

SUMMARY REPORT ON THE STATUS OF RESOURCES OF THE SOUTHWEST INDIAN OCEAN FISHERIES COMMISSION FOR INFORMATION OF THE SOUTHERN INDIAN OCEAN FISHERIES AGREEMENT

The Ninth Session of the Scientific Committee of the Southwest Indian Ocean Fisheries Commission (SWIOFC) was held at Hotel Archipel, in la Réunion, France, from 16 to 19 July 2019, on the generous offer of the Government of France and the local authorities of la Réunion to host the meeting.

The Session was attended by delegates from Comoros, France (la Réunion and Mayotte), Kenya, Madagascar, Maldives, Mauritius, Mozambique, Seychelles and United Republic of Tanzania. Representatives of the Nairobi Convention (NC), the Marine Stewardship Council (MSC), the World Wide Fund for Nature (WWF) and the IOC-SWIOFish1 project attended the meeting as observers.

STATUS OF FISHERIES RESOURCES

Following the decisions taken at the previous meetings of the Commission and the Scientific Committee, several member countries presented the results of the assessment of the status of stocks exploited by their fisheries using the Weight of Evidence approach format.

Updated status reports were received from: Comoros, France (la Réunion and Mayotte), Kenya, Madagascar, Maldives, Mauritius, Mozambique, Seychelles, South Africa and the United Republic of Tanzania. A distinction is made in the summary of these reports where the country informed that the status of exploitation was not known (U) and where the country did not return any information on the status (-). The classification used is presented in Appendix 1.

Status of focus groups:

The status of focus groups stocks is presented in Appendix 2. A total of 45 stocks were reported, from which 20 stocks were classified as Not-Overexploited and 15 as Overexploited. In only two instances no information was provided, but in almost 25% of the stocks from focus groups (8 stocks) the status is still classified as Unknown, due either to lack of information or insufficient resources to gather and analyse it. A summary of the information by focus group is presented:

- *Spiny and rock lobsters:* The lobsters were reported as mainly Not-Overexploited;
- *Shrimps:* The shrimp stocks assessed were reported as Overexploited, in contrast with the last evaluation conducted at the SC8;
- *Slope-water snappers:* Most stocks were classified as Not-Overexploited and one stock as Overexploited (the stock of the Deepwater longtail red snapper in Reunion).
- *Sea cucumber:* All stocks assessed were reported as Overexploited with one stock from Maldives with Unknown status;
- *Coastal tunas and related species:* The status were reported as Not-Overexploited and Overexploited in equal number
- *Sharks and Rays:* Only two stocks were reported, being one assessed as Not-Overexploited and the other as Overexploited.
- *Octopus:* All assessed stocks were reported as Not-Overexploited, although an approximately equal number was reported as Unknown status.

- *Bivalve molluscs*: Only one stock was reported, classified as Not-Overexploited (Shells from Tanzania).

As last year, for this year's reporting the stocks of coastal tunas and tuna-like species were split from those of the Oceanic tunas and tuna-like species, for which IOTC is responsible. For the first group, coastal stocks, in general the national assessments will be taken directly. For the Oceanic stocks, however, caution should be exercised in interpreting these national assessments as they are not necessarily an indication of the status of the stock (for which IOTC makes definitive assessments). Since many of the species of this group form straddling stocks, the evaluation should relate to the stock across its extent of distribution, so the national assessments should be interpreted as related to the possibility of national participation within these fisheries.

Other groups:

As in last session, more stocks of non-focus groups were assessed than of focus groups (65 stocks against 45 from focus groups). Non-focus groups include small pelagics, demersal fish, reef fish and others. The latter group comprises stocks of fish, crustaceans and cephalopods that did not fit into any of the other categories. Their status is presented in Appendix 3.

In only one stock the information is missing, and it corresponds to Billfish from Maldives, which is followed by IOTC. All the other groups were categorized. However, as in focus groups almost a quarter of the stocks are reported as Unknown. A summary of the information by non-focus group is presented:

- *Small pelagic fish stocks*: It was not possible to determine the status in 3 stocks, against 4, which were classified, in equal numbers as Overexploited and Not-overexploited;
- *Demersal fish*: The group included Not-Overexploited and Overexploited stocks, with a larger number of the first category;
- *Reef fish*: The stocks reported were classified as Overexploited and Not-Overexploited in almost equal numbers;
- *Others*: The majority of stocks grouped under this broad category are classified as Overexploited.

Status by countries

The status of assessed fisheries resources by countries is presented in Appendix 4. Most of the stocks reported as assessed by Comoros were considered as Overexploited. France reported 31 stocks, which include 45% of Not-overexploited stocks, and a proportion of stocks with Unknown status smaller than last session. In 2017, more than half of the stocks reported by Kenya show status Unknown, with the others classified both as Not-Overexploited and Overexploited. The species with no information from Maldives correspond to species followed by the IOTC, and half of the stocks with information were reported as Not-Overexploited. This year, Mauritius presented the same number of Overexploited and Not-Overexploited stocks, and one stock with undetermined status (Octopus). Mozambique reported 8 stocks, of which 4 classified as Not-Overexploited and the other 4 as Overexploited. Seychelles reported a relatively high number of stocks (15) of which more than 50% are assessed as Overexploited. South Africa provided information on 8 stocks classified by status, with 56% Not-Overexploited. The proportion of Not-Overexploited stocks from Tanzania remains stable since last report (73%), as also the number of stocks followed (15).

