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

10th Annual Meeting of the Scientific Committee (SC10)

Concarneau, France, 17-26 March 2025

SC-10-44

Conveners Report of the Southern Indian Ocean Fisheries Agreement (SIOFA) Joint MoP-SC Workshop on the Development of Harvest Strategies (WS2024-HSS)

Workshop Conveners

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Abstract

This paper presents the Conveners Report of the Southern Indian Ocean Fisheries Agreement (SIOFA) Joint MoP-SC Workshop on the Development of Harvest Strategies (WS2024-HSS). The recommendations of this paper summarize the recommendations given in the report.

[1] Restricted documents may contain confidential information. Please do not distribute restricted documents in any form without the explicit permission of the SIOFA Secretariat and the data owner(s)/provider(s).
[2] Documents available only to members invited to closed sessions.

Recommendations

The following is a list of recommendations from the report:

- The Workshop noted the usefulness of paper WSHSPA-2023-01 for tracking SIOFA's progress in developing harvest strategies. The Workshop recommended that the Secretariat regularly update this information and present it to future meetings and workshops where harvest strategies are to be discussed.
- The Workshop recommended that the MSE initially evaluate alternative sensitivity choices of 50-60-70% probability of being at or above a TRP of 30-40-50% B0 for orange roughy.
- The Workshop recommended that the MoP adopt the management objectives and performance indicators for orange roughy described in Annex B.
- The Workshop recommended that the MSE initially evaluate alternative sensitivity choices of 50-60-70% probability of being at or above a TRP of 40-50-60% B0 for toothfish.
- The Workshop recommended that the MoP adopt the management objectives and performance indicators for toothfish described in Annex C.
- The Workshop recommended that the MoP task the SC to provide advice on determining a total allowable catch (TAC) for toothfish and on determining a TAC and/or total allowable effort (TAE) for orange roughy, as well as potential provisions to allow a degree of flexibility, such as allowable unders/overs/carry-overs, or multi-year limits.
- The Workshop recommended that the MoP task the SC to consider how effort management and effort creep would be included in the MSE for orange roughy.
- The Workshop recommended that the MoP develop a framework for deciding allocations based on catch history, among other factors, and to advance this work in parallel with the development of harvest strategies.
- The Workshop reaffirmed that harvest strategy development work should first focus on toothfish and orange roughy, and that harvest strategies for alfonsino and other SIOFA species could be developed thereafter, as was agreed by MoP10 and SC9.
- The Workshop recommended that the MoP note the updated harvest strategy development timeline (Annex D).

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Conveners Report of the Southern Indian Ocean Fisheries Agreement (SIOFA) Joint MoP-SC Workshop on the Development of Harvest Strategies (WS2024-HSS)

Hotel President, Seoul, Republic of Korea / Hybrid Format

29 June 2024

List of Annexes

Agenda item 1 – Opening

1a. Welcome from the SC and MoP Chairs

1. The Workshop was co-convened by Dr Dae-yeon Moon, Chair of the Meeting of the Parties (MoP), and Mr Alistair Dunn, Chair of the Scientific Committee (SC). The MoP Chair opened the meeting and welcomed the participants. He thanked the Government of the Republic of Korea for hosting the meeting and the Secretariat for its support.
2. The SC Chair also welcomed the participants and expressed his hope that the meeting would yield fruitful discussions.
3. The Science Officer, Dr Marco Milardi, explained the practical arrangements for the meeting.

1b. Introduction of meeting participants

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

Agenda item 2 – Administrative arrangements

2a. Adoption of agenda

5. The preliminary agenda was adopted (WS2024-HSS-ADM-03).

2b. Confirmation of meeting documents

6. The Science Officer outlined the meeting documents and advised that they are available on the SIOFA website.

2c. Report arrangements

7. The MoP Chair explained the arrangements for drafting and adopting the Conveners' report.
8. Mr Alexander Meyer (Urban Connections, Tokyo) served as rapporteur and supported the SC and MoP Chairs in preparing the Conveners' report.

Agenda item 3 – Introduction to harvest strategies

3a. What are harvest strategies?

