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Southern Indian Ocean Fisheries Agreement

Accord relatif aux Pêches dans le Sud de l'Océan Indien

Convener's Report of the Southern Indian Ocean Fisheries Agreement (SIOFA) Scientific Committee (SC) Workshop to progress the SIOFA Precautionary Approach and Management Projects (WS2025-PAM2)

Virtual

6 August 2025

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Agenda item 1 – Opening

1a. Welcome from Convener

1. The Workshop was convened by the SC Chairperson, Dr Alistair Dunn.
2. The Convener opened the Workshop and welcomed the participants.

1b. Introduction of meeting participants

3. The list of registered participants is included in Annex A.

1c. Introduction of the SIOFA-PAM project consultants

4. The Convener welcomed the invited experts and consultants for the Workshop:
   a. Ms Kerrie Robertson and Dr Glen Holmes (ADIRA Consulting), consultants for the project PAM-2024-01 (Development of the SIOFA Precautionary Approach Framework);
   b. Dr Sophie Mormede (soFish Consulting) and Dr Simon Hoyle (Hoyle Consulting), consultants for projects PAM-2024-02 (Determination of Biological Reference Point (BRPS) for key SIOFA fish stocks) and PAM-2024-03 (Development of harvest strategies for key SIOFA fish stocks); and
   c. Dr Anne-Elise Nieblas (COOOL), Dr Sylvain Bonhommeau (IFREMER), and Dr Nathan Walker, consultants for project PAM-2024-04 (Expert review panel for the development of the SIOFA precautionary approach and management projects).

Agenda item 2 – Administrative arrangements

2a. Adoption of agenda

5. The agenda was adopted (WS2025-PAM-ADM-04).

2b. Confirmation of meeting documents

6. The Convener advised the Workshop that the meeting documents are available on the dedicated page on the SIOFA website (https://siofa.org/meetings/WS2025-PAM).

2c. Workshop report arrangements

7. The Convener introduced the meeting and report arrangements.
8. Mr Alexander Meyer (Urban Connections, Tokyo) served as rapporteur and supported the Convener in preparing the Convener's report.

Agenda item 3 – Background to the SIOFA-PAM projects

9. The Convener recalled for the Workshop that a summary of all Scientific Committee (SC) projects is available on the SIOFA website https://siofa.org/science/sc-works and that the ToRs and requirements for each of the PAM projects could be accessed there.
10. The Convener summarised the history of the SIOFA Precautionary Approach and Management (SIOFA-PAM) Program, which consists of three main projects (PAM-2024-01, PAM-2024-02, and PAM-2024-03) that will be reviewed by a panel of experts (PAM-2024-04). The key aim of the SIOFA-PAM Program is to establish a framework for high, medium, and low information stocks to apply the precautionary approach within the SIOFA Area. The framework would provide guidelines and principles to help ensure that the fisheries management decisions are made in a precautionary manner using the best scientific evidence available consistent with the objectives in Article 2 and the general principles in Article 4 of the Agreement.

Agenda item 4 – SIOFA-PAM project methods and project plans

4a. PAM-2024-01: Development of the SIOFA Precautionary Approach Framework

11. Ms Kerrie Robertson, one of the PAM-2024-01 consultants, presented WS2025-PAM2-01, which provided a consultation draft of the Precautionary Approach Framework (PAF) Conceptual Framework for SIOFA, designed to implement SIOFA's legal obligations under international fisheries law. The Framework operates through three interconnected components: (1) an Information Classification System that categorises stocks as high, medium, or low information

based on data availability; (2) a Three-Zone Stock Status System that classifies stocks into Healthy, Cautious, or Critical zones based on biological condition relative to reference points; and (3) Management Procedures as the default management approach for all stocks, with three methodological tiers: full quantitative model-based procedures for high-information stocks, simplified empirical procedures for medium-information stocks, and qualitative knowledge-based procedures for data-poor fisheries. Complementary Technical Guidelines are currently being developed to provide detailed implementation guidance. The Framework aligns with international best practices while being tailored to SIOFA's operating environment.