It should be noted that these figures represent only the information on the stocks that the countries could report on, and are not an overall figure of the status of the majority of the exploited fish stocks in the member countries, as they are not a census of all exploited stocks nor a random sample of these.

France presented the largest number of stocks with status unassessed or unknown. This however reflects only a higher level of detail and extent in the reporting, rather than a lower level of assessments or information available, often directly connected with the high species-level resolution of the information provided.

Regional status of resources

A summary of the regional status of fisheries resources based on the national tables of 10 countries of the Southwest Indian Ocean is presented in Appendix 5.

Of 85 groups assessed, numerically 47 were Not-overexploited, while 38 were Overexploited. Thus, overall 55% of the assessed stocks on which information was provided to the Scientific Committee can be considered as being sustainably exploited, a proportion lower than that reported at the last meeting in 2018 (60% of stocks being exploited sustainably). There were an additional 22 groups for which the status was Unknown. The status categories were based on information available, whose reliability and level of detail may vary from one region to another as well as between stocks of groups of the same or different species, within the same area. For detailed information on individual assessments, refer to the national status tables in the Scientific Committee report.

It should be noted that the percentages of Overexploited or Not-Overexploited stocks refers to the stocks whose status could be estimated by the countries, not to the total number of stocks that exist in each country. Care must therefore be exercise in the use of these figures as indicators of the overall status of fish stocks in the region or by country. It is noted however that a larger part of the assessments reported were based on scientific analysis of existing data and information, rather than only on expert opinion, so the final result should have a somewhat higher level of reliability.

Management plans

The number of national management plans for species/groups/complexes other than those covered by IOTC increased since last Committee. Moreover, in about 40% of the plans listed, EAF was considered in its elaboration and / or implementation. In general, this reflects an improvement of the situation reported during the last meeting, indicating that member countries are increasing their efforts to manage their fisheries in the framework of established management plans. The management plans (in preparation, implementation or revision) were reported in Comoros (2), France (3), Kenya (5), Madagascar (5), Maldives (4), Mauritius (1), Mozambique (4) Seychelles (5) and Tanzania (4).

Comparison of the SWIOFC region against global results.

The situation in relation to the changing status of fisheries resources in the SWIOFC region from 2004 to 2017 is presented against the global situation between 2006 and 2015 in Appendix 6.

From the 2004 assessment reported to the SC in 2005, to the one reported in 2019 regarding 2017, in the SWIOFC region the percentage of Not-Overexploited stocks decreased (from 74% to 55%), while that of Overexploited stocks increased (from 26% to 45%); The situation changed noticeably among years, largely depending on the numbers of countries providing updated results and also on the stocks included in the national reports.

Globally, and from the 2006 assessment to the 2018 one (using data from 2015) reported by FAO in the State of Fisheries and Aquaculture (SOFIA) publication, the percentage of Not-Overexploited

stocks also decreased (from 75% to 67%), while that of Overexploited stocks increased (from 25% to 33%).

The comparison indicates that the SWIOFC region may show a situation comparable but slightly worse than the global situation, meaning there is still a significant proportion of stocks that need to be better managed. These results, however, need to be considered carefully, given the caution already expressed relatively to the relation between the stocks reported on by the countries and the overall stock situation in each of the countries and the region as a whole. It is particularly relevant that countries will tend to concentrate their efforts on stocks for which there are indications of negative situations, so it is to be expected that a larger proportion of the stocks actually assessed show a less than positive situation. At the same time, the development of the scientific work of the SWIOFC is leading to an important increase in the number of stocks and fisheries assessed, that are selected on the basis of more “neutral” information, and it is likely that the situation may change in the near future.

Future Work of the Scientific Committee

The Committee, in its 9th meeting, discussed the progress of the stock assessment work in the region, and the tasks committed to it, together with an evaluation of the capacity currently available to discharge these tasks, and adopted unanimously the following RECOMMENDATIONS and REQUESTS:

