, including for target, non-target and associated and dependent species such as marine mammals, marine reptiles, seabirds or 'other species of concern', are collected from vessels flying their flag that are fishing in the Agreement Area in accordance with the relevant sections of Annex A.
5. ~~The Scientific Committee shall, by no later than the ordinary meeting of the Scientific Committee in 2019, provide advice and recommendations to the Meeting of the Parties on an appropriate spatial resolution for the collection and reporting of data to facilitate effective stock assessment. Until the Meeting of the Parties, based on the advice of the Scientific Committee, determines an appropriate spatial resolution for the collection and reporting of data, CCPs shall ensure that data are collected on a haul-by-haul basis. CCPs shall collect and report vessel catch and effort data on a haul-by-haul basis in accordance with the specifications in Annex A.~~

#### *Data collection and submission*

6. CCPs shall report to the Secretariat, by 31 May each year, the data collected under paragraphs 4 and 5 for the previous calendar year, in accordance with the format prescribed in the corresponding annexes.
7. CCPs shall provide to the Secretariat, by 31 May each year, annual catch summaries for all species/groups caught in the Agreement Area during the previous calendar year. The catch summaries shall include the following information:
  - a. Calendar year (eg 2015)
  - b. FAO statistical area (eg FAO87)
  - c. Species/group name (common name and scientific name)
  - d. Species/group code (FAO3-alpha code 19, EG ORY) (if available)
  - e. Annual catch total - tonnes raised to 'live' weight.
8. To assist in data collection CCPs shall implement on-board all fishing vessels flying their flag the FAO Identification guide to the deep-sea cartilaginous fishes of the Indian Ocean<sup>2</sup>. Where available the use of Smartforms may be considered.

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<sup>2</sup> Ebert, D.A. and Mostarda, E. 2013. Identification guide to the deep-sea cartilaginous fishes of the Indian Ocean, FishFinder Programme, FAO, Rome. 76 p

*National report*

9. Following the entry into force of this CMM, CCPs shall provide to the Scientific Committee, at least 30 days prior to the commencement of each ordinary meeting, an annual National Report of their fishing, research and management activities in accordance with the following:
- a. For the first report: the National Report shall include details of activities of the previous five calendar years;
  - b. For all reports thereafter: the National Report shall include details of activities of the previous calendar year; and
  - c. In either case, the National Report shall take into account the guidelines prepared by the Scientific Committee for the preparation of such reports.

*Historical Data*

~~10. To assist with the development of a bottom fishing footprint and stock assessments, CCPs shall provide to the Secretariat, by 31 January 2018 historical catch, effort and, if available, observer data from vessels flying their flag that were fishing in the Agreement Area at any time during the period 2000 to 2015, and any previous years where available, in a format as close as is possible to the annexes to this CMM. The catch, effort and, if available, observer data provided to the Secretariat may initially be provided as unverified data, and updated with verified data any time before 31 January 2018.~~

~~To assist with the development of a bottom fishing footprint and stock assessment, each CCP shall endeavor to provide the Secretariat with all historical catch and effort since 2000 and, if possible, all available data collected by scientific observer from vessels flying their flags in accordance with annex A and annex B if applicable.~~

~~11.~~ Any State or fishing entity that becomes a Party to the Agreement, a CNCP or PFE after the date this CMM is adopted shall provide their historical data to the Secretariat within 12 months of becoming Party to the Agreement, or becoming a CNCP or PFE.

~~12.~~ Where possible, CCPs are encouraged to provide relevant, reliable historical data for species caught in waters under their national jurisdiction where such information would assist in understanding the status of the stocks and the impacts of fishing on all target species, non-target and associated and dependent species and the marine environment within the Agreement Area.

**Scientific Observer Data**

~~13.~~ All CCPs shall implement national scientific observer programmes to collect from activities undertaken by vessels flying their flag:

- a. Vessel information, effort and catch data for its fishing activities in the Agreement Area, including target, non-target and associated and dependent species including marine mammals, marine reptiles, seabirds or 'other species of concern';
- b. Biological or other data and information relevant to the management of fishery resources in the Agreement Area, as specified in this CMM, or as identified from time to time by the Scientific Committee or through processes identified by the Meeting of the Parties; and
- c. Relevant scientific information related to the implementation of the provisions of the CMMs adopted by the Meeting of the Parties.

~~43-14.~~ The function and tasks of the scientific observer are described in Annex D.

~~44-15.~~ CCPs shall, through their National Report, provide to the Scientific Committee an annual ~~observer programme~~ implementation report which ~~should shall~~ include summary sections covering: observer training, ~~programme~~ design and coverage, type of data collected, and any problems encountered during the previous calendar year.

**Commented [P1]:** We suggest to use that each CCP should provide a specific document describing in detail observer program. FROT already proposed a description of his observer program SC-04-INFO-07 based on the list of criteria developed under the CCAMLR observer training program accreditation scheme (COTPAS).

~~45-16.~~ CCPs shall, for all observed trips, collect observer data in accordance with the relevant sections of Annex B. All observer data collected by CCPs shall be reported to the Secretariat by 31 May each year for the previous calendar year. ~~Annex B will be reviewed by the Scientific Committee at its ordinary meeting in 2020 based on observer data provided.~~

~~46-17.~~ By 2023, the Scientific Committee shall develop and adopt a template for the observer reports, and a template for an observer data collection form that may be used by observers in subsequent years.

~~47-18.~~ By 2023, the Meeting of the Parties, based on recommendations from the Scientific Committee and the Compliance Committee shall adopt a SIOFA framework for scientific observation clarifying all the aspects related to the role.

#### Data Verification

~~48-19.~~ CCPs shall:

- a. ensure that fishery data are verified through an appropriate system of data verification mechanisms;
- b. develop, implement and improve data verification mechanisms, which may include:
  - i. Position verification through vessel monitoring systems;
  - ii. Independent monitoring, including scientific observer programs and approved electronic observer programs,<sup>3</sup> to verify industry data on catch, effort, catch composition (target and non-target), discards and other details of fishing operations;
  - iii. Vessel trip, landing and transshipment reports; and
  - iv. Port sampling.
- c. provide to the Scientific Committee, through their National Report, an annual data verification report which should provide information regarding their development and implementation of data verification mechanisms.

#### Format for data submission

~~49-20.~~ CCPs shall report all data required to be reported by this measure to the Secretariat in accordance with the formats described in this CMM, including its annexes.

~~20-21.~~ Specifications for the submission of data:

- a. times, ~~latitudinal~~ /longitudinal/~~latitudinal~~ information and units of measure are to be reported in accordance with the format described in Annex C;
- b. Species are to be described using the FAO 3 letter Species Codes;<sup>4</sup>
- c. Fishing methods are to be described using the International Standard Classification

<sup>3</sup> Approved electronic observer programs refers to those programs that meet the SIOFA agreed standard and have been reviewed by the Scientific Committee and approved by the Meeting of the Parties as being capable of meeting the data requirements in this CMM.

