

Report of the Second Meeting of the Southern Indian Ocean Fisheries Agreement (SIOFA)
Scientific Committee Protected Areas and Ecosystems Working Group (PAEWG)

Held on 26 May and 16 June 2020 via videoconference using WebEx, as well as via email
correspondence

Items not addressed this year due to the reduced format and postponed to 2021 are in grey.

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Agenda item 1 – Opening

Agenda item 1.1 Opening statement from the Chair

Agenda item 1.2 Introduction of participants

1. The meeting was chaired by Mr Patrice Pruvost of France (Territories).
2. The list of 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 meeting documents (**Annex C**) were confirmed.

Agenda item 2.3 Appointment of rapporteurs

5. Mr Alex Meyer (Urban Connections, Tokyo) was appointed as rapporteur with assistance from delegations.

Agenda item 2.4 Review of functions and terms of reference

6. The Chair noted that there were no proposed changes to the functions and terms of reference of the PAEWG.

Agenda item 3 – Vulnerable Marine Ecosystems (VME)

Agenda item 3.1 VME taxa list and pictorial identification card

Agenda item 3.2 VME thresholds for trawl gears

7. The Chair reminded the participants that the Meeting of the Parties (MoP) requested the Scientific Committee (SC) to progress the work to identify a suitable threshold for trawl gears. This should include a review of the methods used by CCPs to establish their existing thresholds, as well as development of a consistent threshold based on consolidated records of benthic bycatch data for trawl gears (MoP 6 para 42).
8. The Chair reminded the PAEWG that Conservation and Management Measure (CMM) 2019-01 (Interim Management of Bottom Fishing) defined a VME taxa list and that the Secretariat has submitted an updated SIOFA VME taxa guide this year. However, due to the reduced format of the PAEWG, it will not be discussed this year.
9. The Chair presented a summary of the VME thresholds of each CCP, as well as the longline VME thresholds applied by the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR), to facilitate the discussions of the PAEWG.
10. The VME thresholds specified in each CCP's Bottom Fishing Impact Assessments (BFIA) are as follows:

- Australia: Australia has adopted protocols which, similar to other RFMOs such as the North East Atlantic Fisheries Commission (NEAFC), the South East Atlantic Fisheries Organisation (SEAFO) and the Northwest Atlantic Fisheries Organization (NAFO), use a broad definition of 'evidence of VMEs' (corals and sponges) with a trigger threshold of 50 kg for coral and sponge.
 - Cook Islands: The Ministry of Marine Resources (MMR) VME encounter protocol requires that the presence of more than 60 kg of live coral and/or 400 kg of live sponge indicates a VME encounter that must be reported to the Director Offshore at MMR within 24 hours. If any subsequent trawl within 1 nM of the encounter trawl contains more than 30 kg of live coral/and or 200 kg of live sponge the vessel must not fish within 5 nM of that area until the MMR has completed an investigation.
 - European Union: The EU countries will ensure that any vessels flying its flag comply with any Conservation Measures adopted at SIOFA for the purpose of preventing significant adverse impacts on VMEs.
 - France Overseas Territories: The VME conservation rules from CCAMLR are applied in the French fishing zones within the SIOFA Area through the French national legal framework. (France (Territories) is now also abiding by CMM 2019-01 (Interim Management of Bottom Fishing).)
 - Japan: Japan had been operating under voluntary measures that temporarily establish a VME encounter threshold (50 kg for corals) and a move-on rule (1 mile) in accordance with Article 11, CMM 2018-01 when the observer recognises that the trawl operations touch the seafloor and there are VME species bycatches. As for the bottom longline fisheries, Japan temporarily applies those measures used in CCAMLR.
 - Thailand: Thailand's measures include mandatory levels of observer coverage, move-on requirements triggered by encounters of certain levels of evidence of the presence of VMEs (>60 kg accidental catch of corals and >700 kg accidental catch of sponges).
11. The PAEWG proposed that CCPs with trawl fisheries could form a small working group to work intersessionally to compile and analyse benthic bycatch data for quantitatively informing the setting of a VME threshold for trawl gears in SIOFA. However, the PAEWG also noted that the setting of thresholds is not an entirely scientific question and must be considered holistically together with other management measures.
 12. The PAEWG agreed with the approach proposed and noted that the provisional threshold (specified in CMM 2019-01 para 12) should continue to apply in the interim.
 13. The SC Chair noted that the work proposed would be complex and time-consuming, and suggested complementing such work with a review of the approaches and advice that CCPs have themselves used previously, towards developing advice that can be provided to the MoP in the shorter term.
 14. The PAEWG discussed the advantages and disadvantages of thresholds and move-on rules. They can facilitate rapid responses to interactions with potential VME and move fishing activity away from vulnerable areas if move-on rules are actioned appropriately. However, there is also the risk that they have the unintended effect of moving fishing activity away from preferred fishing areas to areas that are only lightly fished or unfished, which may increase the risk to VMEs. Furthermore, they can be complex and costly to administer. Therefore, they are best viewed as complementary measures until evidence-based,