1. The SC RECOMMENDED that a study on the identification of stock units of potentially shared or transboundary key stocks in the region is carried out, focusing on a first phase on sea cucumber, octopus, shallow-water shrimp and small pelagic fish;
2. The SC RECOMMENDED that the Commission supports the coordination and harmonization of management plans dealing with common priority species in several countries of the region, to improve the efficacy of management measures;
3. The SC REQUESTED that SWIOFC support the preparation of a document with a compilation of the historical and current knowledge on the fisheries of the SWIOFC region identified in the table in Appendix K, with the full contribution and participation of the fisheries management and research agencies of the countries involved. This will require support for meetings and travel of the members of the authors groups;
4. The SC RECOMMENDED that the members promote dedicated basic studies on Biological Parameters of the main priority species identified (Table K), possibly in cooperation with Universities. These should include studies on Length-Weight relationships, Growth, Maturity, Reproduction, Feeding Ecology and other parameters;
5. The SC RECOMMENDED that members should make an effort to improve the coverage of port sampling of landings and effort, focusing on the priority species in Table K. Besides widening the geographical and temporal coverage of the sampling programmes, particular attention should be given to obtain better separation of species, regular collection of length frequency distributions for some priority species and the regular collection of socio-economic data;
6. The SC RECOMMENDED that members should work together to improve and standardise the systems and procedures for management of their fisheries and scientific data, to facilitate quality control and availability of data for analyses, as well as cooperation across the region. It is recommended that the SWIOFC create a WG on scientific data management and standardisation;

7. The SC RECOMMENDED that a training and scientific data compilation workshop on simple indicator-based methods for fish stock assessment to be held before the next Working Group meeting; This will be associated to the training on the R system;
8. The SC REQUESTED that the Secretariat makes an effort to secure funding for a region-wide study on the likely reasons for the observed generalised decline in the landings and productivity of the shallow-water shrimp fishery in the SWIO region;
9. The SC RECOMMENDED that the Secretariat organizes the preparation of a Catalogue of the Fishing Gear and Methods of the SWIO region. This should be done by a team of regional consultants, and if possible also led by an expert from the region.
10. The SC REQUESTED the Commission to carry out a stock-taking of existing human capacity on fisheries research, as a first step towards a higher-education programme for national staff in this scientific field;
11. The SC RECOMMENDED that attention is given to building capacity on data analysis particularly acoustic survey data, given that many datasets have been collected in the region but the technical ability to undertake comprehensive analysis of these data is lacking;
12. The SC ENCOURAGED countries to keep stability in their representation to the SC and WG, to ensure continuity;
13. The SC RECOMMENDED that the work on recovering and making available relevant data from previous projects run in the region, like SWIOFP, ASCLME, the Indian Ocean Expedition and others is continued;
14. The SC ENCOURAGED the continuation of the work on updating the WIOFish database, as this is useful in the SC context;
15. The SC RECOMMENDED that member countries submit all reports and data before the SC meetings, in accordance with the deadlines set by the Secretariat.

ACTIONS BROUGHT BY THE SC FOR CONSIDERATION OF THE 10TH SESSION OF THE SWIOFC

1. Members of the Commission are invited to note the status of resources and in particular those overexploited stocks and refer to the Scientific Committee report on the actions that are being taken by them to improve the status of these stocks. They are also invited to note the situation in the SWIOFC region as compared to the global situation and advise on how the SWIOFC should address the situation with regard to overexploited fisheries resources.
2. Members are also invited to disseminate training and capacity-development opportunities on fisheries assessment and management organized by them among the institutions in the region, and, if possible, reserve a number of posts for scientists or managers from other SWIOFC members.
3. Members are invited to, as much as possible, keep a stability of their participation in the Scientific Committee and Technical Working Groups, to facilitate the continuous improvement of the work under the responsibility of the Scientific Committee.

4. The Secretariat is requested to explore and identify sources of funding and logistical and institutional support to facilitate the participation of scientists and/or managers from other SWIOFC members in these initiatives.
5. The Secretariat is requested to explore further opportunities to reinforce the training on stock assessment processes and methods, including on the WoE approach, to the fisheries research institutions from the SWIOFC member states.
6. The Secretariat is requested to explore opportunities to organize and hold meetings of the Small Pelagic Fish and Demersal Fish Stock Assessment Working Groups in the coming intersessional period, with appropriate technical and scientific support as required.

OUTCOMES OF THE 10th SESSION OF THE SWIOFC RELEVANT TO THE SC

1. The Commission AGREED that there was an urgent need for concerted or coordinated management actions among the members to counter the decline of the sea cucumber stocks. It thus REQUESTED the Scientific Committee to carry out a comprehensive study on the comparison of the management measures and plans adopted or not by all the countries in the region, and provide an analysis of the relative advantages and shortcomings of alternative sets of management measures. These should include possible coordinated management frameworks, to improve the status of sea cucumber stocks in the region. The Commission will then adopt one or more sets of alternative management frameworks for recommendation to the member states.
2. The Commission also REQUESTED Member States to share the management actions and plans on sea cucumber they are implementing or considering with the Scientific Committee, to facilitate this work.
3. On the overall theme of improving the quality of the work of the Commission, the Commission REQUESTED the Scientific Committee to provide advice on methods and tools for collection and management of fisheries data, including biological, operational and socio-economic data. The Commission also REQUESTED the inclusion of observer data on the work of the Scientific Committee and working groups for stock assessment.
4. Mr. Barros informed the participants that an expert meeting on the Weight of Evidence Framework will be held in December 2019 in FAO Headquarters in Rome, Italy. This meeting is expected to refine and widen the tools and manuals to support the application of this methodology that has been also used by the SC in recent years.
5. The Commission then discussed at length and ADOPTED all the following recommendations by the Scientific Committee, as below:
6. A study on the identification of stock units of potentially shared or transboundary key stocks in the region is carried out, focusing on a first phase on sea cucumber, octopus, shallow-water shrimp and small pelagic fish.
7. The Commission supports the coordination and harmonization of management plans dealing with common priority species in several countries of the region, to improve the efficacy of management measures.