<sup>4</sup> [www.fao.org/fi/statist/fisoft/asfis/asfis.asp](http://www.fao.org/fi/statist/fisoft/asfis/asfis.asp)

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of Fishing Gear (ISSCFG - 29 July 1980) codes;<sup>5</sup> and

- d. Types of fishing vessels are to be described using the International Standard Classification of Fishery Vessels (ISSCFV) codes.<sup>6</sup>

**Review**

~~21.22.~~ This CMM should be reviewed periodically by the Scientific Committee and the Meeting of the Parties, taking into account new information or data requirements as may be decided.

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<sup>5</sup> <http://www.fao.org/fishery/cwp/handbook/M>

<sup>6</sup> <http://www.fao.org/fishery/cwp/handbook/L>

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**Standards for the Collection, Reporting, Verification and Exchange of Data  
Annexes**

**List of Annexes:**

**Annex A - Vessel Catch and Effort Data**

**Annex B - Observer Data**

**Annex C - Specifications for the Exchange of Data**

**Annex D - Function and tasks of the scientific observer**

Vessel Catch and Effort Data

1. Contracting Parties, CNCPs and PFEs shall ensure that the following data on fishing activities are collected ~~from all fishing vessels flying their flag~~ in the Agreement Area:

For all demersal fishing vessels flying their flag:

<p><b>Data Set - Fishing activities General (Trip)</b>                  Vessel flag State (ISO 3-apha)                  Name of vessel                  International radio call sign (if any)                  Vessel Registration number (flag State)                  Lloyd's / IMO /IHS Fairplay Number (if allocated)                  Vessel size: Gross Tonnage (Gross register tonnage may be used if GT is not available, or both)                  Name of person filling in the data</p>
<p><b>Weight Conversion Factor</b>                  Species                  Processing type                  Conversion factor = live weight/processed weight</p>
<p><b>Haul Information</b>                  Intended Target species (FAO code)                  Type of fishing (C)ommercial; (R)esearch; (S)urvey data                  Haul ID number</p>
<p><b>Set Start date and Time</b> (Based on Coordinated Universal Time (UTC))                  Recorded at start and end of fishing                  For longline vessels - record at start and end of setting, in addition to start and end of haul                  Date format (YYYY.MON.DD)                  Time format (hh.mm)  <del>Position (Lat/Lon) Decimal degrees (WGS84 are to be used to describe locations)</del></p>
<p><b>Position at start and end of fishing</b>  <u>Precise</u> Latitude  <u>Precise</u> Longitude  <del>Use N and S rather than + and - Use E and W rather than + and -</del>                  For longline vessels;- position is recorded at the start and end of setting                  For <del>bottom trawl</del> <del>Trawl</del> fishing; <del>- for bottom trawl</del> "start" is defined as when the groundrope <del>first touch is on</del> the bottom, and "end" is when <del>the ground rope leaves the bottom at the beginning of hauling</del> <del>the tow ends</del>.  <del>For -</del>for midwater trawl "start" is defined as when the fishing gear is at target fishing depth, "end" is when the tow <del>haul begins</del> <del>ends</del>. <del>If it is not possible to record, collect numbers that the gear touches the sea bottom accidentally in each set</del>  <del>For handline fishing, position is the position of the vessels at the start and at the end of the fishing</del></p>
<p><b>Bottom Depth (m)</b>                  As recorded at the start and end of fishing</p>
<p><b>Fishing / gear depth (m)</b>                  As recorded at the start and end of fishing                  For trapping/potting, Actual Fishing / gear depth (m) as recorded at start is required</p>

**Commented [PS2]:** To be resolved by MoP

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**Commented [PS3]:** JAPAN: For the mid water & aimed trawls, it is technically difficult to record start & end positions. Thus, we propose to add this sentence.

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<p><b>Species retained</b>                  Estimated catch retained on board by <u>species-taxa</u>-(FAO species/group code/scientific name) in <u>live-green</u> weight<sup>7</sup> (kg)</p>
<p><b>Species Discarded</b>                  An estimation of the amount of living marine resources-discarded by <u>species-taxa</u> if possible in <u>live-green</u> weight (kg)                  (excluding, benthos bycatch and incidental by-catch of marine mammal, seabirds, reptiles and other 'species of concern')</p>
<p><b>Specimen cut off</b>                  Yes / No                  For each species caught</p> <ul style="list-style-type: none"> <li>• <u>Species name</u></li> <li>• <u>Number alive</u></li> <li>• <u>Number dead or injured</u></li> </ul>
<p><b>Incidental bycatch of marine mammals, seabirds, reptiles and 'other species of concern'</b>                  Yes / No                  For each species caught</p> <ul style="list-style-type: none"> <li>• Species name</li> <li>• Number alive</li> <li>• Number dead or injured</li> </ul>
<p><b>Benthos bycatch</b>                  Yes/No                  For each benthic organisms' species</p> <ul style="list-style-type: none"> <li>• <u>Species scientific names (identified at the lowest taxon level possible)</u></li> <li>• <u>FAO code (if available)</u></li> <li>• <u>Estimation of the amount caught</u></li> </ul>

**Commented [P4]:** SC-06-16 need a specific list: Experts disagree on the taxonomy of certain species including *Macrourus* species (*holotrachys*, *carinatus*, *ccamlr*, *whitsoni*). For those species with an overlap of identification criteria it's very difficult to identify at sea with certainty

For all pelagic fishing vessels flying their flag:

**Commented [PS5]:** JAPAN: Crews cannot collect such scientific info (both incidental bycatch and benthos bycatch). This is the appropriate task for the trained scientific OBS. So, these two items are shifted to the OBS data fields.

**Commented [PS6R5]:** Japan will fulfill incidental bycatch and benthos bycatch information under the observer data (annex B)

**Commented [PS7]:** The duplication of the table below is a strong preference from Chinese Taipei

<p><b>Data Set - Fishing activities General (Trip)</b>  <u>Vessel flag State (ISO 3-alpha)</u>  <u>Name of vessel</u>  <u>International radio call sign (if any)</u>  <u>Vessel Registration number (flag State)</u>  <u>Lloyd's / IMO /IHS Fairplay Number (if allocated)</u>  <u>Vessel size: Gross Tonnage (Gross register tonnage may be used if GT is not available, or both)</u> Name of person filling in the data</p>
<p><b>Weight Conversion Factor</b>  <u>Species</u>  <u>Processing type</u>                  Conversion factor = live weight/processed weight</p>
<p><b>Haul Information</b>  <u>Intended Target species (FAO code)</u>  <u>Type of fishing (C)ommercial; (R)esearch; (S)urvey data Haul ID number</u></p>
<p><b>Set Start date and Time (Based on Coordinated Universal Time (UTC))</b>  <u>Recorded at start of fishing</u>  <u>Date format (YYYY.MON.DD)</u></p>

<sup>7</sup> Green weight means fresh and unprocessed weight.