comprehensive spatial measures can be included as part of the overall management approach.

15. The PAEWG noted that, in the case of SIOFA, the trawl thresholds observed by Australia and Cook Islands have rarely been triggered.
16. The Secretariat reported that it is hiring a consultant to conduct VME mapping for the full SIOFA Area. The consultant will work on VME mapping, rather than the setting of thresholds, but this may inform the discussion on the setting of thresholds. This work is expected to be conducted over the next 1-2 years.
17. The PAEWG welcomed the planned VME mapping work and suggested that the setting of thresholds should be considered in the context of the SIOFA footprint and spatial predictive habitat suitability modelling.
18. The PAEWG discussed possible approaches for setting the threshold, including:
 - adopting a precautionary approach;
 - determining the threshold based on historical benthic bycatch data, given the limited amount of data currently available, which is also the method used by the South Pacific Regional Fisheries Management Organisation (SPRFMO); and
 - not modifying the current threshold without additional data to support such a modification, such as data from the VME mapping work or the intersessional work to be done by the small working group.
19. Deep Sea Conservation Coalition pointed out that thresholds need to be at level that protects the VME rather than fishing. In light of the paucity of available data, the current thresholds should not be arbitrarily changed, in accordance with the precautionary approach.
20. The PAEWG **NOTED** that the setting of thresholds must be considered holistically, in the context of the full range of management measures, the SIOFA fishing footprint, and spatial habitat modelling.
21. The PAEWG **NOTED** the advantages and disadvantages of thresholds and move-on rules. They can facilitate rapid responses to interactions with potential VME and move fishing activity away from vulnerable areas, if move on rules are actioned appropriately. However, there is also the risk that they have the unintended effect of moving fishing activity away from preferred fishing areas to areas that are only lightly fished or unfished, which may increase the risk to VMEs. Furthermore, they can be complex and costly to administer. Therefore, they are best viewed as complementary measures (CMM2019-01 para 12-15) until evidence-based, comprehensive spatial measures can be included as part of the overall management approach.
22. To that end, the PAEWG **AGREED** to form a small working group comprising CCPs with trawl fisheries to work intersessionally to characterise, and if possible compile and analyse benthic bycatch data, with a view to exploring the potential to quantitatively inform the setting of a VME threshold for trawl gears in SIOFA. Part of this work would include review of the approaches that CCPs have used previously, with a view to developing advice that can be provided to the MoP in the shorter term.
23. The PAEWG **AGREED** that, if adequate data are available, the most appropriate method to set VME thresholds for trawl gears would be to use historical benthic bycatch, but only if there are sufficient data.