8. SWIOFC to support the preparation of a document with a compilation of the historical and current knowledge on the fisheries of the SWIOFC region identified in the table in Appendix K of the Scientific Committee report, with the full contribution and participation of the fisheries management and research agencies of the countries involved. This will require support for meetings and travel of the members of the authors groups.

9. The Members promote dedicated basic studies on Biological Parameters of the main priority species identified (Appendix K), possibly in cooperation with Universities. These should include studies on Length-Weight relationships, Growth, Maturity, Reproduction, Feeding Ecology and other parameters.

10. The Members should make an effort to improve the coverage of port sampling of landings and effort, focusing on the priority species in Appendix K. Besides widening the geographical and temporal coverage of the sampling programmes, particular attention should be given to obtain better separation of species, regular collection of length frequency distributions for some priority species and the regular collection of socioeconomic data.

11. The Members should work together to improve and standardise the systems and procedures for management of their fisheries and scientific data, to facilitate quality control and availability of data for analyses, as well as cooperation across the region. It is recommended that the SWIOFC create a Working Group on scientific data management and standardisation.

12. Training and scientific data compilation workshop on simple indicator-based methods for fish stock assessment should be held before the next Working Group meeting; This will be associated to the training on the R system.

13. The Secretariat should ask donors to fund a region-wide study on the likely reasons for the observed generalised decline in the landings and productivity of the shallow-water shrimp fishery in the SWIO region.

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14. The Secretariat organizes the preparation of a Catalogue of the Fishing Gear and Methods of the SWIO region. This should be done by a team of regional consultants, and if possible also led by an expert from the region.

15. The Commission to carry out a stock-taking of existing human capacity on fisheries research, as a first step towards a higher-education programme for national staff in this scientific field.

16. Attention should be given to building capacity on data analysis particularly acoustic survey data, given that many datasets have been collected in the region but the technical ability to undertake comprehensive analysis of these data is lacking.

17. Member Countries to keep stability in their representation in the Scientific Committee and Working Groups, to ensure continuity.

18. The work on recovering and making available relevant data from previous projects run in the region, like the Southwest Indian Ocean Fisheries Project (SWIOFP), the Agulhas Somali Current Large Marine Ecosystem Project (ASCLME), the Indian Ocean Expedition and others is continued.

19. Ensure continuation of the work on updating the WIOFish database, as this is useful in the SC context.

20. The Member Countries submit all reports and data before the SC meetings, in accordance with the deadlines set by the Secretariat.

Appendix 1

State of exploitation Abbreviations

The abbreviations used for the state of exploitation shown below usually represent the best and most recent estimate of the state of the stock, its potential for increased production or requirements for stock recovery. The estimates are based on the best information available, which may include the results of peer-reviewed published reports, analysis of qualitative data and information whose reliability may vary from one region to another as well as between stocks or groups of the same, or of different, species within the same area. Following the decisions taken on the format of reporting the status of exploited fish stocks adopted by FAO and a large number of other fisheries Commissions around the world, the assessed status of exploited fish stocks is reported in only two categories, Not-Overexploited or Overexploited.

–	No information provided
U	Unknown
NO	The stock is not Overexploited, and the fishery is believed to not be overexploiting the stock.
O	Overexploited. The stock is at an abundance level below the one providing for optimum fisheries yield, and/or it is being exploited at a rate above the level which is believed to be sustainable in the long term, with no potential room for further expansion and a higher risk of stock depletion/collapse.