<u>Time format (hh.mm)</u> <u>Decimal degrees (WGS84 are to be used to describe locations)</u> <b>Position at start of fishing</b> <u>Latitude</u> <u>Longitude</u> <p style="text-align: center;"><u>Use N and S rather than + and - Use E and W rather than + and -</u></p>
<b>Species retained</b> <u>Estimated catch retained on board by taxa (FAO species/group code/scientific name) in live weight (kg)</u>
<b>Species Discarded</b> <u>An estimation of the amount of living marine resources discarded by taxa if possible in live weight (kg)</u>
<b><u>Incidental bycatch of marine mammals, seabirds, reptiles and 'other species of concern'</u></b> <u>Yes / No</u> <u>For each species caught</u> <ul style="list-style-type: none"><li>• <u>Species name</u></li><li>• <u>Number alive</u></li><li>• <u>Number dead or injured</u></li></ul>

Commented [PS8]: To be resolved by MoP

2. Contracting Parties, CNCPs and PFEs shall ensure that the following gear-specific data on fishing activities, as applicable, are collected from all fishing vessels flying their flag in the Agreement Area.



<b>Data Set - Gear</b>
<p><b>Trawl</b>  <u>Cod end mesh Size (mm)</u>                      Trawl technique:                      Type of trawl: (S)ingle, (D)ouble or (T)ripple</p>
<p><b>Demersal Longline</b>                      Type of longline (Spanish, Trotline, Autoline)  <u>Total length (m)</u>                      Type of bait                      Hook size (mm)                      Hook spacing (m)                      Hook code or make Length of line (m)                      Number of hooks set                      Number hooks per cluster (if Trotline)                      Number of hooks lost (attached to lost sections of line)</p>
<p><u><b>Pelagic Longline (for SIOFA species) (provisional)</b></u></p> <p><u>Total length (m)</u>  <u>Total number of hooks in the set</u>  <u>Number of hooks between floats</u>  <u>Number of light-stick used in the set</u>  <u>Type of bait used in the set</u>  <u>Sea surface temperature at noon</u>  <u>(Length of floating line)</u>    <u>(Length of branch line)</u>    <u>(Distance between branch lines)</u></p>
<p><b>Trap/Pot</b>                      Pot type                      Type of line: Dropline or longline Length of line (m)                      Pot spacing (m)                      Number of pots set                      Number of pots lost                      Type of bait</p>
<p><b>Dahn/Drop Line/ Handline</b>                      Total number of hooks in the set  <u>Total number of line lifts in the set</u></p> <p>Number of hooks lost                      Hook code or make                      Type of leader used  <u>Total number of line lifts in the set</u>                      Type of bait used</p>

**Commented [P9]:** Request to the MoP if it's relevant for the prerogatives of SIOFA, IOTC or joint.

**Commented [PS10]:** JAPAN: As agreed yesterday, this is subject to the decision by IOTC & SIOFA in the near future. We understand that, meanwhile, we will discuss data items to collect. However, Japan also conducts tuna LL, and we need to discuss data items internally. So, decisions on data items in this time should be provisional. If oil-fish is decided to be handled by SIOFA, then we need to re-visit the data items to finalize.

**Commented [PS11]:** Inclusion of pelagic longline is subject to species agreed by the IOTC-SIOFA cooperative arrangement.

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Handline

Number of fishermen involved

Number of line lifts per fisherman

Number of hooks per line

Observer Data

1. Contracting Parties, CNCPs and PFEs shall, for all observed trips, collect and provide to the Secretariat the data contained in this Annex in accordance with the format set out below.
2. Contracting Parties, CNCPs and PFEs shall, where appropriate, ensure that observers are briefed and provided with documented length-frequency and biological sampling protocols and the specific priorities for the trip for the sampling activities documented below.
3. Contracting Parties, CNCPs and PFEs shall endeavor to collect tissue, otolith and/or stomach samples in accordance with any research programs developed by the Scientific Committee.

<b>Data Set - Observer data</b>
<p><b>Trip Details</b></p> <p>Trip Number                  Cruise details (start and end dates - YYYY.MON.DD) Date report is generated (UTC)                  Current vessel flag State (ISO 3-apha)                  Name of vessel</p>
<p><b>Observer Details</b></p> <p>Observer name and ID Nationality (ISO 3-apha)                  Employing organisation                  Contact name in organisation (Address/email/fax)                  Boarding location (UNLOCODE, if applicable or Latitude/Longitude) Boarding Date (UTC:YYYY.MON.DD)                  Disembarkation location (UNLOCODE, if applicable or Latitude/Longitude)                  Disembarkation date (UTC:YYYY.MON.DD)                  Time Zone (UTC +/-)</p>
<p><b>Length Frequency Data</b></p> <p>Representative and randomly sampled length-frequency data shall be collected for the target species (FAO species code)</p> <p><del>Optional: Representative and randomly sampled length-frequency data shall be collected for other main by-catch species.</del></p> <p>Length data shall be collected and recorded at the most precise level appropriate for the species (cm or mm and whether to the nearest unit or unit below) and the type of measurement used (total length, fork length, or standard length) shall also be recorded.</p> <p>Where possible, total weight of length-frequency samples should be recorded, or estimated and the method of estimation recorded</p>

<p>Where possible, Observers should determine and record sex of measured fish to generate length-frequency data stratified by sex</p> <p><u>Where possible, representative and randomly sampled length-frequency data shall be collected for other main by-catch species</u></p>	<p><b>Commented [P12]:</b> Here need to define what constitutes 'main' bycatch species</p>
<p><b>Biological Sampling</b></p> <p>Species</p> <p>Length (mm or cm) <u>and</u> <del>with record of</del> the type of length measurement used.</p> <p>Skates and rays:</p> <ul style="list-style-type: none"> <li>• <del>maximum</del> <u>Maximum</u> disk width shall be measured</li> </ul> <p>Sharks</p> <ul style="list-style-type: none"> <li>• Appropriate length measurement to be used should be selected for each species. As a default, total length should be measured.</li> </ul> <p>Weight (kg)</p> <p>Sex (male, female, immature (optional), unsexed (optional))</p> <p>Maturity stage (optional) and criteria/schedule used (optional)</p> <p>Gonad weight (g) (optional)</p> <p>Otoliths</p>	<p><b>Commented [P13]:</b> SC-06-16: <i>The measurements of fish with a tag (column « tags collected ») would be a duplicate of that noted in the "Tags" sheet. Further details are requested. We propose to only fulfill the "Tags" sheet to avoid these duplicates</i></p>
<p><b>Incidental bycatch of seabirds, mammals, turtles or 'other species of concern'</b></p> <p>The following data shall be collected for all seabirds, mammals, turtles and other species of concern caught in fishing operations <u>as much as possible</u>:</p> <ul style="list-style-type: none"> <li>• Species (identified taxonomically as far as possible, or accompanied by photographs if identification is difficult) and size</li> <li>• Estimated species abundance around fishing vessel</li> <li>• Species interactions with fishing gear</li> <li>• Count of the number of each species caught per tow or set</li> <li>• Fate of bycatch animal(s) (retained or released/discarded)</li> <li>• If released, life status (<del>vigorous</del>, alive, <del>lethargic</del>, injured, dead) upon release</li> <li>• If injured, what was the cause of injury?</li> <li>• If dead, then collect information or samples for onshore identification in accordance with pre-determined sampling protocols. Where this is not possible, observers may be required to collect sub-samples of identifying parts, as specified in biological sampling protocols             <ul style="list-style-type: none"> <li>o Record the type of interaction (hook/line entanglement/warp strike/net capture/other) if other, describe</li> </ul> </li> <li>• Sex of each individual for taxa where this is feasible from external observation, e.g. pinnipeds, small cetaceans or Elasmobranchii species</li> <li>• identify any circumstances or actions that may have contributed to the bycatch event? (E.g. tori line tangle, high levels of bait loss)</li> </ul>	<p><b>Commented [PS14]:</b> JAPAN: Bycatch data are requested to collect by both logbook and observer data. We propose to collect this information EITHER logbook or OBS data. Japan will collect by the OBS data.</p>
<p><b>Tag releases</b></p> <p><u>The following data shall be reported for all tagged fish, seabird, mammal or reptile</u></p> <p><u>Tag type, wording and colour</u></p> <p><u>Tag number</u></p> <p><u>Date and time of tagging</u></p> <p><u>Species</u></p>	