12. The Workshop conducted a section-by-section review of the draft PAF Conceptual Framework.
13. The Workshop suggested that the consultants revise the Reversal of Burden of Proof section to align it more closely with Article 2 of the Agreement.
14. The Workshop suggested that the consultants revise the definition of "Precautionary" in the Principles section and align it more closely to the definition in Article 4 of the Agreement.
15. The Workshop suggested that when explaining the precautionary approach, the PAF should refer to Recommendation 10 of the SIOFA Performance Review, which called for the development of a framework for decision-making at managerial level in accordance with the precautionary approach.
16. The Workshop suggested that the consultants further refine the Principles section as a whole such that it provides a clearer explanation of how the PAF supports the implementation of the obligations under the Agreement.
17. The Workshop noted that while all SIOFA species fall within the overall scope of the PAF, it would be unrealistic to apply the PAF equally to all species and that some aspects of the PAF should be focused on the main SIOFA species. The Workshop suggested that as a first step, the target species listed in Annex 1 of CMM 17(2024) (New and Exploratory Fisheries) could be considered the main SIOFA species. The Workshop requested that the consultants add clarifications to the PAF to specify which sections apply to the main SIOFA species.
18. The Workshop discussed how risk-based assessments, such as those conducted by Australia for teleosts and chondrichthyans in the SIOFA Area, could be incorporated in the PAF. The Workshop noted that while some aspects of these assessment methods could be relevant to the PAF, one limitation is that they are only able to provide an assessment in terms of fishing mortality (F) and not biomass.
19. The Workshop suggested that the consultants revise the description "Determines appropriate levels of precaution" for one of the functions of Component 1: Information Classification System to more accurately reflect a process whereby the MoP would determine an appropriate level of risk for all stocks, while the PAF should determine risk equivalency for high, medium, and low information stocks.
20. The Workshop endorsed the overall three-component architecture as appropriate for SIOFA's diverse fisheries portfolio, spanning well-studied high-value stocks to data-poor, low-value fisheries, and recommended proceeding with the proposed Framework Architecture.
21. When considering the proposed three-tier Information Classification System, the Workshop noted that there may be some SIOFA species for which almost no information is available, other than perhaps the species name and some basic catch information. The PAM-2024-01 consultants explained that they had originally considered such species to fall under the low information tier, but suggested that, upon further consideration, they would consider a potential fourth category for stocks with zero or near-zero available information.
22. The Workshop noted that the definitions of the classification criteria for determining high, low, medium information stocks referred to "a comprehensive range of information", "sufficient relevant information", and "some relevant information". The Workshop noted that these descriptions were quite vague and suggested that they may need to be further refined. The consultants explained that the definitions were intentionally worded in that way so as to give the SC greater flexibility when making its own determinations.

23. The Workshop requested that the consultants conduct a preliminary review and classification of the SIOFA stocks against the classification criteria and to include the results in the next iteration of the document.
24. The Workshop endorsed the three-tier classification (high, medium, low information) as practical for SIOFA's circumstances, while noting the potential addition of a fourth tier for stocks with zero or near-zero available information. The Workshop recommended that the SC develop clear, objective criteria for classifying stocks between information categories, with provision for regular review as data availability changes.
25. The Workshop noted that "conservation status" was not a correct description of the criterion by which stocks would be classified under the proposed Three-Zone Stock Status System and suggested that the consultants revise the section accordingly. The Workshop also suggested that the consultants reconsider the current naming of the three zones (Healthy, Cautious, and Critical) and try to find new names that are both scientific and clear to managers. Furthermore, the Workshop suggested that the definitions of the zones be based on the biological reference points that will be developed under PAM-2024-02.
26. With regard to the generic example of the visual representation of the three stock status zones based on F and biomass, the Workshop requested that the Y-axis be inverted (with F_{limit} above and F_{target} below). The Workshop also suggested including a shoulder around the target to reflect management around a target and the fluctuation that naturally occurs around the target.
27. The Workshop noted that very few SIOFA species could be plotted in relation to F-based and biomass-based reference points and suggested that it may be necessary to consider other approaches for formulating decision rules and risk equivalency. The consultants explained that, even in the case of low information species, unless there was zero or near-zero information available, it should be possible to make a qualitative estimation, based on expert opinion, of where that species would fit on the plot and, consequently, identify the appropriate direction for management measures.
28. The Workshop endorsed the Three-Zone Stock Status System, subject to further refinement of the naming and definition of each zone.
29. The Workshop recommended that:
    a. priority should be given to determining limit reference points (LRP) for the main SIOFA species as listed in Annex 1 of CMM 17(2024)
    b. default biological reference points be established for other and low-information stocks, where possible, with provision for adding stock-specific reference points as data improves.
30. The Workshop endorsed Management Procedures as the default management approach for the main SIOFA species, recognising their value for providing predictable, science-based decision-making, and considered the three-tier approach (quantitative model-based, simplified empirical, qualitative knowledge-based) to be appropriate for SIOFA's diverse circumstances.
31. The Workshop recommended applying a progressive approach to implementation, prioritising:
    a. Stocks whose status warrants immediate attention
    b. Primary species of highest economic or ecological importance
    c. Stocks where SIOFA has existing management infrastructure
32. The Workshop suggested that the term "transboundary stocks" be used instead of "straddling stocks".
33. The Workshop endorsed the risk equivalency principle ensuring all stocks face similar conservation risk levels through appropriate precautionary buffers and reference points adjusted for uncertainty levels.
34. The Workshop recommended that Technical Guidelines be developed concurrently with Framework finalisation, addressing:
    a. Stock assessment methodologies for each information tier
    b. Reference point calculation methods
    c. Management Procedure design and testing protocols