Appendix 2 - The status of focus groups

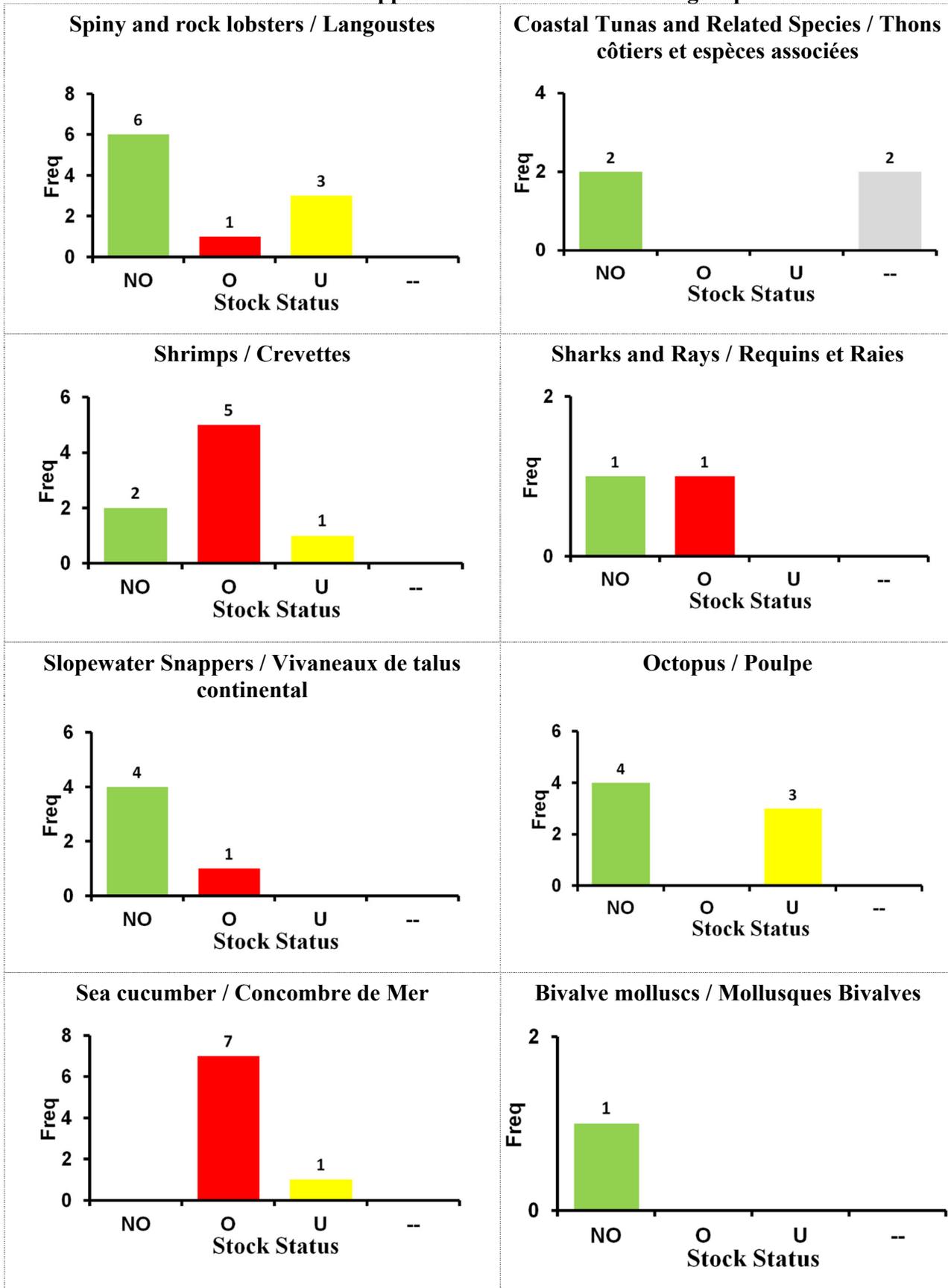


Figure 1. Distribution of the stocks reported per status category, for each group of focus species