Animal length  
Type of length  
Animal sex (F=female, M=male, I=indeterminate, D=not examined)  
Precise position (Lat/Lon) of release  
Animal status at release (injured/uninjured)

**Tag Recoveries**  
 The following data shall be collected for all recovered fish, seabird, mammal or reptile tags if the organism is dead, to be retained, or alive:

- Name of observer
- Name of vessel
- International radio call sign (if any)
- Vessel flag State (ISO 3-apha)
- Collect, label (with all details below) and store the actual tags for later return to the tagging agency
- Species from which tag recovered
- Tag colour, wording and type of tag (spaghetti, archival)
- Tag numbers
- Date and time of capture (UTC)
- Location of capture (Lat/Lon, to the nearest 1 minute)
- Animal length / size (cm or mm) with description of what measurement was taken (such as total length, fork length, etc)
- Sex (F=female, M=male, I=indeterminate, D=not examined)
- Whether the tags were found during a period of fishing that was being observed (Y/N)

**Hierarchies for Observer Data collection**

**Fishing Operation Information**  
 All vessel and tow / set / effort information.

**Reporting of Catches**  
 Record time, weight of catch sampled versus total catch or effort (e.g. number of hooks), and total numbers of each species caught  
 Identification and counts of seabirds, mammals, reptiles (e.g. turtles), sensitive benthic species and vulnerable species  
 Record numbers or weights of each species retained or discarded Record instances of depredation, where appropriate

**Biological Sampling**  
 Check for presence of tags  
 Length-frequency data for Target species (FAO species code)  
 Basic biological data (sex, maturity) for Target species (FAO species code)  
 Length-frequency data for main by-catch species  
 Otoliths (and stomach samples, if being collected) for Target species (FAO species code)  
 Basic biological data for by-catch species  
 Biological samples of by-catch species (if being collected)

**Commented [P15]:** SC-06-16:  
*As combination of number and color does not create unique values, we propose to add a "wording" column*

Take photos
<p><b>For trawl fishing activities ONLY</b></p> <p><b>Gear details</b>            Net ID            Net type (ISSFCV)            Headrope length (m)            Groundrope length (m)            Bobbin diameter (cm)            Otterboard to wing length (m)            Horizontal Opening (m)            Vertical Opening (m)</p> <p><b>Codend mesh</b>            Mesh size (cm),            -codend circumference (cm),            Orientation            Mesh type (diamond, square, etc)</p> <p><b>Otterboard</b>            Type, weight (kg)</p> <p><b>Net design</b>            Net design description including make, model etc</p>
<p><b>Trawl details</b>            Trawl Number            Gear            Trawl type: Research or Commercial (R/C)            Observed (Yes/No)            Target Species (FAO species code)            Date Start (YYYY.MON.DD)            Date Finish (YYYY.MON.DD)            Time net deployed (hh:mm)            Time net retrieved (hh:mm)</p> <p><b>Start and End Fishing</b></p> <p>For <del>Trawl fishing</del> <del>for</del> bottom trawl "start" is defined as when the groundrope is on the bottom, "end" is when the <u>hauling starts to end</u>.  <del>For</del> <del>for</del> midwater trawl "start" is defined as when the fishing gear is at target fishing depth, "end" is when the <u>hauling starts to end</u>. <u>If it is not possible to record, collect numbers that the gear touches the sea bottom accidentally in each set</u></p> <p>Time (hh:mm)</p> <p><u>Precise</u> Latitude  <u>Precise</u> Longitude            Trawl Depth (m)            Bottom Depth (m)</p> <p><b>Other</b></p>

**Commented [PS16]:** JAPAN: For the mid water and aimed trawl, technically it is difficult to record start & end position. Thus, we propose to add this sentence.

Offal discharged during shooting (Y/N)  
 Offal discharged during hauling (Y/N)  
 Trawl speed (knots)  
 Horizontal opening (m)  
 Total catch (kg)

**Observed catch composition**  
 Observer ID  
 Was Haul observed for fish/invertebrate by-catch (Y/N):  
 Record the total weight of all sub-samples for this shot (kg):

**Species**  
 FAO species code  
 Scientific name  
~~Estimated Total~~ retained catch weight (kg) or number of individuals  
~~Estimated Total~~ discarded catch weight (kg) or number of individuals

**Bycatch mitigation measures employed:**  
 Were bird scaring (tori) lines in use? (Yes/No)  
 Were bird bafflers in use? (Yes/No)

**Trawl warp strike (to be monitored for 15 minutes immediately after the net has been deployed). (optional)**  
 Trawl number (optional)  
 Name of observer (optional)  
 Start observation time (hh:mm) (optional)  
 End observation time (hh:mm) (optional)

**Number of heavy warp strikes (record for Albatross, Giant Petrels, White chinned petrels, Other petrels)**

Air  
 Water  
 Sinker

**Seabird abundance observation**  
 Seabirds present in observation area (y/n)  
 Estimated numbers of abundance (by species)

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**For Longline fishing activities ONLY**

**Longline Description**  
 Longline Type (FFSSCV)  
 Period in which the gear was used (YYYY.MON.DD)  
 Start and end date (YYYY.MON.DD)  
 Target Species (FAO species code)

**Main Line**  
 Material  
 Diameter (mm)

**Commented [PS17]:** JAPAN: As it is not possible to collect catch weights (retained and discarded) of all species (more than 100?) in the limited time and man power, we need to add this.

