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Southern Indian Ocean Fisheries Agreement
Accord relatif aux Pêches dans le Sud de l'Océan Indien

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

The Workshop Convener

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Abstract

This paper presents the Convener's Report of the Southern Indian Ocean Fisheries Agreement (SIOFA) Workshop to progress the Precautionary Approach and Management Projects (WS2025-PAM). The recommendations of this paper summarize the recommendations given in the report.

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[2] Documents available only to members invited to closed sessions.

Recommendations

The following is a list of recommendations from the report:

- The Workshop noted that, as many of SIOFA's stocks have low levels of information or data , the project should focus on development of BRPs under PAM2024-02 that would be suitable for low information stocks rather than those that may be applied in high information stock assessments.
- The Workshop noted that the SAFE methodology may be a potential assessment methodology that should be considered under PAM2024-02 but also noted that this required adequate spatial distribution information, and that this may not be the case for many SIOFA fisheries.
- The Workshop noted that often the target reference points like the higher biomass levels are the ones that are often either hardest to achieve or are, in some examples from other jurisdictions, not defined. They noted that the definition of the limit reference point was critical to ensure the stock remained sustainable, while also achieving the long-term objective (i.e., the target reference point) of ensuring the maximum yield.
- The Workshop noted that it would be useful to hold additional workshops to allow consultation with CCPs, the fishing industry, and observers, before finalising the report for project PAM2024-01.
- The Workshop recommended that additional PAM workshops should be held, including joint workshops with the MoP along with technical ad-hoc meetings with experts from the SC and MoP, to ensure that the work was appropriately developed and fully considered by the SC and MoP.
- The Workshop recommended that the development of BRPs and HCRs should be evaluated with consideration to their robustness to the effect of climate change on stock productivity and distribution. Further, the Workshop recommended that the precautionary approach framework should include consideration of the value of monitoring of, for example, age and length distributions, spatial distribution, etc, for evidence of changes in productivity or spatial distribution that would indicate if climate change effects would impact the scientific advice for managers.
- The Workshop recommended that 'breakout' or 'stopping' rules developed for the HCRs include guidelines for management if such climate change effects on spatial distribution or productivity that would affect the management advice were detected.
- The Workshop noted that the development of models to predict changes in productivity and distribution that may happen as a consequence of climate change was a very challenging task, and would not be possible within the current project
- The Workshop noted that assumptions of the spatial distribution of stocks (for example for Orange Roughy and alfonsino) should be considered in the HCR evaluation. Further, the Workshop noted that some SIOFA stocks may cross the boundaries of the SIOFA Area, and that management strategies would need to be robust to cases where stocks partially reside in areas outside SIOFA.
- The Workshop noted that the SC may wish to consider development of future projects to address uncertainties in the stock structure of key SIOFA stocks including consideration of

cost-effective methods for collecting additional data (for example genetic sampling and age information).

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Southern Indian Ocean Fisheries Agreement

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Virtual

3 February 2025

Agenda item 1 – Opening

1a. Welcome from Convener

1. The Workshop was convened by Mr 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 this Workshop:
   (i) Ms Kerrie ROBERTSON (ADIRA Consulting) and Dr Glen HOLMES, consultants for the project PAM-2024-01 (Development of the SIOFA Precautionary Approach Framework);
   (ii) Dr Sophie MORMEDE (SoFish Consulting Ltd) and Dr Simon Hoyle, 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
   (iii) Dr Anne-Elise NIEBLAS, Dr Sylvain BONHOMMEAU (COOOL), 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 revised preliminary agenda was adopted (WS2024-PAM-ADM-04).

2b. Confirmation of meeting documents

6. The Convener noted to 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 Convenor introduced the meeting arrangements, including the timeline for circulating and finalising the Workshop Convener's Report (WS2024-PAM-ADM-03).
8. The SIOFA Secretariat served as rapporteur and supported the Convener in preparing the Convener's report.
9. Recommendations for the Scientific Committee are highlighted in grey in this report.