9. The SC Chair outlined WS2023-HSMO-01, which was first presented at the Joint MoP and SC Intersessional Workshop to Define Harvest Strategy Management Objectives and which provided an overview of harvest strategies, including reference points, categories of management objectives, fisheries monitoring regimes, and management strategy evaluation (MSE).
10. The Workshop noted that WS2023-HSMO-01 included a glossary of terms relevant to Harvest Strategies and requested that the Secretariat regularly update the glossary as necessary.

3b. SIOFA progress on harvest strategies (Document WSHSPA-2023-01)

11. The SC Chair provided a summary of the decisions and recommendations in MoP and SC reports relating to harvest strategies (WSHSPA-2023-01) up to 2022, which include the development of a timeline for the development of harvest strategies, and the development of interim Target Reference Points (TRPs) and interim Limit Reference Points (LRPs) for orange roughy, alfonsino, and toothfish.
12. The Science Officer informed the Workshop that the SC has been advancing a number of projects to support the development of harvest strategies, including several projects that are funded by the European Union (EU) that directly address the recommendations of the SIOFA Performance Review Panel (Recommendations 1 and 10) regarding the adoption of harvest strategies and the development of a decision-making framework for the provision of scientific advice.

13. The Workshop noted the usefulness of paper WSHSPA-2023-01 for tracking SIOFA's progress in developing harvest strategies. The Workshop recommended that the Secretariat regularly update this information and present it to future meetings and workshops where harvest strategies are to be discussed.

3c. SC advice on harvest strategy development

14. The SC Chair summarised the SC advice on harvest strategy development, in particular:
    a. The SC recommended the MoP note that it has considered the potential management objectives and performance indicators for orange roughy that were drafted by the WS2023-HSMO and further refined the performance indicators (Annex H, SC9 Report).
    b. The SC recommended that the MoP note that the development of breakout rules would be a key part of the development of harvest strategies, and that criteria for the application of breakout rules would be developed as part of this process.
    c. The SC recommended the MoP note that it has considered the potential management objectives and performance indicators for toothfish that were drafted by the WS2023-HSMO and further refined them (Annex I, SC9 Report).
    d. The SC recommended that the MoP note that it had updated the harvest strategy development timeline by adding the implementation status of each task (Annex K, SC9 Report).

3d. Potential harvest control rules

15. The SC Chair briefly introduced harvest control rules and informed the Workshop that SC9 discussed potential harvest control rules for toothfish.
16. The Workshop noted that participants had been invited to submit proposals on harvest control rules and that no proposals had been received.
17. The EU noted that a limiting factor in the development of harvest strategy scenarios is the data-limited nature of many SIOFA fisheries.

Agenda item 4 – Management input

4a. Management objectives and performance indicators

18. The SC Chair presented WS2024-HSS-INFO-02, which provided the potential management objectives and performance indicators for orange roughy. These were originally drafted by the Joint MoP-SC Workshop on Harvest Strategy Management Objectives (WS2023-HSMO) and the performance indicators were further refined by SC9.
19. The Workshop reviewed and endorsed the potential management objectives and performance indicators for orange roughy as specified in WS2024-HSS-INFO-02.
20. The Workshop recommended that the MSE initially evaluate alternative sensitivity choices of 50-60-70% probability of being at or above a TRP of 30-40-50% B_0 for orange roughy.
21. The Workshop recommended that the MoP adopt the management objectives and performance indicators for orange roughy described in Annex B.
22. The SC Chair presented WS2024-HSS-INFO-03, which provided the potential management objectives and performance indicators for defined toothfish management areas. These were originally drafted by WS2023-HSMO, and the performance indicators were further refined by SC9.
23. The Workshop reviewed and endorsed the potential management objectives and performance indicators for toothfish as specified in WS2024-HSS-INFO-02.
24. The Workshop recommended that the MSE initially evaluate alternative sensitivity choices of 50-60-70% probability of being at or above a TRP of 40-50-60% B_0 for toothfish.
25. The Workshop recommended that the MoP adopt the management objectives and

performance indicators for toothfish described in Annex C.