Integrated ~~weight~~ ~~Wt~~ (g/m)

**Branch Lines**

Material  
Length (M)  
Spacing (m)

**Hooks**

Type (e.g.: J shaped, Circular, etc.)  
Make  
Size (inch)  
Total length (mm)  
Shank (mm)  
Gape (mm)  
Throat (mm)  
Front length (mm)  
Usual setting position  
Line off bottom (m) (optional for pelagic longline)  
Hooks off bottom (m) (optional for pelagic longline)  
Method of baiting (manual/automatic)  
Automatic baiting equipment (make and model)

**Hook sinkers**

Size (g)  
Position from hook (mm)  
Offal dumping position (port, starboard, stern)  
Longline setting position (port, starboard, stern)  
Offal dumping during hauling (never, occasionally, always)  
Propeller rotation direction (clockwise/anti-clockwise)  
Detail the weight and distance between the line weights for the longline system used  
Single (Auto) Line (kg:m)  
Double (Spanish) Line (kg:m)  
Trotline (vertical droppers/trots attached to a mainline) (kg:m)

**General Streamer Line Description**

Vessel equipped with a streamer line (y/n)  
Number of streamer lines regularly set  
Streamer line position (port, starboard, stern)  
Streamer line length (m)  
Streamer length min/max (m)  
Attached height above water (m)  
Distance between streamers (m)  
Number of streamers  
Streamer design (single or paired)  
Aerial extent of line (m)  
Method used to assess aerial extent  
Streamer material  
Streamer line diameter (mm)  
Streamer colours  
Streamer line over bait entry position? (y/n/u)  
Distance from stern to bait entry point (m)



Towed object (Y/N)  
Horizontal distance from bait entry point to streamer line (m)

**Daily setting observations**

Set Number (as referenced in catch and effort log)  
Set Type: Research or Commercial (R/C)  
Longline Type Code (FSSCV)  
Trotline cetacean exclusion device used (Y/N)  
Date of observation (YYYY/MON/DDy)

**Setting information**

Vessel setting speed (knots)  
Number sets unobserved since last set

**Start and End setting for each haul**

Date (YYYY/MON/DD)  
Time (hh:mm)  
[Precise](#) Latitude  
[Precise](#) Longitude  
Bottom Depth (m)  
Total length of longline set (km)  
Total number of hooks for the set

**For each Observation**

Start date (YYYY.MON.DD)  
Start time (hh:mm)  
End date (YYYY.MON.DD)  
End time (hh:mm)

**Details of Longline Setting**

Main line length (m)  
Number of hooks set  
Number of Baskets/Magazines Set  
Number of hooks per Basket/Magazine  
Percentage hooks baited  
Distance between branches (m)  
Distance of hooks off bottom (m) [\(optional for pelagic longline\)](#)  
Bait species (FAO species code)  
Deck lights during setting (On, Off)  
Streamer lines used (Yes, No)  
Number of streamer lines used Offal dumping during setting (Yes, No)  
Bait entry position (Port, Starboard, Stern)

**Daily hauling observations**

Set number  
Date of observation (YYYY.MON.DD)

**Hauling Information**

Number of hooks observed for seabird and fish by-catch (tally period)  
Offal dumped during hauling (Yes / No)

**Gear lost**  
 Number of sections lost  
 Number of hooks lost that were attached to lost sections of the longline  
 Number of other hooks lost (excluding hooks attached to lost sections)

**Observed catch composition**  
 Was Haul observed for fish/invertebrate by-catch (Y/N):  
 Estimate percentage of the haul observed for by-catch (%)

**Species**  
 Species code (FAO species code)  
 Total retained catch weight (kg) or total number  
 Total discarded catch weight (kg) or total number

**Species Retained**  
 Observed number retained  
 Observed number retained with tags

**Species Discarded**  
 Observed number discarded  
 Observed number discarded dead  
 Observed number discarded alive

**Species Lost**  
 Observed number lost/dropped off at surface

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**For Trapping/Potting Fishing Activities ONLY**

**Gear type**  
 pot type (with drawing)  
 mesh size (mm)

**Funnel position**  
~~e~~Orientation  
~~a~~Aperture (cm)  
~~n~~Number of chambers  
 Escape port present (y/n)  
~~dimensions~~Dimensions (cm) of escape port

**Processing Details and Conversion Factors (CF)**  
 Haul Number  
 Name of observer  
 Species Code (FAO species code)  
 Processing Code  
 Length Range (Minimum Maximum)  
 Number of individuals  
 Live Weight (kg)  
 Processed Weight (kg)  
 Grade  
 Conversion Factor

**Commented [P18]:** During longline observation, fishery observers can only report catch numbers by species. The protocol makes it impossible to weigh.

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**Set and haul details**

Set Number

Date of observation YYYY.MON.DD)

Set Type: Research or Commercial (R/C)

Target species (FAO species code)

Offal dumped during setting (Yes / No)

Offal dumped during hauling (Yes / No)

**Start and End setting. Repeat for hauling**

Date (YYYY.MON.DD)

Time (:mm)

~~Precise~~ Latitude~~Precise~~ Longitude~~bottom~~ ~~Bottom~~ depth (m)**Gear Details**

Length of line (m)

Type of line Pot spacing (m)

Bait type

**Setting**~~number~~ ~~Number~~ of pots set~~number~~ ~~Number~~ of pots observed**Hauling**

number of pots hauled

number of pots observed

**Observed interactions with birds or marine mammals**

Species Code (FAO species code)

**~~At~~ Setting**

Abundance (500m radius)

Gear interaction (y/n)

**~~At~~ Hauling**

Abundance (500m radius)

Gear interaction (y/n)

**Observed catch composition**

Name of observer

Was Haul observed for fish/invertebrate by-catch (Y/N):

Estimate percentage of the haul observed for by-catch (%):

**Number of pots observed for by-catch:**

Species Code (FAO species code)

~~T~~total retained catch weight (kg)~~total~~ ~~Total~~ discarded catch weight (kg)**Species Retained**~~observed~~ ~~Observed~~ number retained~~observed~~ ~~Observed~~ number retained with tags

**Species Discarded**

~~observed-Observed~~ number discarded  
~~observed-Observed~~ number discarded dead  
~~observed-Observed~~ number discarded alive

**Species Lost**

~~observed-Observed~~ number lost/dropped off at surface

**For Dahn/Drop lining/~~Handline fishing~~ activity ONLY**

Commented [PS20]: proposed as a new section (next below)

**Dahn/Dropline Description**

Line Type  
 Period in which the gear was used (YYYY.MON.DD) Start and end date  
 Target species (FAO species code)

**Main Line**

Material  
 Diameter (mm)  
 Integrated Wt (g/m)

**Hooks**

Type (e.g.: J shaped, Circular, etc.)  
 Make  
 Size (inch)  
 Total length (mm)  
 Shank (mm)  
 Gape (mm)  
 Throat (mm)  
 Front length (mm)  
 Usual setting position  
 Line off bottom (m)  
 Hooks off bottom (m)  
 Method of baiting (manual/automatic)  
 Automatic baiting equipment (make and model)

**Offal**

Offal dumping position (port, starboard, stern)  
~~offal-Offal~~ dumping during hauling (never, occasionally, always)  
 Propeller rotation direction (clockwise/anti-clockwise)

**General Streamer Line Description**

Vessel equipped with a streamer line (y/n)  
 Number of streamer lines regularly set  
 Streamer line position (port, starboard, stern)  
 Streamer line length (m)  
 Streamer length min/max (m)  
 Attached height above water (m)  
 Distance between streamers (m)  
 Number of streamers  
 Streamer design (single or paired)

Ariel extent of line (m)  
 Method used to assess aerial extent  
 Streamer material  
 Streamer line diameter (mm)  
 Streamer colours  
 Streamer line over bait entry position? (y/n/u)  
 Distance from stern to bait entry point (m)  
 Horizontal distance from bait entry point to streamer line (m)