Agenda item 3 – Background

10. The Convener summarised the history of the SIOFA Precautionary Approach and Management Program (SIOFA-PAM) funded by European Union in order to enhance the scientific advice of the SIOFA Scientific Committee for the SIOFA Meeting of the Parties.
11. The Workshop thanked the European Union for providing financial support for the SIOFA-PAM projects.
12. The SIOFA-PAM program consists of three main projects (PAM2024-01, PAM2024-02, and PAM2024-03) that will be reviewed by a panel of experts (PAM2024-04).
13. The final reports for the SIOFA-PAM projects will be presented to the Scientific Committee in 2026 (SC11), in order for any recommendations arising to be able to be presented to MoP13 in 2026.
14. The Convenor recalled that a summary of all projects of the Scientific Committee is available on the SIOFA website **https://siofa.org/science/sc-works**, including the ToRs for each project and any project outputs, and that the ToRs and requirements for each of the PAM projects could be accessed there.

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

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

15. Ms Kerrie ROBERTSON introduced the other members of the project team for PAM2024-01, Dr Glen HOLMES and Ms Shana MILLER.
16. The consultant noted that the project will provide advice on operationalising the obligations of SIOFA to take a precautionary approach to fisheries management. Two outputs will be produced, the first will be the conceptual framework that will be a consistent and transparent framework to guide decision-making, and the second will develop operational guidelines for high, medium and lower information stocks. These aim to ensure fisheries management decisions based on guideline and principles in precautionary way using best available science, drawing on lessons from RFMOs, regional fisheries management organisations, and national frameworks relevant to SIOFA. SIOFA has a number of fisheries, with differences in the number and type of vessels, fish species, and the volume of catch. The consultant noted that they will develop the framework to be understandable and usable by the Scientific Committee, for the Meeting of the Parties, and industry to better understand the basis of SIOFAs management decisions.
17. The presentation is available on https://siofa.org/meetings/WS2025-PAM
18. The consultant explained that the structure of the final report was being developed and would be based on FAO technical papers and national approaches, as well as comparison with other RFMOs and international fishery management organisation.

4b. PAM 2024-02: Determination of Biological Reference Points (BRPs) for key SIOFA fish stocks

19. Dr Simon HOYLE introduced PAM2024-02 and presented the BRPs for key SIOFA fish stocks. He gave the background of biological reference points and the terms of reference for PAM2024-02. He explained that the biological reference points are reference points that are used as a benchmark to assess management performance against and in achieving particular objectives. The BRPs provide biological benchmark for management objectives and are more or less the starting point for developing harvest strategies.
20. The presentation is available on https://siofa.org/meetings/WS2025-PAM
21. The consultant explained that for species that are not directly targeted, the focus should be to develop a suitable limit reference points as that has a direct implication on the sustainability of the stock.
22. SIODFA noted the quality of data may not be the same for all the species, and while the quality of data from the alfonsino fisheries was excellent, knowledge of the stock structure and drivers of recruitment were poorly understood.
23. SIODFA noted that CPUE was not a reliable index for the targeted trawl fishery's in SIOFA, and should not be used as an index of abundance. For this stock, they noted that effort-based management controls may be more appropriate than catch-based management controls.
24. The Workshop recalled that MoP11 had tasked the SC to consider TAC and/or total allowable effort (TAE) management controls for orange roughy (MoP11 report, paragraphs 150-151).

4c. PAM 2024-03: Development of Harvest Strategies for key SIOFA fish stocks

25. Dr Simon HOYLE presented PAM2024-03, developing Harvest Strategies for key SIOFA fish stock on behalf Dr. Sophie MORMEDE. The process consists of the development of operating models that would be used to simulate the stock status and management process. This would develop a biological and fishery model that would generate data to feed into an estimation model, and hence evaluate harvest control rules. This process allows to test different management systems, different stock assumptions, different estimation methods, and Harvest Control Rules (HCRs).
26. The presentation is available on https://siofa.org/meetings/WS2025-PAM
27. The consultant noted that the different types of HCRs trade off different aspects of risk or catch and stock variability, and there are some options that allow minimisation of risks of going below

the limit reference point or the risk of being above or below the target reference point. These HCRs have different levels of fluctuation associated with different rules and model assumptions. The simulations provide a scientific approach to providing advice to managers for their decisions.

28. The Workshop noted that many SIOFA fisheries have only a few vessels involved, and that this may impact the reliability of performance indicators. The Workshop recommended that the consultants consider this aspect when developing the simulations for this project.