26. The Workshop recommended that the MoP task the SC to provide advice on determining a total allowable catch (TAC) for toothfish and on determining a TAC and/or total allowable effort (TAE) for orange roughy, as well as potential provisions to allow a degree of flexibility, such as allowable unders/overs/carry-overs, or multi-year limits.
27. The Workshop recommended that the MoP task the SC to consider how effort management and effort creep would be included in the MSE for orange roughy.
28. The Workshop recommended that the MoP develop a framework for deciding allocations based on catch history, among other factors, and to advance this work in parallel with the development of harvest strategies.
29. The Workshop welcomed the offer from the Cook Islands to develop a paper, in collaboration with other CCPs, for MoP12 to help advance work to develop an allocation framework in SIOFA.
30. The Deep Sea Conservation Coalition (DSCC) emphasised the importance of including ecosystem considerations, including potential impacts on vulnerable marine ecosystems and climate change in the development of harvest strategies.

4b. Priority species

31. The Workshop reaffirmed that harvest strategy development work should first focus on toothfish and orange roughy, and that harvest strategies for alfonsino and other SIOFA species could be developed thereafter, as was agreed by MoP10 and SC9.
32. The Workshop noted that the ongoing SC work to develop a Precautionary Approach Framework would inform the identification of other species for which the development of harvest strategies would be appropriate in the future.

Agenda item 5 – Future work plan

33. The Workshop reviewed and updated the timeline for the development of harvest strategies (Annex D).
34. The Workshop recommended that the MoP note the updated harvest strategy development timeline (Annex D).

5a. Development of operating models and management strategy evaluation

5b. Draft workplan and indicative budget

35. The Science Officer presented relevant sections from the draft SC Workplan for 2024-2028 (detailed in MoP-11-06), highlighting the EU-funded project on Precautionary Approach and Management (SIOFA-PAM) and the proposed plans to hold three PAM workshops in 2024/5.
36. The Workshop noted the draft workplan.

Agenda item 6 – Other business

37. There was no other business.

Agenda item 7 – Summary of advice to MoP

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

Agenda item 8 – Review of report recommendations in plenary, with other comments on the Conveners report via email

39. The co-conveners thanked the participants for their active participation and cooperation.
40. The meeting was closed at 1:45 p.m., Seoul time, 29 June 2024.
41. The report was circulated via email following the close of the workshop and the Conveners invited participants to provide any comments by the end of 30 June 2024.

Annex A – List of registered participants

CCP	Title	First name	Last name	Position	Organisation	In-person attendance	Remote attendance
Australia	Mr	Patrick	Sachs	HoD	Department of Agriculture, Fisheries and Forestry	✓	
Australia	Mr	Trent	Timmiss	Alternate	Australian Bureau of Agricultural and Resource Economics and Sciences		✓
Australia	Mr	Adam	Camilleri	Advisor	Department of Agriculture, Fisheries and Forestry	✓	
Australia	Dr	Lyn	Goldsworthy	Advisor	University of Tasmania	✓	
Australia	Ms	Selina	Stoute	Advisor	Australian Fisheries Management Authority		✓
Australia	Ms	Danait	Ghebrezgabhier	Advisor	Australian Fisheries Management Authority		✓
Australia	Mr	Rhys	Arangio	Advisor	Austral Fisheries		✓
China	Dr	Heng	Zhang	Alternate	East China Sea Fisheries Research Institute, China Academy of Fisheries Science	✓	
China	Dr	Zhou	Fang	Alternate	Shanghai Ocean University	✓	
Cook Islands	Ms	Pamela	Maru	HoD	Ministry of Marine Resources	✓	
Cook Islands	Dr	Steve	Brouwer	Alternate	Ministry of Marine Resources	✓	
European Union	Ms	Fiona	Harford	Head of Delegation	European Commission, Directorate General for Maritime Affairs and Fisheries	✓	
European Union	Ms	Laura	Marot	Alternate	European Commission, Directorate General for Maritime Affairs and Fisheries	✓	
European Union	Dr	Sebastián	Rodriguez Alfaro	Alternate	European Union	✓	
European Union	Ms	Barbara	Focquet	Advisor	European Commission, Directorate General for		✓