Agenda item 3.3 VME mapping

Agenda item 4 – Cumulative SIOFA BFIA

24. The Chair reminded the PAEWG of the tasks outlined in the cumulative BFIA workplans for trawl and longline gears.
25. The PAEWG trawl fishing CCPs noted the need to conduct inventories of their trawl data, and noted that detailed benthic information is required for conducting a BFIA.
26. The Secretariat reported that it is beginning to group CCPs' observer data on benthic bycatch. However, the data are still heterogeneous and there is not full coverage. There are also few benthic and depth data available.
27. The SC Chair pointed out that the VME mapping work being done by the consultant should provide some of the data that would be relevant for a BFIA. This work is scheduled to be completed by 2021. Whether or not data from the VME mapping work can be used in the BFIA work will depend on the timing of the latter, as well as the types of datasets required.
28. The PAEWG discussed the need to collect more data, recognising that NAFO, for example, uses around 20 years of data for its BFIA.
29. The PAEWG discussed the fact that the resolutions of the footprint data and the environmental data are different,
30. The PAEWG discussed a number of methods that can be used for assessing the impact of trawl and line gears, namely the Sharp-Mormede method, the Relative Benthic Status (RBS) method, the International Council for the Exploration of the Sea (ICES) method based on physical disturbances, the swept-area seabed impact (SASI) method, and the photograph-based survey method employed by France (Territories).
31. The PAEWG recognised that the Sharp-Mormede and RBS methods do not require detailed information about the distribution of VMEs, as they estimate the impact based on the depletion rate from a trawl event, using data such as gravel and sand. Of the two, the Sharp-Mormede method is easier to apply, as the RBS method requires more rigorous data. Therefore, the PAEWG could begin by applying the Sharp-Mormede method, before transitioning to the RBS method, as more data become available.
32. The PAEWG recognised that, of the five aforementioned methods, only the photograph-based survey method used both environmental data and VME bycatch data. The Sharp-Mormede method, RBS, ICES and SASI methods do not use VME bycatch data and therefore lack clear background information on the relationship between the VME bycatch data and the footprint, which could result in a biased cumulative impact assessment. Thus, with sufficient data, the photograph-based survey would produce the more realistic and plausible estimate of impact.
33. The PAEWG **NOTED** that the cumulative impact for longlines has already been assessed for CCAMLR using the same framework as SIOFA.
34. The PAEWG **NOTED** that work to collect and organise CCPs' data is progressing.

35. The PAEWG **REQUESTED** the Secretariat to prepare a characterisation of the trawl data available, towards collation of spatial trawl data at finest resolution.
36. The PAEWG **NOTED** that, given the paucity of data available, particularly the lack of detailed VME distribution data, the Sharp-Mormede method may be the most useful method for an initial BFIA. As more data become available, subsequent BFIA's could be conducted using more sophisticated methods, such as the RBS or photograph-based survey methods.
37. The PAEWG **AGREED** to continue intersessional correspondence regarding methods for assessing the cumulative SIOFA BFIA.

Agenda item 5 – Protocols for interim Protected Areas and review the protected areas proposal in SIOFA

Agenda item 6 – Advice on management and/or research plans in the proposed and/or validated protected zones

Agenda item 7 – SIOFA fishing footprint

38. The Secretariat presented PAEWG-02-10, which provides four draft SIOFA fishing footprints, as requested by SC04, for consideration by the PAEWG.
39. The PAEWG noted that the date range for the maps shown was 2000-2017, whereas SC04 requested a 2000-2015 timeframe, which aligns with the request for the submission of historical catch data. The PAEWG requested the Secretariat to modify the maps to show data for 2000-2015.
40. The PAEWG recognised that historically, CCPs have collected data at different levels of resolution from one another. This poses a number of technical issues when trying to determine the most appropriate fishing footprint map, such as risking overextending the footprint when using highly aggregated data or excluding the data of CCPs that do not have sufficiently fine data.
41. The PAEWG suggested developing another map using effort data.
42. The PAEWG expressed concern about using highly aggregated data as there is the risk of overextending the footprint.
43. The PAEWG noted that the selection of a SIOFA fishing footprint is a management question that will ultimately be decided by the MoP. To facilitate that decision, it would be useful to provide a variety of options and analyses. It would be useful to combine and compare maps of differing degrees of resolution.
44. The PAEWG suggested that understanding the difference in the areal extent of the fishing footprints of the different maps could be useful for informing management decisions.
45. The SC Chair suggested that it would be useful to understand which CCPs' data are missing from which maps. The SC Chair reminded that the footprint scale required by the MoP should be a 20-minute resolution grid.

