



EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR MARITIME AFFAIRS AND FISHERIES
INTERNATIONAL AFFAIRS AND MARKETS

Reference Grant: SI2.815850

Title

**“SIOFA-Vulnerable Marine Ecosystem Mapping – Strengthening the
functioning of SIOFA”**

Directorate Maritime Affairs and Fisheries

Final Report

Project duration: from 1 January 2020 to 30 June 2022

Date of submission: 28 July 2022

Version: 1 from SIOFA - 20220728

Beneficiary

(or coordinator organisation in case of multiple beneficiaries):

SOUTHERN INDIAN OCEAN FISHERIES AGREEMENT

Project coordinator name and title: Pierre PERIES/Thierry CLOT Executive Secretary

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DECLARATION BY THE PROJECT MANAGER

I, **Patrice PRUVOST**, Chairperson of the Protected Area and Ecosystem Working group and Project Manager of the "**SIOFA Vulnerable Marine Ecosystem mapping project** " hereby confirm that:

- This final report represents an accurate description of the work carried out in this project;
- The project:
 - () has fully achieved its objectives and technical goals;
 - (**X**) has achieved most of its objectives and technical goals with relatively minor deviations;
 - () has failed to achieve critical objectives.
- To the best of my knowledge, the financial statements submitted as part of this report are in line with the actual work carried out and are consistent with the report on the resources used for the project and - if applicable - with the certificate on financial statement.



30th September, 2022

Date and Signature

DECLARATION BY THE PROJECT COORDINATOR¹

I, **Pierre PERIES/Thierry CLOT Executive Secretary**, coordinator of the "**SIOFA Vulnerable Marine Ecosystem mapping project**" hereby confirm that:

- This final report represents an accurate description of the work carried out in this project;
- The project:
 - () has fully achieved its objectives and technical goals;
 - (X) has achieved most of its objectives and technical goals with relatively minor deviations;
 - () has failed to achieve critical objectives.
- To the best of my knowledge, the financial statements submitted as part of this report are in line with the actual work carried out and are consistent with the report on the resources used for the project and - if applicable - with the certificate on financial statement.

Thierry CLOT



30 September 2022

Pierre PERIES



Date and Signature

¹ By "project coordinator" shall be understood the person responsible for the work to be performed under this grant. If different from the person who signed the Grant Agreement representing "the beneficiary" (or "the coordinator" in case of multiple beneficiaries), a formal letter must accompany this report, in which the latter authorises the project coordinator to report on behalf of the beneficiary or beneficiaries.

1. FINAL SUMMARY REPORT

This is a comprehensive summary overview of results, conclusions and expected impacts of the project. The report shall be formatted to be printed as a stand-alone document. Please ensure that it:

- Fits in the space provided in this page;
- Is comprehensive, and describes the work carried out to achieve the project's objectives, its main results and conclusions. Please mention the target groups (such as policy makers or sectors of the civil society) for whom the project results could be relevant.

Following UNGA resolutions, the Southern Indian Ocean Fisheries Agreement (SIOFA) has taken a series of steps towards the protection of VMEs. SIOFA have adopted a list of VME indicator taxa and have identified five Benthic Protected Areas (BPAs) where bottom-fishing trawling is not permitted. For SIOFA to progress meeting its management obligations (UNGA, 2007), it requires scientific advice informed by maps of where VMEs are known to occur, or likely to occur, in the Agreement Area.

The aim of the project was to map where indicator taxa of VMEs are known to occur, and are likely to occur, in the Southern Indian Ocean Fisheries Agreement Area, to eventually delineate biogeographical regions for indicator taxa.

This final report summarises the results and deliverables of the project, including details of the project management.

as well as the associated data quality indicators (ToR1). The report presents maps of biogeographic regions for VME indicator taxa using three complementary predictive modelling approaches and we discuss the resulting biogeographic regions in detail (ToR2). The report:

1. compile, clean and verify occurrence and environmental data necessary for the project.
2. evaluate the quality of occurrence data and determine an optimal spatial and taxonomic resolution for analyses, provide indicators of data quality at different resolutions
3. implement predictive approaches to map VME taxa occurrence and develop and compare multiple bioregionalisation schemes, different bioregionalisation approaches should be implemented

This report could be relevant for managers and stakeholders of fishery resources in the open seas, especially in the Indian Ocean region.

2. PROJECT OBJECTIVES

Please provide an overview of the project objectives, as included in Annex I of the Grant Agreement. If applicable, please refer to any recommendations or guidance received from the European Commission and indicate how these have been taken into account.