CCP	Title	First name	Last name	Position	Organisation	In-person attendance	Remote attendance
					Maritime Affairs and Fisheries		
European Union	Ms	Agata	Malczewska	Advisor	European Commission, Directorate General for Maritime Affairs and Fisheries		✓
European Union	Ms	Elodie	Seznec	Advisor	Ministère de l'Intérieur et des Outre-mer, France	✓	
European Union	Mr	Luis	Belmonte Gónzalez	Advisor	Directorate-General for Sustainable Fisheries. Ministry of Agriculture, Fisheries and Food, Spain	✓	
France-OT	Ms	Adèle	Moisan	HoD	General directorate of maritime affairs, fishery and aquaculture	✓	
Japan	Mr	Ichiro	Nomura	Head of Delegation	Fisheries Agency Government of Japan	✓	
Japan	Mr	Taisuke	Iwano	Alternate	Fisheries Agency Government of Japan	✓	
Japan	Dr	Midori	Hashimoto	Alternate	Fisheries Resources Institute, Japan Fisheries Research and Education Agency	✓	
Japan	Mr	Hiroto	Nakamoto	Advisor	Fisheries Agency Government of Japan	✓	
Japan	Mr	Hideki	Moronuki	Advisor	Japan Overseas Fishing Association	✓	
Japan	Mr	Takeshi	Shibata	Advisor	Taiyo A&F Co., Ltd.		✓
Mauritius	Mr	Vikash	Munbodhe	Participant	Ministry of Blue Economy, Marine Resources, Fisheries and Shipping		✓
Mauritius	Dr	Luvna	Caussy	Participant	Ministry of Blue Economy, Marine Resources,		✓

CCP	Title	First name	Last name	Position	Organisation	In-person attendance	Remote attendance
					Fisheries and Shipping		
Mauritius	Mr	Doorvanand	Kawol	Participant	Ministry of Blue Economy, Marine Resources, Fisheries and Shipping		✓
Republic of Korea	Mr	Tae-hoon	Won	HoD	Ministry of Oceans and Fisheries	✓	
Republic of Korea	Ms	Jiyoung	Oh	Alternate	Ministry of Oceans and Fisheries	✓	
Republic of Korea	Ms	Soomin	Kim	Advisor	Korea Overseas Fisheries Cooperation Center	✓	
Republic of Korea	Ms	Seung Eun	Lee	Advisor	Korea Overseas Fisheries Cooperation Center	✓	
Seychelles	Mr	Roy	Clarisse	HoD	Ministry of Fisheries and the Blue Economy	✓	
Seychelles	Mr	Vincent	Lucas	Alternate	Seychelles Fishing Authority	✓	
Seychelles	Ms	Julie	Bibi	Advisor	Seychelles Fishing Authority	✓	
Seychelles	Ms	Stephanie	Radegonde	Expert	Ministry of Fisheries and the Blue Economy	✓	
Seychelles	Ms	Sheriffa	Morel	Expert	Ministry of Fisheries and the Blue Economy		✓
Chinese Taipei	Dr	Tsu-Kang	Wen	HoD	Chinese Taipei	✓	
Chinese Taipei	Mr	Wei-Ming	Hsu	Alternate	Chinese Taipei	✓	
Chinese Taipei	Mr	Chia-Chun	Wu	Alternate	Chinese Taipei	✓	
Chinese Taipei	Mr	Cheng-En	Hsieh	Delegate	Chinese Taipei	✓	
Chinese Taipei	Mr	Po-Hsiang	Liao	Delegate	Chinese Taipei	✓	
Chinese Taipei	Ms	Chia-Ti	Li	Delegate	Chinese Taipei	✓	
Thailand	Mr	Pavarot	Noranarttragoon	Head of Delegation	The Department of Fisheries, Thailand	✓	
Thailand	Mr	Wirat	Sanitmajjaro	Alternate	The Department of Fisheries, Thailand	✓	
Thailand	Ms	Kanyarat	Woraprayoth	Alternate	The Department of Fisheries, Thailand	✓	
Thailand	Ms	Sampan	Panjarat	Alternate	The Department of Fisheries, Thailand		✓