4d. Expert reviewer commentary

29. Dr Nathan WALKER (PAM2024-14) noted that:
    a. the work would need to ensure coordination with similar projects being progressed in other RFMOs or international fishery management organisations (i.e., CCAMLR where MSEs are being developed) and in domestic fisheries for the same or similar species. He noted that there was benefit in comparing between organisations with similar objectives, but should also take into account the different levels of information available for the fisheries in the comparisons.
    b. Concerning high seas research, collection of fisheries information can be very expensive and we need to consider the cost and trade off and how that research can be arranged and managed.
    c. Best practice approaches are needed to reduce non fish bycatch and impacts on ecosystems.
    d. Non-target fish have even lower information than target species, so we would need to consider how to gather appropriate information or undertake risk assessments to prioritise data collection.
    e. It would be useful to include climate change in the analyses. There is some work on climate change considerations in, for example, Australia and New Zealand that could help inform approaches to the management of fisheries that takes account of climate change.
    f. Note that CCAMLR will be developing management strategy evaluations for both high and low information toothfish stocks.
    g. Note that when considering the BRPs that with lower knowledge and greater uncertainty, more precautionary approaches could be considered. With this in mind, sensitivities could be tested that include uncertainty in the estimates of biological parameters assumed.
30. Dr Anne Elise NIEBLAS (PAM2024-04) noted that:
    a. The implementation plan documented in SC9, Annex K should be revised to provide a timeline for implementation, and that it would be useful to provide a plan for the timing of upcoming workshops and engagement between the SC and MoP to facilitate the development of the precautionary framework.
    b. The PAM projects should consider approaches in those areas overlapping and neighbouring the SIOFA Area, to ensure that the management approaches and reference points are aligned, and additionally, consider the effects of their catch and management on fisheries within SIOFAs competency.
    c. Little is known about the spatial structure of many of SIOFAs target species, and the development of BRPs and management strategies for these stocks should take the uncertainty associated with the lack of knowledge into account.
    d. Where the spatial structure of the population is not known, cost effective methods for collecting additional data (for example genetic sampling and age information) should be considered to provide information to address these uncertainties.
31. Sylvain BONHOMMEAU (PAM2024-04) noted that:
    a. The approach of combined technical meetings across the PAM projects was useful, and additional technical experts could be co-opted into these meetings in specific cases to assist the PAM project consultants.
    b. Development of standard simple monitoring reports of the available fisheries data (i.e., CPUE and length frequencies), such as developed for the current SIOFAs fisheries summaries, would be useful for all of the important primary and secondary stocks in the

SIOFA Area.

c. The projects should consider the use of PSA based risk assessments to assist prioritisation and evaluation for providing advice.
d. That the code and software used for the analyses should be made available at the conclusion of the project for the SIOFA scientific community, and that the use of open source software would be preferrable.
e. With regard to climate change impacts, it would be ambitious to attempt to include climate models and climate projections within the analysis, but the BRPs and HCRs developed should evaluated with consideration to their robustness to the effect of climate change on stock productivity and distribution.
f. Length based models may be useful for those stocks for which few data are available.

32. Dr Takehiro OKUDA, in his role as convener of the WG-SAM working group at CCAMLR, noted that:
    a. There are two approaches used for providing scientific advice for toothfish in the CAMLR Convention Area:
        i. Where there is enough data to conduct an integrated assessment model, the stocks are managed using the CCAMLR Decision Rules based on the integrated assessments.
        ii. For low information stocks (called Research Blocks), which have similar levels of information as toothfish stocks in the SIOFA Area, the scientific advice uses the 'trend analysis rule', which provides management advice based on changes in either CPUE or Chapman estimates from tag data.
    b. CCAMLR has a work program in place to develop management strategy evaluations for both of these approaches that will be progressed over the next few years.