Appendix 3 - The status of non –focus groups

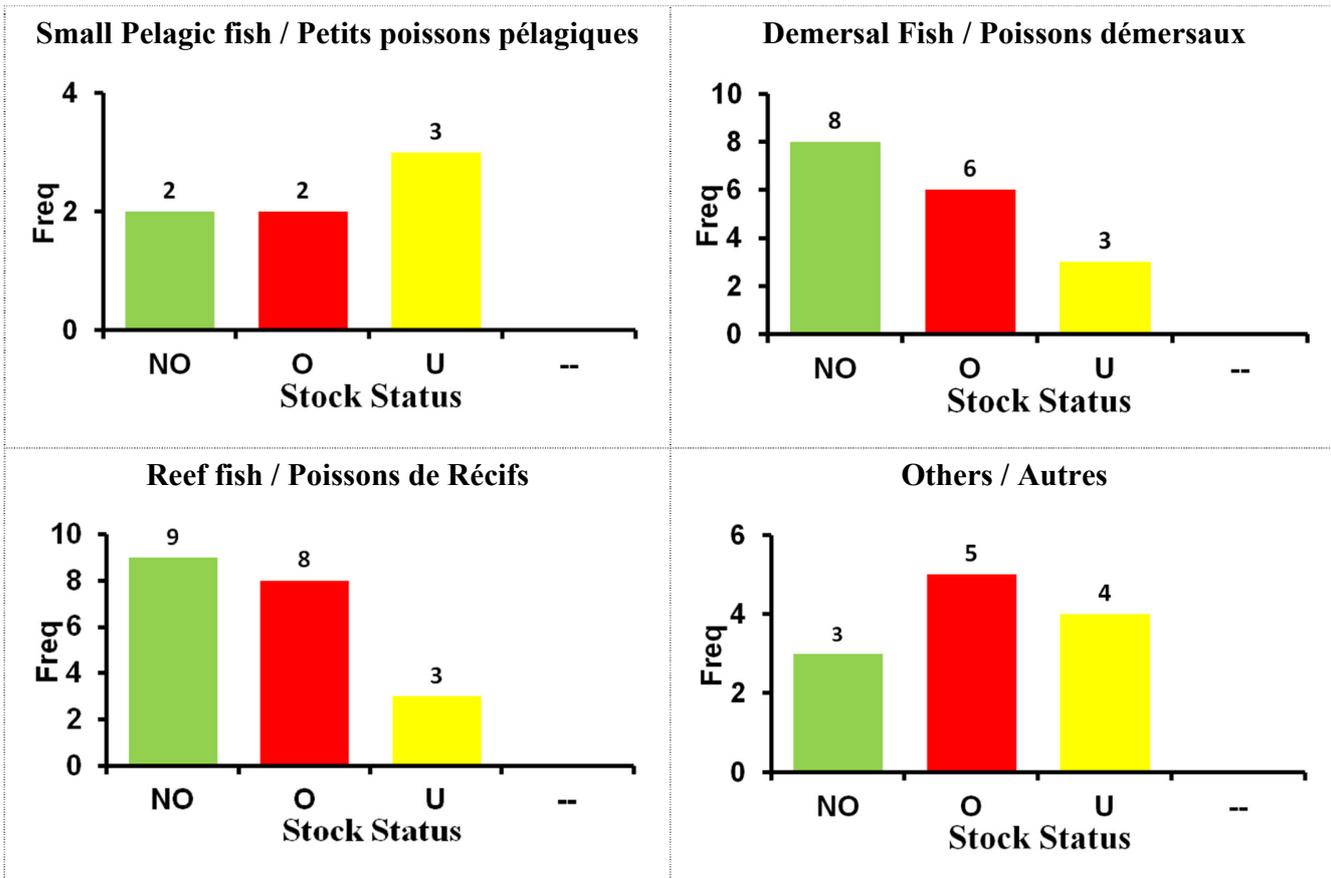


Figure 2. Distribution of the stocks reported per status category, for each group of non-focus species

Appendix 4 - The status of fisheries resources by countries

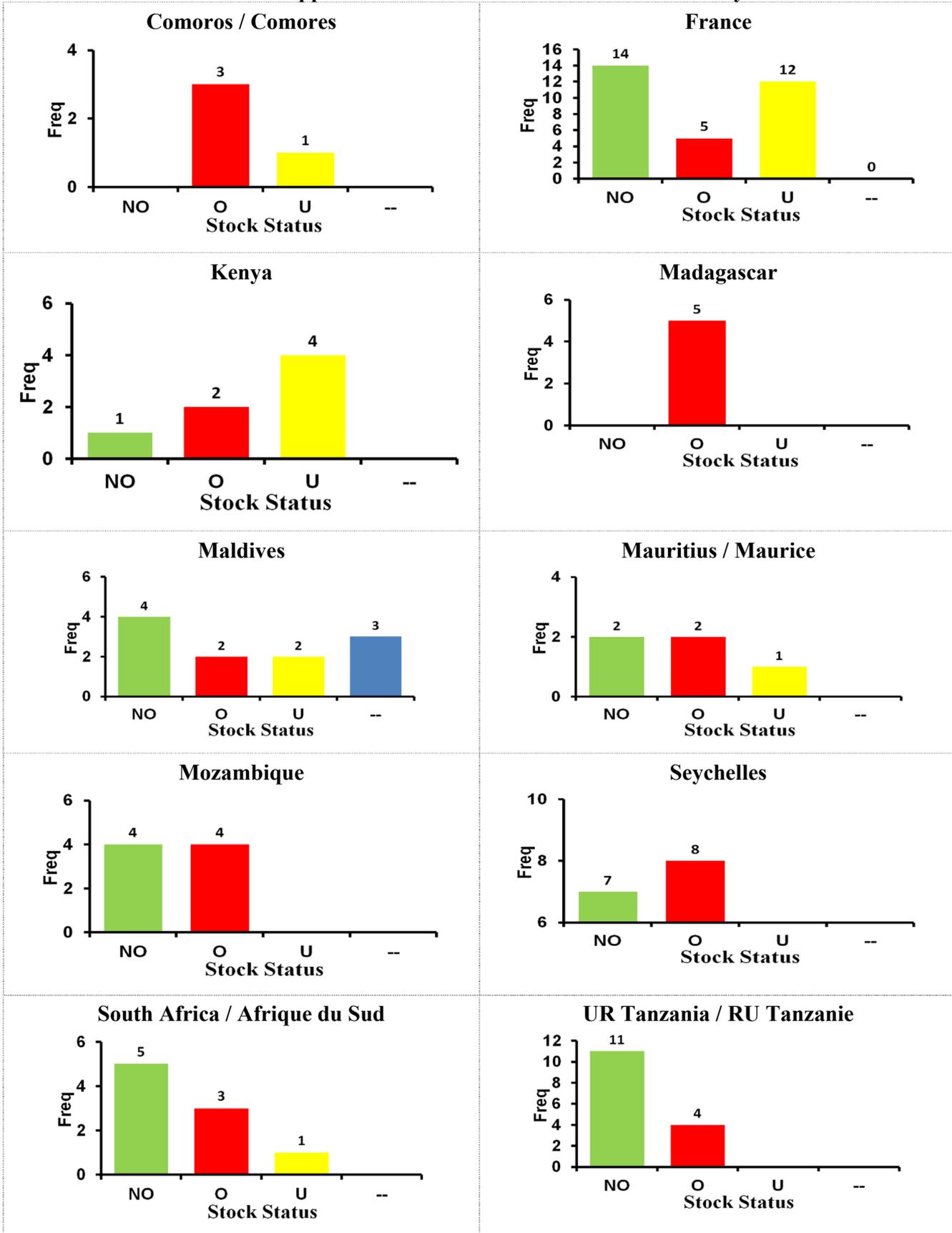


Figure 3. Distribution of the stocks reported per status category, for each reporting country

Appendix 5.