***Details of Dahn/Dropline/~~Handline~~ Setting***

Main line length (m)  
 Number of hooks set  
 Percentage hooks baited  
 Distance between branches/snoods (m)  
 Distance of hooks off bottom (m)  
 Bait species  
 Bait size  
 Bait proportion  
 Deck lights during setting (On, Off)  
 Streamer lines used (Yes, No)  
 Number of streamer lines used Offal dumping during setting (Yes, No)  
 Daylight period  
 Moonlight  
 Bait entry position (Port, Starboard, Stern)  
 Vessel setting speed (knots)

***Start and End setting. Repeat for Start and End of hauling***

Date (YYYY.MON.DD)  
 Time (hh:mm)  
Precise Latitude  
Precise Longitude  
 Bottom Depth (m)

***Gear lost***

Number of sections lost  
 Number of hooks lost that were attached to lost sections of the dahn/dropline  
 Number of other hooks lost (excluding hooks attached to lost sections)

***Observed catch composition***

Observer ID  
 Was Haul observed for fish/invertebrate by-catch (Y/N):  
 Estimate percentage of the haul observed for by-catch (%)  
 Species (data shall be collected for each observed species)  
 Species code (FAO species code)  
 total retained catch weight (kg)  
 total discarded catch weight (kg)

***Species Retained***

observed number retained  
 observed number retained with tags

***Species Discarded***

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observed number discarded  
 observed number discarded dead  
 observed number discarded alive

**Species Lost**  
 observed number lost/dropped off at surface

**Handline fishing activity**

**Handline Description**  
Target species (FAO species code)

**Main Line**  
Material  
Diameter (mm)  
Integrated Wt (g/m)

**Hooks**  
Type (e.g.: J shaped, Circular, etc.)  
Make  
Size (inch)  
Total length (mm)  
Shank (mm)  
Gape (mm)  
Throat (mm)  
Front length (mm)  
Usual setting position  
Line off bottom (m)  
Hooks off bottom (m)

**Offal**  
Offal dumping position (port, starboard, stern)  
Offal dumping during hauling (never, occasionally, always)  
Propeller rotation direction (clockwise/anti-clockwise)

**Details of Handline Operation**

Main line length (m)  
Number of fishermen operating handlines  
Number of line lifts per fisherman (average)  
Number of hooks per line  
 Percentage hooks baited  
 Bait species  
 Bait size  
 Bait proportion  
 Deck lights during setting (On, Off)

**Start and End time of operation.**  
**[An operation is a defined period of fishing between start and end date]**  
Date (YYYY.MON.DD)  
Time (hh:mm)  
 Latitude

**Commented [PS21]:** SPECIFIC SECTION FOR HANDLINE FISHING PROPOSED BY THAILAND

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<p><u>Longitude</u> <u>Bottom Depth (m)</u></p> <p><b>Gear lost</b> <u>Number of hooks lost</u></p> <p><b>Observed catch composition</b> <u>Observer ID</u> <u>Was Haul observed for fish/invertebrate by-catch (Y/N):</u> <u>Estimate percentage of the haul observed for by-catch (%)</u> <u>Species (data shall be collected for each observed species)</u> <u>Species code (FAO species code)</u> <u>total retained catch weight (kg)</u> <u>total discarded catch weight (kg)</u></p> <p><b>Species Retained</b> <u>observed number retained</u> <u>observed number retained with tags</u></p> <p><b>Species Discarded</b> <u>observed number discarded</u> <u>observed number discarded dead</u> <u>observed number discarded alive</u></p> <p><b>Species Lost</b> <u>observed number lost/dropped off at surface</u></p>	<p>Formatted: Left</p> <p>Formatted: Font: Not Bold</p> <p>Formatted: Font: Not Bold</p> <p>Formatted: Font: Not Bold</p> <p>Formatted: Font: Not Bold</p> <p>Formatted: Font: Not Bold</p> <p>Formatted: Font: Not Bold</p> <p>Formatted: Pattern: Clear (White)</p> <p>Formatted: Font: Not Bold</p>
<p><b>Interactions with Vulnerable Marine Ecosystems (VME)</b></p> <p><b>General information</b> Name of observer Name of vessel Date Trip number Set number</p> <p><b>VME location</b> Start and end positions of all gear deployments and/or observations. (Latitude/longitude) Depth(s) fished (m)</p> <p><b>Fishing Gear</b> Indicate fishing gears used at each location</p>	

<p><b>VME Taxa</b></p> <p>a) Species (identified taxonomically as far as possible, or accompanied by a photograph where identification is difficult).</p> <p>b) An estimate of the quantity (weight (kg) or volume (m3)) of each listed benthic species caught in the tow <u>(and the unit of measurement)</u>.</p> <p>c) An overall estimate of the total quantity (weight (kg) or volume (m3)) of all invertebrate benthic species caught in the tow. <u>(and the unit of measurement)</u></p> <p>d) Where possible, and particularly for new or scarce benthic species which do not appear in</p>	<p><b>Commented [P22]:</b> SC-06-16: <i>Few discrepancies between the "codes help" sheet and the document « PAEWG-02-09 SIOFA VME taxa guide v.0.1.pdf » are noted. It is necessary to specify which document to refer to.</i></p> <p><b>Commented [P23]:</b> SC-06-16: <i>Clarifications are requested on the definition of « quantity estimate » column. If it corresponds to VME-indicator units (sum of total volume + total weight) we propose to change the column comment in order to be more precise. If it is to note weight (Kg) or volume (m3) with no distinction, in this case we propose to add a column to separate weight and volume data.</i></p>
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ID guides, whole samples should be collected and suitably preserved for identification on shore.

e) Collect representative biological samples from the entire VME catch. (Biological samples shall be collected and frozen when requested by the scientific authority in a Contracting Party). For some coral species that are under the CITES list photographs should be taken.

Other benthos taxa

Yes/No

For each retained caught of benthic organisms species

Scientific names (identified at the lowest taxon level possible)

FAO code (if available)

Estimation of the amount caught



Specifications for the Exchange of Data

1. Coordinated Universal Time (UTC) shall be used to describe times, using the following submission format: YYYY-MON-DDThh:mm:ss where:
  - a. YYYY - represents a 4-digit year e.g. "2007"
  - b. MON - represents a 3-character month abbreviation e.g. "APR"
  - c. DD - represents a 2-digit day e.g. "05"
  - d. T - is a space separator
  - e. hh - represents hours based on the 24hr clock (length = 2 digits) e.g. "16"
  - f. mm - represents minutes (length = 2 digits) e.g. "05"
  - g. ss - represent seconds (length = 2 digits) e.g. "00"

*Example*

2003-JUL-17T13:10:00 = 1.10pm (1310h), 17 July 2003

~~2. Coordinates Decimal degrees (WGS84) are to be used to describe precise locations and the following standards shall be used: Degrees minutes seconds (DD°MM'SS"), or Degrees minute decimal (DD°MM.XX) or Decimal degrees (DD.XXXX). Add N or S to indicated North or South for latitudes. Add E to indicate the Eastern longitude (the SIOFA Area is always in the Eastern longitudes), for decimal degrees, add minus for southern latitudes.~~