Agenda item 5 – Discussion of the SIOFA PAM Projects

33. The Workshop noted that, as many of SIOFA's stocks have low levels of information or data , the project should focus on development of BRPs under PAM2024-02 that would be suitable for low information stocks rather than those that may be applied in high information stock assessments.
34. SIODFA noted that the lack of knowledge on what was driving recruitment and stock structure for alfonsino may cause significant uncertainty for developing management procedures for this species, and hence more simple management procedures may be all that could be justified. SIODFA noted that they intend to present such procedures for alfonsino to SC10.
35. The Workshop noted that the SAFE methodology may be a potential assessment methodology that should be considered under PAM2024-02 but also noted that this required adequate spatial distribution information, and that this may not be the case for many SIOFA fisheries.
36. The Workshop noted paper SC01-INFO-10 that used yield-per-recruit analysis of Alfonsino, and that this may be a useful document for the consultants to consider as a part of their review.
37. SIODFA noted that they are intending to submit a paper to SC12 that provides an update on the trawl fishery for alfonsino.
38. The Workshop noted that often the target reference points like the higher biomass levels are the ones that are often either hardest to achieve or are, in some examples from other jurisdictions, not defined. They noted that the definition of the limit reference point was critical to ensure the stock remained sustainable, while also achieving the long-term objective (i.e., the target reference point) of ensuring the maximum yield.
39. The Workshop noted that it would be useful to hold additional workshops to allow consultation with CCPs, the fishing industry, and observers, before finalising the report for project PAM2024-01.
40. The Workshop recommended that additional PAM workshops should be held, including joint workshops with the MoP along with technical ad-hoc meetings with experts from the SC and MoP, to ensure that the work was appropriately developed and fully considered by the SC and MoP.

41. The Workshop noted that the SC8 report (paragraph 188) endorsed the recommendation to formally propose final Harvest strategies to the MoP in 2026. The SC noted that if these were adopted by the MoP in 2026, the Harvest Strategies could be used for formulating the SC 's scientific advice from 2027.
42. The Workshop noted that elements such as bycatch of sharks, seabirds and protected species interactions, and benthic impacts are important and should be considered at a principle or high level only in development of the precautionary framework within PAM2024-01 by considering how these had been addressed in frameworks used by other fisheries management authorities. The Workshop also noted that SIOFA has processes and policies in place for many of these issues.
43. The Workshop noted that climate change, including changes in climate variability, could affect stock distributions and productivity, and was an important consideration for future management.
44. The Workshop noted that it is important to evaluate how candidate Harvest Control Rules respond to changes in productivity. The Workshop noted that there are three levels of analysis that could be considered:
    (i) To ensure that if there are changes in productivity, it is detected;
    (ii) To evaluate how robust the decision rules are to such changes, including how they respond to potential changes in productivity from climate change;
    (iii) To model and hence predict the changes that may happen with climate change.
45. The Workshop recommended that the development of BRPs and HCRs should be evaluated with consideration to their robustness to the effect of climate change on stock productivity and distribution. Further, the Workshop recommended that the precautionary approach framework should include consideration of the value of monitoring of, for example, age and length distributions, spatial distribution, etc, for evidence of changes in productivity or spatial distribution that would indicate if climate change effects would impact the scientific advice for managers.
46. The Workshop recommended that 'breakout' or 'stopping' rules developed for the HCRs include guidelines for management if such climate change effects on spatial distribution or productivity that would affect the management advice were detected.
47. The Workshop noted that the development of models to predict changes in productivity and distribution that may happen as a consequence of climate change was a very challenging task, and would not be possible within the current project
48. The Workshop noted that assumptions of the spatial distribution of stocks (for example for Orange Roughy and alfonsino) should be considered in the HCR evaluation. Further, the Workshop noted that some SIOFA stocks may cross the boundaries of the SIOFA Area, and that management strategies would need to be robust to cases where stocks partially reside in areas outside SIOFA.
49. The Workshop noted that the SC may wish to consider development of future projects to address uncertainties in the stock structure of key SIOFA stocks including consideration of cost-effective methods for collecting additional data (for example genetic sampling and age information).

Agenda item 6 – Any Other Business

50. The Workshop noted that the development of management strategies would require that these be periodically updated and revised, and recommended that the SC include in its workplan a process for this. Further, the Workshop noted that this would require additional resources to be allocated to ensure that the work could be completed when required.

Agenda item 7 – Meeting Close

51. The Convener noted that a draft conveners report would be drafted by the rapporteurs and the convener over the next few days, and then circulated to the workshop participants for comment.

He noted that the final report would need to be submitted to SC10 by the deadline for Working Papers to the SC10 meeting on the 15th of February 2025.

52. The Convener thank the presented and the consultants for the PAM projects, and also thanked all of the participants and the Secretariat for a productive workshop meeting. The meeting was closed at 11h50 UTC.