A summary of the regional status of fisheries resources based from the national tables of 10 countries of the South West Indian Ocean

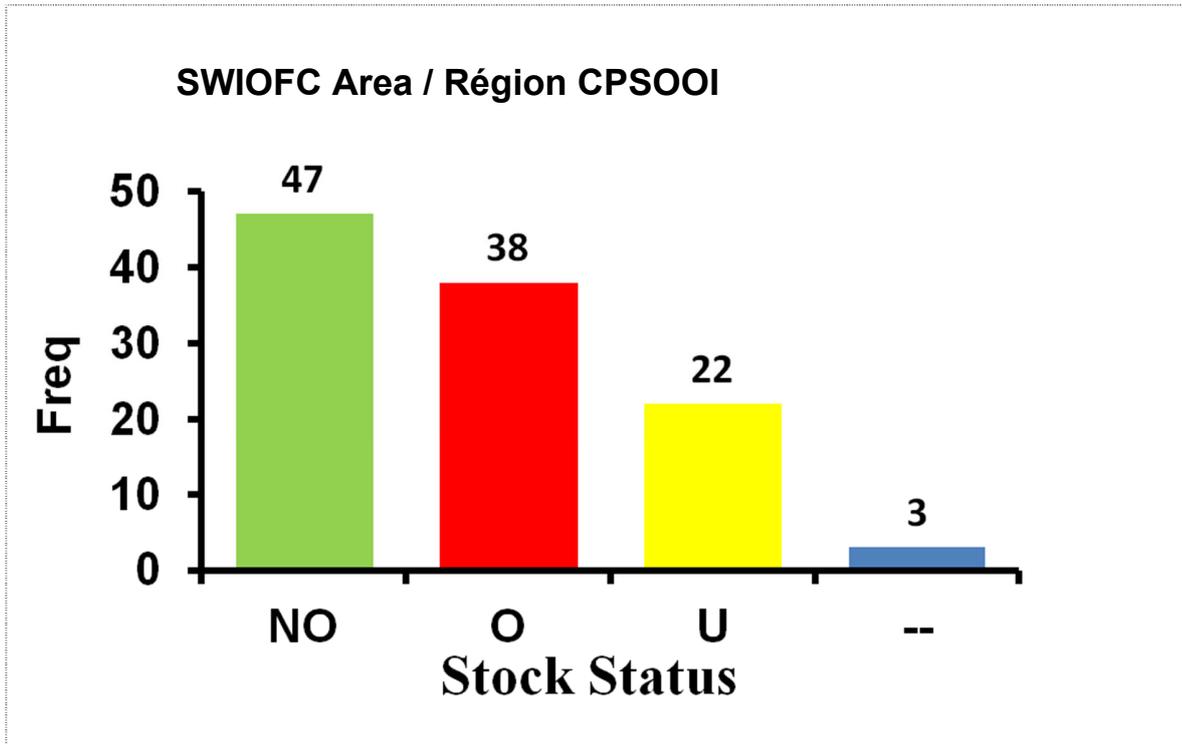


Figure 4. Distribution of the stocks reported per status category, all stocks reported

Appendix / Annexe 6

Comparison of the status of stocks in the SWIOFC 2005 to 2016 as against the global status of fish stocks (from SOFIA 2018)