CCP	Title	First name	Last name	Position	Organisation	In-person attendance	Remote attendance
Thailand	Mr	Weerapol	Thitipongtrakul	Advisor	The Department of Fisheries, Thailand		✓
Observers - SIODFA	Mr	Charles	Heaphy	HoD	SIODFA	✓	
Observers - SIODFA	Dr	Ross	Shotton	Alternate	SIODFA		✓
Observers - DSCC	Mr	Barry	Weeber	HoD	Deep Sea Conservation Coalition	✓	
SIOFA MoP Chair	Dr	Dae-yeon	Moon			✓	
SIOFA SC Chair	Mr	Alistair	Dunn	Director	Ocean Environmental		✓
Rapporteur	Mr	Alex	Meyer	Rapporteur	Urban Connections	✓	
SIOFA Secretariat	Mr	Thierry	Clot	Executive Secretary	SIOFA Secretariat	✓	
SIOFA Secretariat	Mr	Pierre	Peries	Data Officer	SIOFA Secretariat	✓	
SIOFA Secretariat	Mr	Johnny	Louys	Compliance Officer	SIOFA Secretariat	✓	
SIOFA Secretariat	Dr	Marco	Milardi	Science Officer	SIOFA Secretariat	✓	

Annex B – Management Objectives and Performance Indicators for the assessed management units of orange roughy

Table summarising Management Objectives by Objective Type, and Performance Indicators for the assessed management units of orange roughy. Please note that these Management Objectives and Performance Indicators may be further revised during the harvest strategy development process.

No.	Objective Type	Potential Management Objective	Performance Indicators
1	Stock status	Maintain the stock at, or fluctuating around (i.e., as likely as not) 40% B_0[1]	The stock is above 40% B_0 with a 50% probability
2	Risk/Safety	Ensure that it is very likely that the stock is above the limit reference point (LRP)	The stock is above 20% B_0 with a 90% probability
3	Economic, Yield	Maintain catch and effort at a given level consistent with Objectives 1 and 2	
4	Economic, Catch rate	Maintain catch rates at a given rate that is representative of a period of fishery stability [2]	Catch rates averaged over three years are about as likely as not to be around the level of that in the chosen representative period
5	Economic, Stability	Minimise the variability of the catch/effort limits from year to year that should be within a specific range	Define a reasonable level (%) of change that the model will allow between years in the harvest-control-rule-generated catch/effort limits[3]
6	Social goals	• Maintain/create employment opportunities and contribute to food security • Ensure safe and fair employment practices on vessels operating in this fishery	
7	Ecosystem goals	Maintain a healthy ecosystem	• Avoid significant adverse impacts on Vulnerable Marine Ecosystems • Minimise the impact on species of special interest, and Endangered, Threatened, or Protected species • Minimise the impact on any deepwater shark species listed in Annex 1 of CMM 12(2023) • Minimise the impact on seabirds (CMM 13(2022))

[1] Note that future work on MSE will evaluate alternative sensitivity choices of the TRP and probability, for example 50-60-70% probability of being above 30-40-50% B_0

[2] Currently defined as 2015-2020 by SC7, but to be discussed and further defined as a part of the harvest strategy development process

[3] To be further developed as part of the harvest strategy development process

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Annex C – Management Objectives and Performance Indicators for defined toothfish management areas

Table summarising Management Objectives by Objective Type, and Performance Indicators for <u>defined toothfish management areas</u>. Please note that these Management Objectives and Performance Indicators may be further revised during the harvest strategy development process.