d. Performance monitoring requirements
e. Specification of how precautionary buffers and reference points will be adjusted based on information availability and assessment uncertainty
f. Additional guidance for how to use the scientific information to categorise stocks

35. The Deep Sea Conservation Coalition (DSCC) suggested that the consultants further refine and flesh out how habitat and environmental considerations fit within the overall PAF.
36. The Southern Indian Ocean Deepsea Fishers Association (SIODFA) suggested that it would be useful to include a table or list, in appendix, of events that would warrant concern, such as recruitment failure, excess fishing mortality, environmental changes, and so on. These could be ranked and would provide some guidance on where management effort should be directed.
37. The Workshop thanked the PAM-2024-01 consultants for their thorough work and looked forward to seeing the updated PAF Conceptual Framework.
38. The Convener encouraged participants to share any further feedback by Monday 25 August they may have in writing via email to the consultants with himself and the Secretariat in copy. He explained that rather than being addressed directly by the consultants, such feedback would be picked up for discussion within the Project Advisory Group, as is the established SC procedure for managing scientific projects.

4b. Expert reviewer commentary

39. Dr Walker, one of the expert reviewers, drew the PAM-2024-01 consultants' attention to a consultation paper on applying low-medium information approaches to fisheries management to some fish stocks in New Zealand, which is available at https://www.mpi.govt.nz/dmsdocument/70080-Review-of-sustainability-measures-for-five-low-medium-knowledge-stocks-for-2025.26.
40. Dr Nieblas, one of the expert reviewers, noted that:
    a. For stock status classification schemes, it would be important to consider these classifications in relation to major international standards, particularly the United Nations Food and Agriculture Organization (FAO) State of Stocks Index, and how these are defined, particularly for data-limited or knowledge-defined status decisions.
    b. As a related point, consideration should be given to transparency and reproducibility of decisions throughout the PAF. It would be useful to have typical case studies or even draft decisions on how to implement these steps throughout the PAF, so there can be a clear understanding of what these steps are and how to apply them. Rubrics, checklists, and scores could be included to enable these decisions to be taken by anybody and to be easily defended or reproduced.
    c. The PAF should try, through the implementation plan, to explicitly integrate data collection and learning updates, especially since many of these stocks are very data limited, and encourage transition to higher data tiers.
41. Dr Bonhommeau, one of the expert reviewers, noted that:
    a. The involvement of all stakeholders in the process, including managers, industry, and observers, as soon as possible will be very helpful for facilitating discussions and further progress by ensuring that everyone is engaging in the process on the same basis and with the same understanding.
    b. Of the three components of the PAF (Information Classification System, Three-Zone Stock Status System, and Management Procedures), so far, emphasis has been placed on how the Information Classification System and information availability will drive the other two components. However, there will likely be mutual feedback and connections among all three components, and this could be more clearly described in the PAF.