~~Examples:~~

- ~~Latitude= 42°37'06" S Longitude= 48°03'58" E.~~
- ~~Latitude= 35°09.70" S Longitude= 51°12.94"~~
- ~~Latitude= -10.0386 Longitude= 61.7088~~

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~~2. The following standard shall be used for the submission of latitudinal/ longitudinal information:~~

- ~~a. Northern latitudes and eastern longitudes should be indicated by the use of [unsigned] positive decimal degree values~~
- ~~b. Southern latitudes and western longitudes should be indicated by the use of negative decimal degree values~~

<del>Latitude – Degrees: Represented as positive (unsigned) or negative numbers from 0 to 89.99</del>	<del>E.g. If value = 83.2, this means 83.2° N E.g. if value = -83.2, this means 83.2° S</del>
<del>Longitude – Degrees: Represented as positive (unsigned) or negative numbers from 0 to 179.99</del>	<del>E.g. If value = 83.2, this means 83.2° E E.g. if value = -83.2, this means 83.2° W</del>

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3. Metric units of measure be used, specifically:

- a. ~~Tonnes or~~ kilograms are to be used to describe catch weight
- b. Metres are to be used to describe height, width, depth, beam or length
- c. Cubic metres are to be used to describe volume
- d. Kilowatts are to be used to describe engine power

**Role and tasks of the scientific observer**

1. The function of scientific observers on board vessels engaged in harvesting of marine living resources is to independently observe and report on the operation of fishing activities in the SIOFA Area.
2. In fulfilling this function, scientific observers will undertake the following tasks:
  - a. Record details of vessel operations, including inter alia, times of, searching, fishing, transit etc., and details of hauls;
  - b. Take biological samples of catches;
  - c. Record biological data of species caught;
  - d. Record by-catch information, such as species, quantity and other biological data [as specified in Annex B]
  - e. Record interactions with seabirds, marine mammals, and marine reptiles
  - f. Record information on catch including data relating to processed conversion factors;
  - g. prepare reports of their observations for their respective national authorities;
  - h. collect and report data on sightings fishing vessels, unmarked fishing gear, and recovery of fishing gear in the SIOFA Area, including vessel type identification, vessel position and activity and gear type;
  - i. collect information on fishing gear loss and waste disposal by the fishing vessels at sea.

## **ANNEX F: PAEWG and SERA WG workplans**

# PAEWG work plan

Project	Task no	Task	Proposition	Situation	Beginning date	PAEWG01 (2019)	PAEWG02 (2020)	PAEWG03 (2021)	PAEWG04 (2022)	PAEWG05 (2023)	Durée	Budget estimated	Budget adopted	Consultant	Comments	
1. Develop SIOFA definition of VME indicator species:	1	<ul style="list-style-type: none"> <li>Consider VME indicator species identified in other relevant RFMOs or other bodies (e.g. CCAMLR, SPRFMO, etc.)</li> <li>Test whether these are appropriate for SIOFA area</li> <li>Development of pictorial guides to VME indicator species</li> </ul>						Done	To be updated			0				
2. BFIA Trawl and Longline consultancy - [3 months trawl, 2 months longline]	2	<ul style="list-style-type: none"> <li>Refine process to advance, given the disparate nature of information available.</li> <li>Undertake cumulative impact assessment for groups of fisheries/gear (eg orange roughy bottom trawling, long lining, Saya de Malha trawl) using a consistent methodology across the gear.</li> <li>Work plans updated at SC5 (SC5 Report, Annex I)</li> </ul>	Version1: SC04 ANNEX T	Not adopted MoP 05		Beginning		End			6 month	65,925.00				
			Version2: SC05 ANNEX G	Current Presentation to PAEWG 03 Adopted MoP06	2020		Beginning		End			5 month	57,870.00	57,870	Sophie Mormede	Payment done at 3/5 with AUS voluntary contribution[55000 AUD], and 2/5 with MoP6 Budget [25900€]. [solde positif > 2750 €]
3. Fishing footprint	3	to develop an appropriate SIOFA fishing footprint (CMM 2019/01 MoP request)	SC5-SC6 papers	on going, presentation to SC6								0.00				
4. Threshold	4	Review of trawl fisheries threshold levels for VME encounters	No proposition												Perhaps recruitment of consultant to prepare a proposal?	
5. VME Habitat Mapping	5	<ul style="list-style-type: none"> <li>"VME bioindicator species" consist in a series of taxa which presence, according to various observation thresholds (e.g. related to biomass, abundance, functional attributes), is considered as a proxy of presence of Vulnerable Marine Ecosystems (VME) to be protected. VME risk areas consist in areas where VME are likely to occur and may be impacted by a range of different fishing activities.</li> <li>According to FAO experts recommendations, PAEWG has therefore indicated that VME indicator taxa distribution models in combination with empirical data sets on the known distribution and status of VME indicator taxa would be useful tools to develop in order to map VME risk areas over the SIOFA region.</li> </ul>	Version 1: SC04 ANNEX I	Current Presentation to PAEWG 03 and 04 Adopted MoP05	2020		Beginning		End PAEWG 04		24 month	120,910.00	96,000 €	Boris Leroy	Funds budgeted as a first matching participation to a EU Grant Agreement for a total amount of EURO 96 000, budgeted by a EU grant of 78380€, and 17620€ by MoP6 and MoP7 budget.	
6. Bioregionalisation	6.0	<ul style="list-style-type: none"> <li>PAEWG has recognised the usefulness of bioregionalisation approach to help in the design of Protected Areas in the SIOFA area. Bioregionalisation searches for smaller spatial entities within a larger area using a range of environmental information. Ecoregionalisation seeks the same goal using biotic parameters such as Species Distribution Models (SDM).</li> <li>PAEWG and SC have recommended to further build upon PAEWG-01-12-results to develop a more robust bioregionalisation.</li> </ul>	Version 1: SC04 ANNEX k	Not adopted MoP 05				Start proposed		End proposed	24 month	120,910.00	To be funded			
	6.1	Bioregionalisation searches for smaller spatial entities within a larger area using a range of environmental information. Ecoregionalisation seeks the same goal using biotic parameters such as Species Distribution Models (SDM), including:	Version 2: SC06 ANNEX ???	To be proposed MoP 07				Even planned on EU Grant, and SIOFA funding		End proposed on PAEWG 05		12 month	60,000.00	To be approved (include the EU objectives and grant)		<b>Option 1:</b> one ToR 60000 € including: 15000 € (to be adopted) + 45000 € from the EU grant
		6.1 Investigation of a holistic framework for assessing and preventing Significant Adverse Impacts on VMEs		EU Grant Agreement	TOR in progress (April 2021)			Even planned on EU Grant		No later than End PAEWG 05			15000			<b>Option 2</b> one ToR per task
		6.2 Support work on benthic bioregionalization (underway) and (future) investigate possible habitat suitability modelling		EU Grant Agreement	TOR in progress (April 2021)			Even planned on EU Grant		No later than End PAEWG 05			15000			<b>Option 2</b> one ToR per task
6.3 Investigation of representative protected areas (relevant to the bioregionalization work)			EU Grant Agreement	TOR in progress (April 2021)			Even planned on EU Grant		No later than End PAEWG 05			15000			<b>Option 2</b> one ToR per task	