46. To this end, the PAEWG suggested creating a series of maps showing the haul-by-haul data at a 20-minute resolution, with the coarser effort data overlaid on this for comparison.
47. The PAEWG requested the Secretariat to prepare analytics for the maps to facilitate their comparisons, namely the areal extent of the footprint of each map, the fishing intensity shown on each map, and which CCPs' data are included/excluded from each map.
48. Based on the suggestions of the PAEWG, the Secretariat prepared and presented new maps with corresponding analytics (PAEWG-02-11).
49. The PAEWG recognised the need to take into account the intended purpose of the footprint and that it may be necessary to use different methods for developing footprints for different objectives.
50. The SC Chair explained that CMM 2019-01 (Interim Management of Bottom Fishing) defines the bottom footprint as a map of the spatial extent of historical bottom fishing in the SIOFA Area but does not clearly state how the bottom fishing footprint will be used. In discussions at the SC, the footprint has been treated as being used for informing the BFIA.
51. The PAEWG suggested that, if the objective of the footprint is to prevent significant adverse impacts (SAI), it would be necessary to define the footprint in greater detail with higher resolution and gear-specificity.
52. The PAEWG suggested that it would be useful for managers to have separate, gear-specific footprints.
53. The SC Chair pointed out that areas that are unlikely to have been fished should be excluded from the footprint but recognised that there are practical constraints created by the resolution of the data available. The PAEWG should discuss how to exclude such areas, and also whether or not to include depth exclusions.
54. The PAEWG suggested that gear-specific analyses may be needed when considering depth exclusions.
55. The PAEWG discussed the handling of grids with only a single fishing event. Whether or not they should be included in the footprint would depend on the objective. For example, if the objective is the prevention of SAI, grids with a single fishing event should be included. The PAEWG also recognised that the presence of such one-off fishing events could be the result of data errors and suggested that CCPs should check the data to verify that these are true fishing events.
56. The SC Chair pointed out that removing all the grids with a single fishing event would result in the removal of an area of around 1,000 nm² from the footprint, which would be significant.
57. The PAEWG discussed the need for further discussions regarding specific criteria for determining 'significant intensity'.
58. The PAEWG **NOTED** that historically, CCPs have collected data at different levels of resolution from one another. This poses a number of technical issues when trying to determine the most appropriate fishing footprint map.
59. The PAEWG **NOTED** that it may be necessary to use different methods for developing footprints for different objectives.
60. The PAEWG **AGREED** to hold further discussions on:
 - how to exclude unfished areas from footprints;
 - whether or not to include depth exclusions;

- how to handle grids with a single fishing event, including the possible existence of data errors; and
 - specific criteria for determining 'significant intensity'.
61. The PAEWG **REQUESTED** CCPs to check the underlying data of grids with a single fishing event to verify that these are true fishing events.

Agenda item 8 – Consideration of PAEWG work plan and resource requirements

Agenda item 9 – Advice to the Scientific Committee

VME thresholds for trawl gears

62. The PAEWG **NOTED** that the setting of thresholds must be considered holistically, in the context of the full range of management measures, the SIOFA fishing footprint, and spatial habitat modelling.
63. The PAEWG **NOTED** the advantages and disadvantages of thresholds and move-on rules. They can facilitate rapid responses to interactions with potential VME and move fishing activity away from vulnerable areas, if move on rules are actioned appropriately. However, there is also the risk that they have the unintended effect of moving fishing activity away from preferred fishing areas to areas that are only lightly fished or unfished, which may increase the risk to VMEs. Furthermore, they can be complex and costly to administer. Therefore, they are best viewed as complementary measures (CMM2019-01 para 12-15) until evidence-based, comprehensive spatial measures can be included as part of the overall management approach.
64. To that end, the PAEWG **AGREED** to form a small working group comprising CCPs with trawl fisheries to work intersessionally to characterise, and if possible compile and analyse benthic bycatch data, with a view to exploring the potential to quantitatively inform the setting of a VME threshold for trawl gears in SIOFA. Part of this work would include review of the approaches that CCPs have used previously, with a view to developing advice that can be provided to the MoP in the shorter term.
65. The PAEWG **AGREED** that, if adequate data are available, the most appropriate method to set VME thresholds for trawl gears would be to use historical benthic bycatch, but only if there are sufficient data.