Agenda item 5 – Discussion of the SIOFA-PAM projects

5a. Implications and development of PAM-2024-02: Determination of Biological Reference Points (BRPs) for key SIOFA fish stocks, and PAM-2024-03: Development of Harvest Strategies for key SIOFA

fish stocks

42. Dr Simon Hoyle, one of the SIOFA-PAM consultants, presented WS2025-PAM2-02, which provided a summary of the preliminary findings and methodological approaches of Project PAM-2024-02. The project is proceeding according to timeline but is experiencing some dependencies on related PAM projects. The following work has been completed to date: literature review and preliminary analysis of international best practices across major RFMOs, development of parameter reliability ranking system based on data source quality and regional relevance, compilation of biological parameters for 29 target species using systematic prioritisation criteria, framework development for tiered approach addressing data-rich, medium-data, and data-poor species, risk assessment methodology review including Sustainability Assessment for Fishing Effects (SAFE) and Ecological Assessment of the Sustainable Impacts of Fisheries (EASI-Fish) approaches, and species-specific biological parameter compilation with quality assessments.
43. The Workshop noted that it would be unrealistic to develop biological reference points for all SIOFA species, and suggested that this work be focused primarily on the main SIOFA species, defined as the target species listed in Annex 1 of CMM 17(2024) (New and Exploratory Fisheries), and secondarily on the target species listed in Appendix A of the SIOFA Overview of Fisheries with the exception of tuna or tuna-like species that fall under the jurisdiction of the Indian Ocean Tuna Commission (IOTC).
44. Dr Sophie Mormede, one of the SIOFA-PAM consultants, presented WS2025-PAM2-03, which provided an update on Project PAM-2024-03. Project PAM-2024-03 requires guidance from PAM-2024-01 on potential management processes which might inform preferred harvest control rules (HCRs), and from PAM-2024-02 on biological parameters and reference points which will inform the outcomes of the harvest control rules. In the meantime, data were collated on the species of interest and planning was carried out. The performance of the different harvest control rules will be compared using performance indicators as discussed in WS2025-PAM03. Breakout rules will also be developed. The proposed plan by species is as follows:
    a. Orange roughy has a series of fully Bayesian age-based stock assessments developed in 2025, which include catch per unit effort (CPUE), age compositions and length compositions. HCR testing will include F-based rules, CPUE-based rules and constant catch rules using these models.
    b. Alfonsino has an existing stock assessment with catch, standardised CPUE and a length composition. This will be recreated in a Bayesian age-based stock assessment framework as a simulation. HCR testing will include F-based rules, CPUE-based rules, and constant catch rules.
    c. Toothfish has CPUE-based biomass estimates and cumulative catch stock reduction models. A Bayesian age-based stock assessment will be developed to replicate the main processes, informed by the CPUE series. HCR testing will include F-based rules, CPUE-based rules, and constant catch rules. Rules will be tested with feedback from the CPUE-based biomass estimates and control rules.
    d. Hapuka and mora have unstandardised CPUE series only. Age-based stock assessment models will be developed as conceptual simulation models with a range of potential biological parameters and stock structures. HCR testing will include CPUE-based rules and constant catch rules.
45. The Workshop noted that there were different levels of uncertainty associated with the different stock assessments conducted for orange roughy and that consideration should be given to how to account for this in the harvest strategies and management framework.
46. The Convener pointed out that the SC will conduct an aging protocol workshop for alfonsino later this year, that the aging data used for the existing alfonsino stock assessment may be inaccurate, and that this uncertainty may need to be considered when developing harvest strategies for alfonsino.
47. The Convener also pointed out the ongoing work at the Commission for the Conservation of

Antarctic Marine Living Resources (CCAMLR) concerning HCRs and simulation frameworks for research block fisheries, which may be of relevance to the management of toothfish in SIOFA.

5b. Recommendations for the proposed PAM-2024-01 methods

48. The Workshop recognised strong linkages between PAM-2024-01, PAM-2024-02, and PAM-2024-03 and emphasised the need for coordinated development, particularly for ensuring congruity among the monitoring procedures, reference points, management procedures, and harvest control rules.

49. The Workshop recommended that the consultants ensure full integration between the framework development (PAM-2024-01) and the biological reference points (PAM-2024-02) and harvest strategies (PAM-2024-03) projects.