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Annex A – List of registered participants

Delegation	Title	First name	Last name	Position	Organisation
Australia	Mr	Trent	Timmiss	HoD	ABARES
China	Dr	Zhou	Fang	Alternate	Shanghai Ocean University
China	Dr	Jun	Yu	Advisor	Shanghai Ocean University
China	Dr	Heng	Zhang	HoD	"East China Sea Fisheries Research Institute, China
China	Dr	Yongchuang	Shi	Advisor	"East China Sea Fisheries Research Institute, China
EU	Dr	Sebastián	Rodríguez Alfaro	HoD	Marine Sciences/EU
EU	Mr	Roberto	Sarralde Vizuete	Alternate	IEO
EU	Ms	Vanessa	Rojo Méndez	Alternate	IEO
France-OT	Dr	Alexis	Martin	HoD	MNHN
France-OT	Ms	Charlotte	Chazeau	Alternate	MNHN
France-OT	Dr	Clara	Péron	Expert	MNHN
Japan	Dr	Takehiro	Okuda	Head of Delegation Scientific Committee	Japan Fisheries Research and Education Agency
Japan	Dr	Midori	Hashimoto	SC Alternate	"Fisheries Resources Institute, Japan Fisheries Research and Education Agency"
Japan	Mr	Taisuke	Iwano	Head of Delegation	Fisheries Agency Government of Japan
Japan	Mr	Kazuki	Tsuda	Alternate	Fisheries Agency Government of Japan
Mauritius	Dr	Luvna	Caussy	Scientific Officer	Ministry of Agro-industry, Food-security, Blue Economy & Fisheries
Mauritius	Mr	Doorvanand	Kawol	Senior Technical Officer	Ministry of Agro-industry, Food-security, Blue Economy & Fisheries
Seychelles	Mr	Rodney	Govinden	HoD	Seychelles Fisheries Authority
Seychelles	Ms	Sabrena	Lawrence	Alternate	Seychelles Fisheries Authority
Chinese Taipei	Dr	Ching-Ping	Lu	Head of Delegation	National Taiwan Ocean University
Chinese Taipei	Mr	Chia-Chun	Wu	Alternate	Fisheries Agency
Chinese Taipei	Ms	Chia-Ti	Li	Delegate	Overseas Fisheries Development Council
Chinese Taipei	Ms	Chia-Jung	Wang	Delegate	Fisheries Agency
Thailand	Mr	Weerapol	Thitipongtrakul		Department of fisheries, Thailand
Thailand	Mr	Bunyarit	Permnak		Department of Fisheries, Thailand
SIODFA	Dr	Ross	Shotton	Delegate	SIODFA

Delegation	Title	First name	Last name	Position	Organisation
SIODFA	Mr	Charles	Heaphy	Delegate	SIODFA
SIODFA	Mr	Tim	Silverstone	Delegate	SIODFA
DSCC	Dr	Lyn	Goldsworthy	advisor	University of Tasmania, Australia
Observers FAO	Ms	Eszter	Hidas	Project Coordinator	FAO, Rome (DSF Project)
Observers FAO	Dr	Anthony	Thompson	Consultant	FAO, Rome (DSF Project)
Observers FAO	Ms	Sarah	Fagnani	Project Assistant	FAO, Rome (DSF Project)
Invited Expert	Ms	Kerrie	Robertson	Director	ADIRA consulting
Invited Expert	Mr	Glen	Holmes	Senior Officer	PEW Charitable Trusts
Invited Expert	Ms	Shana	Miller	Project Director	The Ocean Foundation
Invited Expert	Dr	Sophie	Mormede	Director	soFish Consulting
Invited Expert	Dr	Simon	Hoyle	Director	Hoyle Consulting
Invited Expert	Dr	Anne-Elise	Nieblas	Director	COOOL consulting
Invited Expert	Dr	Nathan	Walker	Director (acting)	Ministry for Primary Industries - Fisheries NZ
SIOFA SC Chair - Convener	Mr	Alistair	Dunn	Director	Ocean Environmental
SIOFA SC Vice Chair	Dr	Pavarot	Noranarttragoon	Senior expert	"Marine Fisheries Research and Development Division
SIOFA SC Vice Chair	Dr	Zhou	Fang	Alternate	Shanghai Ocean University
SIOFA Secretariat	Mr	Thierry	Clot	Executive Secretary	SIOFA Secretariat
SIOFA Secretariat	Mr	Pierre	Peries	Data Officer	SIOFA Secretariat
SIOFA Secretariat	Dr	Marco	Milardi	Science Officer	SIOFA Secretariat

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