Overarching objective: map biogeographical regions of vulnerable marine ecosystems (VME) indicators taxa.
 Specific objectives:

- Compile, clean and verify occurrence and environmental data (WP1)
- Evaluate the quality of occurrence data and determine an optimal resolution for analyses (WP2)
- Develop and compare multiple bioregionalization schemes (WP3)
- Project future trends according to different climate change scenarios (WP4)
- Synthesis (WP5)

3. WORK PROGRESS AND ACHIEVEMENTS

Please provide a concise overview of the progress of the work in line with the structure of Annex I of the Grant Agreement. Deliverables and dissemination activities can be mentioned, but should be described in detail in section 4. Similarly, details related to the management of the project shall be further reported in section 5..

Please ensure that this section:

- **Contains a summary of progress explicitly compared to the objectives specified in section 2 above** providing, if applicable, details for each task as detailed in the agreed work plan (Annex I of the Grant Agreement);
- Highlights clearly significant results and outputs;
- If applicable, explains the reasons for deviations from Annex I, and explains the impact on other objectives/tasks as well as on available resources and planning;
- If applicable, explains the remedial actions that have been applied.

WP1 – Compile, clean and verify occurrence and environmental data

Objective:

Collect and groom all data necessary for the project.

Report:

In its first year, the project collected occurrence data from GBIF/OBIS, available SIOFA VME data, occurrence data from oceanographic campaigns, and environmental data (climate data at all depth, topography and associated variables, primary productivity, geology)

Deliverables (see final report chapters 2.1 and 4.1):

Consolidated occurrence dataset

Maps of VME indicator taxa occurrence

WP2 – Evaluate the quality of occurrence data and determine an optimal resolution (grain) for analyses

Objective:

provide indicators of data quality at different resolutions

Report:

In its first year, the project trialled the use of different indicators of data quality: sampling intensity and completeness of the dataset. It then investigated the effect of spatial and taxonomic resolution on data quality and considered non-standard spatial resolutions such as geomorphologic units or spatially varying resolutions depending on sampling intensity.

Deliverables (see final report chapters 2.2 and 4.1):

Indicators of data quality

Maps of optimal resolutions of analysis

WP3 – Develop and compare multiple Bioregionalization schemesObjective:

Implement three different Bioregionalization approaches:

1. Raw biogeographical regions based on consolidated occurrence data
2. Biogeographical regions based on taxa distribution models
3. Generalised dissimilarity modelling

Report:

This work package was carried out over the whole project duration and produced 6 bioregionalization maps using the three predictive approaches. However, note that the project modified some of the methods to follow state-of-the-art recommendations.

The Generalised Dissimilarity Models initially planned have been recently criticised for their inadequacy in identifying relevant predictors of turnover in species composition between regions. The method was thus modified to Regions of Common Profile, which corresponds to the approach “analyse simultaneously”. Likewise, the modelling techniques initially proposed to model each indicator taxa in the “predict first, then group” approach.

Modified results will be reevaluated in a project currently ongoing under support from Grant Agreement SI2837681, and may serve as the building blocks for a conservation planning procedure.

Deliverables (see final report chapter 3.2):

Raw biogeographical region maps (Year 1)

Maps of regions distribution models (Year 1)

Taxa distribution maps (Year 2)

Maps of regions based on stacked-taxa distribution models (Year 2)

Maps of generalized dissimilarity models (Year 3)

WP4 – Project future trends according to different climate change scenariosObjective:

Apply multiple climate change scenarios (Representative Concentration Pathways) to the models developed in WP3 in order to provide potential future trends for each bioregionalisation scheme.

Report:

The project did not complete this work package because the SIOFA Scientific Committee did not reach a consensus to include it in the scope of the project, as it considered it too premature to address. During project implementation, the data collected and groomed indeed resulted of too poor quality to make reliable future projections according to climate change scenarios.

Deliverables not delivered**WP5 - Synthesis**Objective:

Synthesis on the main findings, robustness of results and maps, future directions for improvement

Report:

This work package was aimed at the production of the Final Project Report, which was delivered as planned. Among other things, the report includes many of the deliverables (e.g. maps) produced by the project.

Deliverables:

Final Project Report - Synthesis on the main findings, maps and perspectives (Year 3)

4. DELIVERABLES AND DISSEMINATION ACTIVITIES

Use this section to summarise all deliverables produced over the whole project duration (e.g. reports -other than those contractually required to be submitted to the European Commission-, websites, software etc.), as well as all dissemination activities executed (publications, workshops, conferences, etc.). For each of them, please signal if they were a contractual obligation², and provide the title, description and date of production, organisation or publication. If relevant, please provide information on how the provisions of Article II.7 of the Grant Agreement (Visibility of Union Funding) were implemented.