Cumulative SIOFA BFIA

66. The PAEWG **NOTED** that the cumulative impact for longlines has already been assessed for CCAMLR using the same framework as SIOFA.
67. The PAEWG **NOTED** that work to collect and organise CCPs' data is progressing.
68. The PAEWG **REQUESTED** the Secretariat to prepare a characterisation of the trawl data available, towards collation of spatial trawl data at finest resolution.
69. The PAEWG **NOTED** that, given the paucity of data available, particularly the lack of detailed VME distribution data, the Sharp-Mormede method may be the

most useful method for an initial BFIA. As more data become available, subsequent BFIA's could be conducted using more sophisticated methods, such as the RBS or photograph-based survey methods.

70. The PAEWG **AGREED** to continue intersessional correspondence regarding methods for assessing the cumulative SIOFA BFIA.

SIOFA fishing footprint

71. The PAEWG **NOTED** that historically, CCPs have collected data at different levels of resolution from one another. This poses a number of technical issues when trying to determine the most appropriate fishing footprint map.
72. The PAEWG **NOTED** that it may be necessary to use different methods for developing footprints for different objectives.
73. The PAEWG **AGREED** to hold further discussions on:
- how to exclude unfished areas from footprints;
 - whether or not to include depth exclusions;
 - how to handle grids with a single fishing event, including the possible existence of data errors; and
 - specific criteria for determining 'significant intensity'.
74. The PAEWG **REQUESTED** CCPs to check the underlying data of grids with a single fishing event to verify that these are true fishing events.

Agenda item 10 – Future meeting arrangements

Agenda item 11 – PAEWG Chair and co-chair

Agenda item 12 – Other business

Agenda item 13 – Adoption of the meeting report

75. The report of the 2nd meeting of the SIOFA PAEWG2 was adopted via email at 14:10 UTC, 20 July 2020.

Agenda item 14 – Close of meeting

ANNEX A – List of participants

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ANNEX B – PAEWG2 Agenda and documents

Items in grey-italic have not been processed this year.
VS=video session

Relevant agenda items	Format	Document Reference No	Priority
2. Administrative arrangements 2.1 Adoption of the Agenda <i>2.2 Confirmation of meeting documents</i> 2.3 Appointment of rapporteurs <i>2.4 Review of functions and terms of reference</i>	VS VS	PAEWG-02-03 Provisional Agenda rev7.pdf	High
3. Vulnerable Marine Ecosystems (VME) <i>3.1. VME taxa list and pictorial identification card</i> <i>Update on the adoption of CCAMLR taxa list and preparation of the SIOFA VME taxa ID card</i>			
3.2. VME thresholds for trawl gears <i>PAEWG to discuss on appropriate and common threshold levels and definition for VME characterisation for trawl gears</i>	VS	No document	High
<i>3.3. VME mapping</i>			Low
4. Cumulative SIOFA BFIA <i>Impact of cumulative bottom fishing activities for CCPs</i>	VS	No document	High
<i>5. Protocols for interim Protected Areas and review the protected areas proposal in SIOFA.</i>			Low
<i>6. Advice on management and/or research plans in the proposed and/or validated protected zones</i>			

7. SIOFA Fishing Footprint SIOFA Secretariat to present draft approaches to compiling the fishing footprint, PAEWG to discuss best approaches/method to establish the SIOFA final fishing footprint	VS	PAEWG-02-10 [restricted] SIOFA Fishing Footprint rev.2.pdf PAEWG-02-11 [restricted] SIOFA Fishing Footprint.pdf	High
8. Consideration of PAEWG work plan and resource requirements	email		
9. Advice to the Scientific Committee	report		
<i>10. Future meeting arrangements</i>			
<i>11. PAEWG Chair and co-chair</i>			
<i>12. Other business</i>			