5c. Draft ToRs for the Third Joint MoP-SC Workshop on the Development of Harvest Strategies (to be held on 17 December 2025)

50. The Workshop requested the Convener to work with interested CCPs and the Secretariat to develop the draft Terms of Reference (ToRs) for the Third Joint MoP-SC Workshop on the Development of Harvest Strategies. The draft ToRs should include consideration of the PAF, including the framework architecture; consideration of the risk equivalency principle, including appropriate definitions of risk and acceptability of risk; consideration of how the PAF should be used by the MoP and the SC; prioritisation in the implementation of the PAF; consideration of the management framework, including zone-specific management, ecosystem management, roles and responsibilities, and decision pathway; consideration of the biological reference points; and consideration of the harvest strategies for key stocks.

Agenda item 6 – Other business related to the development of the SIOFA precautionary approach and management

6a. Draft workplan and indicative budget

51. Due to time constraints, the Workshop did not discuss a draft workplan or indicative budget.

52. The Workshop noted the need to hold an additional Workshop to progress the SIOFA-PAM Projects and requested the Convener to determine the appropriate date, tentatively in late October or early November, in consultation with CCPs, the consultants, and the Secretariat.

Agenda item 7 – Development of the Conveners report and summary recommendations

53. The Convener explained that the draft convener's report would be circulated to the workshop participants and invited them to provide their comments by the end of 2 September 2025.

54. Paragraphs with recommendations and advice to the MoP are highlighted in grey above.

Agenda item 8 – Meeting close

55. The Convener thanked the consultants and all of the participants for their active contributions.

56. The meeting was closed at 11:40 a.m., UTC, 6 August 2025.

Annex A – List of registered participants

Title	First name	Last name	Position	Organization/Department
Dr	Anne-Elise	Nieblas	Consultant	COOOL
Dr	Sylvain	Bonhommeau	Consultant	IFREMER
Ms	Eszter	Hidas	HoD	Common Oceans Deep-sea Fisheries Project, FAO
Dr	Takehiro	Okuda	HoD	Fisheries Resources Institute, Japan Fisheries Research and Education Agency
Mr	Rodney	Govinden	HOD	Seychelles Fisheries Authority
Ms	Sabrena	Lawrence	Alternate	Seychelles Fisheries Authority
Mr	Ross	Shotton	Exec. Sec.	SIODFA
Dr	Pavarot	Noranarttragoon	HoD	Department of Fisheries
Mr	Weerapol	Thitipongtrakul	Alternate	Department of Fisheries
Dr	Sophie	Mormede	Consultant	SoFish
Dr	Simon	Hoyle	Consultant	Hoyle Consulting
Mr	Alistair	Dunn	SC Chair	SIOFA
Dr	Zhou	Fang	SC Vice Chair	China/SIOFA
Ms	Charlotte	Chazeau	SC Vice Chair	FR OT/SIOFA
Mr	Thierry	Clot	ES	SIOFA
Mr	Pierre	Périès	DO	SIOFA
Ms	Salomé	Boulenger	Intern Assistant	SIOFA
Mr	Alex	Meyer	Rapporteur	SIOFA
Dr	Alexis	Martin	HoD	MNHN
Mrs	Charlotte	Chazeau	Alternate	MNHN
Mr	Barry	Weeber	HOD	DSCC
Dr	Lyn	Goldsworthy	Advisor	IMAS, UTAS
Mr	Trent	Timmiss	HoD	ABARES
Ms	Kerrie	Robertson	Consultant	Adira Consulting
Dr	Glen	Holmes	Consultant	Adira Consulting
Ms	Luvna	Caussy	Participant	Ministry of Agro-Industry, Food Security, Blue Economy and Fisheries (Blue Economy and Fisheries Division)
Dr	Sebastián	Rodríguez Alfaro	HoD	Marine Sciences EU
Mr	Roberto	Sarralde Vizuete	Alternate	IEO
Mr	Nathan	Walker	PAM consultant - reviewer	Independent reviewer
Mr	Taisuke	Iwano	Alternate	Fisheries Agency Government of Japan
Mr	Kazuki	Tsuda	Advisor	Fisheries Agency Government of Japan