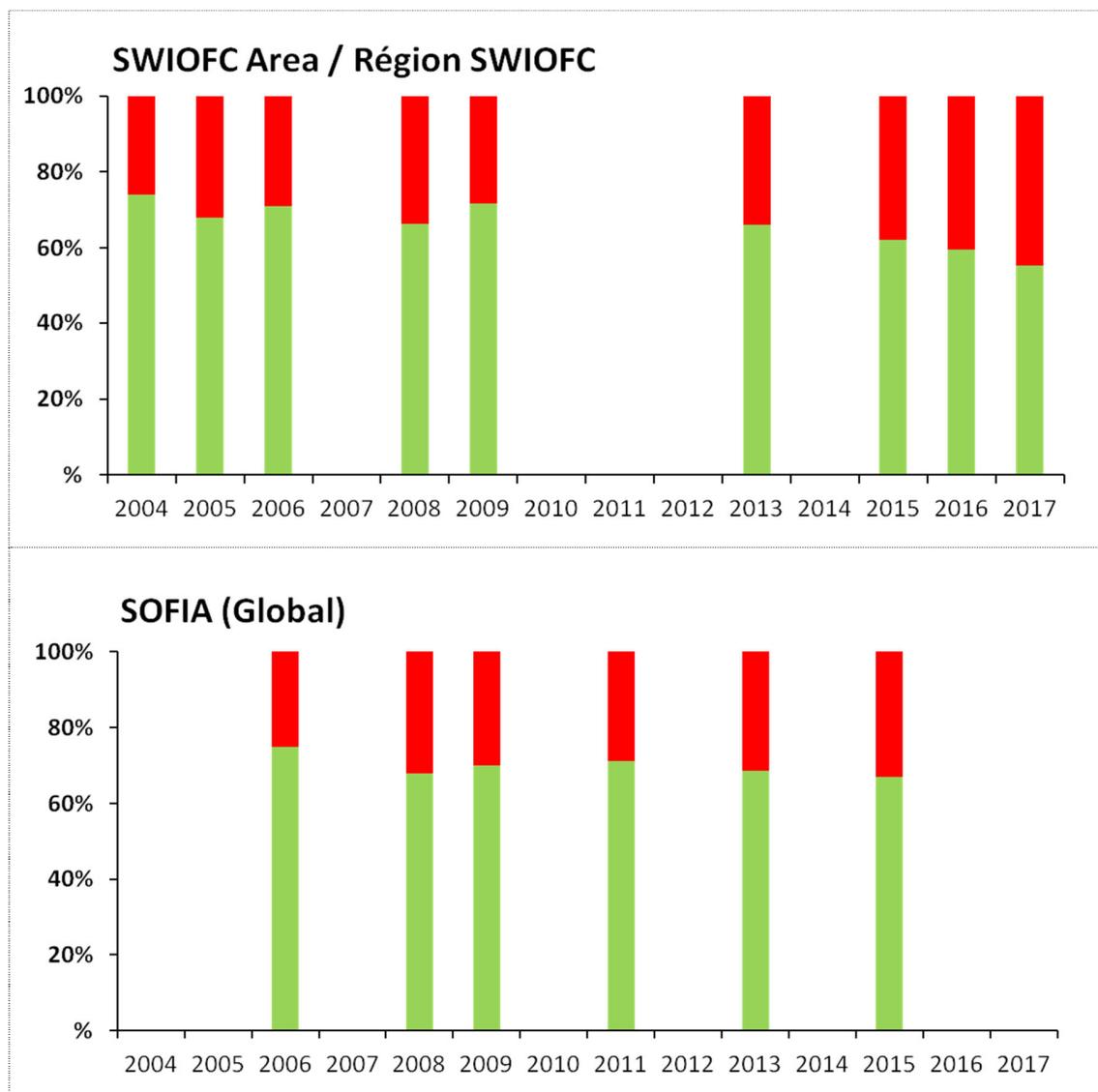


Figure 5. Comparison of the evolution of the percentage of stocks classified as Not-Overexploited and Overexploited, between the SWIOFC Area and the Global situation. Data for the Global situation taken from the FAO publication The State of World Fisheries and Aquaculture (SOFIA)

Appendix /Annexe 7

Summary table: Priority fisheries for future research in South West Indian Ocean
Tableau sommaire : Pêcheries Prioritaires pour recherche future dans le Sud-Ouest de l'Océan Indien

Country/Pays	Priority level / Niveau de priorité		
	1	2	3
Comoros / Comores	Demersal handline fishery / Pêche de démersale à la ligne à main	Artisanal octopus fishery / Pêche artisanale de poulpe	
France (Reunion)	Demersal handline fishery / Pêche de démersale à la ligne à main	Artisanal octopus fishery / Pêche artisanale de poulpe	
Kenya	Sea cucumber fishery / Pêche de concombre de mer	Shallow-water prawn fishery / Pêche de crevettes de surface	Artisanal octopus fishery / Pêche artisanale de poulpe
Madagascar	Artisanal Crab fishery / Pêche artisanale de crabe	Shallow-water prawn fishery / Pêche de crevettes de surface	Lobster fishery / Pêche de langouste
Maldives	Demersal handline fishery / Pêche de démersale à la ligne à main	Sea cucumber fishery / Pêche de concombre de mer	
Mozambique	Shallow-water prawn fishery / Pêche de crevettes de surface	Deep-water shrimp fishery / Pêche de crevettes de profondeur	Coastal shark fishery / Pêche côtière aux requins
Seychelles	Demersal handline fishery / Pêche de démersale à la ligne à main	Lobster fishery / Pêche de langouste	Sea cucumber fishery / Pêche de concombre de mer
South Africa / Afrique du Sud	Shallow-water prawn fishery / Pêche de crevettes de surface	Deep-water shrimp fishery / Pêche de crevettes de profondeur	
U. R. Tanzania / R.U. Tanzanie	Shallow-water prawn fishery / Pêche de crevettes de surface	Artisanal octopus fishery / Pêche artisanale de poulpe	Small pelagic fishery / Pêche aux petits poissons pélagiques
Continental countries / Pays continentales	<i>Sardinella gibbosa</i>		