No.	Objective Type	Potential Management Objective	Performance Indicators
1	Stock status	Maintain the stock at, or fluctuating around (i.e., as likely as not) 50% B_0[1]	The stock is above 50% B_0 with a 50% probability or a suitable proxy of B_0 has a 50% probability of being above the target value
2	Risk/Safety	Ensure that it is very likely that the stock is above the limit reference point (LRP)	The stock is above 20% B_0 with a 90% probability
3	Economic, Yield	Maximise catch at a level consistent with Objectives 1 and 2, in accordance with the proportion of the stock in the SIOFA Area	
4	Economic, Catch rate	Maintain CPUE at a given rate/level that is representative of a period of fishery stability[2]	CPUE levels are about as likely as not to be around the level of that in the chosen representative CPUE
5	Economic, Stability	Minimise the variability of the catch limits from year to year that should be within a specific range	Define a reasonable level (%) of annual change that the model would allow between years in the harvest-control-rule-generated catch limits[3]
6	Social goals	• Maintain/create employment opportunities and contribute to food production • Ensure safe and fair employment practices on vessels operating in these fisheries	
7	Ecosystem goals	Maintain a healthy ecosystem	• Avoid significant adverse impacts on Vulnerable Marine Ecosystems • Minimise the impact on species of special interest, and Endangered, Threatened, or Protected species • Minimise the impact on any deepwater shark species listed in Annex 1 of CMM 12(2023) • Minimise the impact on seabirds (CMM 13(2022)

[1] Note that future work on MSE will evaluate alternative sensitivity choices of the TRP and probability, for example 50-60-70% probability of being above 40-50-60% B_0

[2] Different periods might be defined for the different toothfish SIOFA Management Areas, and should be further considered as a part of the harvest strategy development process

[3] To be further developed as part of the harvest strategy development process

Annex D – Harvest strategies and timeline for the implementation of pre-assessments, assessments, management objectives and implementation

(Additional columns have been added to the timeline, originally developed by the Harvest Strategy Pre-Assessment Workshop, to record the implementation status of each step for orange roughy and Patagonian toothfish.)

Steps	SC			MoP		
		ORY	TOP		ORY	TOP
Step 1 **Define management objectives**				1. Specify management objectives: ➢ biological (including ecosystem considerations) e.g., ensuring long-term sustainability and productivity; recovering heavily depleted stocks ➢ socio-economic e.g., maintaining reasonable stability in catches for the industry	☐	☐
	2. Propose reference points based on management objectives: limit reference points (B_{lim} and/or F_{lim}), and target reference points (B_{TARGET} and/or F_{TARGET})	☒	☒			
				3. Select reference points	☐	☐
	4. Characterise the sources and values of uncertainties associated with the estimation of reference points (target and limit)	☒	☒			
				5. Specify acceptable levels of risk to be used in evaluating possible consequences of management actions, and time horizons for fishing mortality adjustments to avoid stock collapse, breaching limit reference point or achieve the target reference.	☐	☐
Step 2 **Determine appropriate fisheries monitoring regime**	1. Identify data collection and monitoring activities required to reliably evaluate resource status with respect to reference points	☐	☐			
				2. Implement data collection and monitoring programme to deliver consistent, high-quality data into the future.	☐	☐
	3. Determine how frequently to monitor (survey and/or assessments)	☐	☐			

Steps	SC			MoP		
		ORY	TOP		ORY	TOP
Step 3 **Develop candidate Harvest Control Rules**	1. Propose candidate Harvest Control Rules (HCR): actions for controlling fishing mortality (F) or adjusting catch (and/or effort for orange roughy) with respect to pre-defined, stock-specific, precautionary reference points for both biomass (B) and fishing mortality (F) were possible.	☐	☒			
				2. Select HCR	☐	☐
	3. Conditions for Re-Evaluating Reference Points and HCR	☐	☐			
Step 4 **Test HCR with MSE**	1. Test HCR and compare expected performance of harvest strategies	☐	☐			
				2. Adopt appropriate harvest strategy	☐	☐
Step 5 **Implement Harvest Strategy**				1. Implement management changes based on HCR	☐	☐
	2. Monitor (survey and/or assessment) and assess stock(s)	☐	☐			
	3. Determine stock status relative to reference points	☐	☐			
				4. Determine if Harvest Strategy delivers the objectives	☐	☐
Step 6 **Improve assessment and harvest strategy**	1. Review reference points and HCR if needed	☐	☐			
	2. Define research requirements to improve the quantification and evaluation of uncertainty (i.e., risk analysis), as well as methodological developments required to reduce uncertainty.	☐	☐			