SERAWG work plan

Source of Budget (EURO) (K=1,000)		SIOFA budget (except 2nd HS & RP consultant by the EU fund)												to be decided later					
Year		2021												2022		2023			
Month		3	4	5	6	7	8	9	10	11	12	1	2	3	4 - 12		1 - 12		
Meetings		WG3 +SC6													WG4 +SC7				
Harvest strategies (HS) and Reference Points (RP)													[2nd] Consultant (15K)						
ERA	Sea bird	National scientists																	
	Sharks	National scientists																	
	Teleosts	Australia																	
Orange roughy	Acoustic data			Acoustic data (2018-2020) process (Consultant) (20K)															
	Stock assessment												Consultant (25K)						
Alfonsino	Acoustic data																Acoustic data process (Consultant) (15K) if the investigation (2021) proves feasibility to use.		
	Estimation of the growth equation (WEST)	National scientists (encouraged to do this work) Aged data by otolith (Fish Ageing Services) are available & not yet analyzed (n=250 each ♂ & ♀)																	
	Age validation using bomb calorimetry																	Consultant (15K)	
	Stock assessment (with more size, other biological and acoustic data if feasible)																	Consultant (25K)	
Patagonian toothfish (note) SIOFA needs a mechanism for formally communicating collaborative works to CCAMLR at an organisational level)	Stock analyses	National scientists and CCAMLR																	
	Tagging	National scientists and CCAMLR																	
	Stock structure (molecular analysis)													(1) SIOFA(Del Cano) and CCAMLR (Crozet, Kerguelen & Prince Edward) (2) SIOFA (William's Ridge) and CCAMLR(Kerguelen's and Heard & McDonald's) (EU, France Territories, Japan & Australia (CONSULTANT subject to the SC review for the similar work by the UK) (Japan's cooperation is subject to the tissue sampling protocol)					
	Growth equation (otolith)													Collection of otolith and ageing (Del Cano Rise and William's Ridge) (EU, France Territories, Japan & Australia ) (CONSULTANT) (Japan will provide aged data by otolith)					

**ANNEX G SC proposed research activities with estimated budgets**

	2021-2022 Activities	2020-2021 Budget	Priority level at SC5	Situation of the Project	Comment
SERAWG	Development of T + L Reference points and Harvest strategies Year 1 (2 years total 30,000) (MoP 6 approved)	15,000	High	Completed	1st part (2020) of the Researches to develop Harvest Strategies for Key target species in SIOFA (Budget 1st part : MoP6)
PAEWG	BFIA Trawl and Longline consultancy - [3 months trawl, 2 months longline]	57,870	High	Current	Expense distribution : 3/5 Australia Voluntary contribution (55000 AUD ) 2/5 MoP6 This research will be updated after the SC comment and availability of new data
PAEWG	VME Habitat Mapping	5620	High	Current	EU 54866 +SIOFA 12 000 + SIOFA5620+ EU 23514 (Once final report received) = 96 000. The EU grant's sold 23514€ will be obtain once the final report will be send to EU
SERAWG	Orange roughy acoustic data process (2018-2020) (Consultant)	20,000	High	TOR in progress (April 2021)	Budget validated by MoP7 (55620 =20000 + 25000 + 5000 + 5620)
SERAWG	Orange roughy stock assessment	25,000	High	TOR in progress (Sept 2021)	Budget validated by MoP7 (55620 = 20000 +25000 + 5000 + 5620)
SERAWG	Alfonsino Investigation of the acoustic data	5,000	High	TOR in progress (July 2021)	Budget validated by MoP7 (55620 = 20000 + 25000 +5000 + 5620)
SERAWG	Stock structure studies (orange roughy, alfonsino, tooth fish)	EU Grant Agreement	25000	TOR in progress (April 2021)	
SERAWG	Development of T + L Reference points and Harvest strategies Phase 2	15000	High	ToR in progress (Sept 2021)	2nd part (2021) of the Researches to develop Harvest Strategies for Key target species in SIOFA. Funds are available from the remained funds( >41 K€) on the Scientific Research account
PAEWG	Updates to the ERA work - Considering seabirds & mammals	EU Grant Agreement	10000	TOR in progress (May 2021)	
SC + SEC	Coordinate, plan and assist Implementation of Science Consultancy to support the SC Working Plan	EU Grant Agreement	15000	In progress	
SC + SEC	Develop the database system and analyses.	EU Grant Agreement	20000	TOR in progress (May 2021)	
<b>PROPOSALS TO MOP8</b>					
	2022-2023 Activities	2022 budget	Budget obtained from EU Grant	Priority (SC6)	COMMENTS
PAEWG	'Bioregionalisation searches for smaller spatial entities within a larger area using a range of environmental information.	15,000			
PAEWG	Investigation of a holistic framework for assessing and preventing Significant Adverse Impacts on VMEs	EU Grant Agreement	15000	TOR in progress (April 2021)	To be started after the VME mapping work and to be delivered in 2023
PAEWG	Support work on benthic bioregionalization (underway) and (future) investigate possible habitat suitability modelling	EU Grant Agreement	15000	TOR in progress (April 2021)	To be started after the VME mapping work and to be delivered in 2023
PAEWG	Investigation of representative protected areas (relevant to the bioregionalization work)	EU Grant Agreement	15000	TOR in progress (April 2021)	
SERAWG	Acoustic data process if the investigation (2021) proves the feasibility to use.	15,000			To be confirmed after the investigation done in 2021
SERAWG	Alfonsino Assessment	EU Grant Agreement	25,000	Hight	
SERAWG	Age validation using bomb calorimetry	EU Grant Agreement	15,000	Hight	Additional otolith ageing - growth equation for all ages
SERAWG	Saya de Malha Bank Fisheries	EU Grant Agreement	15000		
SERAWG	Updates to the ERA work - update the Teleosts ERAs with better and more recent input data				Funded by AUS
SC	Biologically appropriate catch limits for Patagonian Toothfish in Del Cano Rise and Williams Ridge				Not budgeted. To be confirmed if to be taken in charge by CCPs concerned, or need a budget line.
SC + SEC	Patagonian Toothfish tagging program				Tags from CCAMLR to be used. Order could be done by Cies on the following link ( <a href="https://www.ccamlr.org/en/science/tag-ordering-information">https://www.ccamlr.org/en/science/tag-ordering-information</a> )
SC + SEC	Travel and accommodation for Expert				To be provisioned/included within each ToR and included as a specific (optional) line in the Contract value
	Balance suggested for the 2022 Budget line Contract for Specific Service	30000			

Legend

	Activity, planned, budgeted and completed
	Activity, planned, budgeted and current
	Activity budgetted, planned to begin in 2021 (ToR in progress)
	Activity budgetted planned to be done in 2022
	Activity, planned, non budgeted