A preliminary (inception) report has been submitted to the SIOFA secretariat in March 2021 and presented at the 3rd meeting of the Protected Areas and Ecosystems Working Group (PAEWG-03-06 VME mapping), this report included a corresponding presentation at the meeting.

https://apsoi.org/sites/default/files/documents/meetings/PAEWG-03-06-VME_mapping.pdf

A progress report (Progress report - Consultancy on VME mapping) was submitted to the SIOFA secretariat in February 2022 and subsequently presented at the 4th meeting of the Protected Areas and Ecosystems Working Group in March 2022 (PAEWG-04-09-VME-mapping-progress-report) , this report included a corresponding presentation at the meeting.

<https://apsoi.org/sites/default/files/documents/meetings/PAEWG-04-09-VME-mapping-progress-report.pdf>

A final report has been submitted to the secretariat in April 2022 (Final Report_VMEMapping) and was finalised in May 2022. The final report included all the deliverables of WPs 1,2,3 and was the final result of WP5.

https://apsoi.org/sites/default/files/sc_works/Final-Report_VMEMapping.pdf

5. PROJECT MANAGEMENT

Please use this section to summarise project management activities:

- Describe briefly the main tools put in place to ensure sound project management (internal controls, monitoring tools, performance indicators, etc.). If applicable, describe performance of the tasks in terms of selected indicators;
- If applicable, please describe any problem encountered among the different beneficiaries or affiliated entities (distribution of tasks, coordination, communication, etc.);
- If applicable, report any other problems related to project management which have occurred and explain the remedial actions that have been applied as well as its results;
- If applicable, indicate changes which have occurred to the legal status of any of the beneficiaries or their affiliated entities, if any.

Project management was carried out by setting:

- Periodical deadlines, to achieve the step-by-step tasks.
- Periodical on-line meetings with the consultant, to discuss and evaluate the project progress
- Ad-hoc meetings approximately two weeks before each of the SIOFA workgroup or scientific committee meetings, to discuss about the presentations and expectations

² Contractual obligation: this refers either to an activity/deliverable indicated in the grant application

The Consultant report was evaluated by the project Manager, the Secretariat including the Science Officer, the Scientific Committee Chairperson and Vice Chairperson, and SC Head of Delegation. Based on this evaluation, the final report was considered a fair representation and an accurate description of the work carried out in this project.

6. SUBCONTRACTING

Describe whether any of the tasks has been subcontracted, provide justification, percentage of the volume subcontracted as compared to the total budget and explain how the subcontractor was selected.

The consultant has been selected by a panel constituted by the Chairperson and Vice Chairperson of the Scientific Committee, the Chair of the Stock Ecological Risk Assessment working group and by the Executive Secretary.

The criteria to select the candidate were :

- adequate submission of information to allow the panel to evaluate the candidate ;
- evaluation of the proposal from the candidate and their ability to undertake and complete the analyses or work required in the ToR ;
- the candidate's agreement with confidentiality provisions required for the project ;
- acceptable conflict of interest statement ;
- agreement with the data submission and intellectual property terms required for a contract ; and
- financial and resourcing considerations

7. BUDGET

Please fill in the separate template for the Financial Report.

In the section below, please provide your assessment of the budget implementation, as compared to the information included in Annex III of the Grant Agreement:

- Please explain any deviations from the planning, if applicable, as well as their impact on the implementation of the project;
- Signal any relevant problem concerning eligible costs, distribution of budget, financial constraints or others.

The total estimated budget implementation is the same 99475 €, but the costs are not exactly the same compared to the information included in Annex III of the Grant Agreement. In fact the Staff has worked more than what it was planned on this project, and the Consultant costed a little bit more than what was initially planned; These supplementary costs have been compensated by the fact that there has been no expense of travel and physical meeting due to the COVID19 context, all has been done by visio-conference.

8. ADDITIONAL INFORMATION

Please include any comment that you find relevant to convey to the European Commission. You may refer to issues such as policy implementation, contract management or budget execution.

None

9. ATTACHMENTS

Please list all the attachments accompanying this report including the project deliverables, if any. Please number the annexes and use the same reference number as in the list below.

- Annex 1 : Contract
- Annex 2 : Terms of Reference
- Annex 3 : Consultant Reports
 - Annex 3a: inception report
 - Annex 3b: progress report
 - Annex 3c: final report
- Annex 4 : Invoice
- Annex 5 : Attestation of payment
- Annex 6 : Final Financial Statement and Summary financial Statement
- Annex 7 : Request for payment of the balance
- Annex 7a : Identification SIOFA Bank account for transfer of payment
- Annex 8 : Certificate on the financial statement and underlying accounts.