

Project title: Alfonsino (*Beryx splendens*) Stock Assessment (2026/27)

Project Code: ALF-2026-01

Terms of Reference

1. Introduction

The SIOFA Scientific Committee (SC) provides scientific advice to the Meeting of Parties (MoP) on the status of stocks and sustainable yields of deep-sea fisheries resources managed by SIOFA, including alfonsino (*Beryx splendens*).

The most recent stock assessment of alfonsino in the SIOFA area was undertaken by Brandão et al. (2020). Since that assessment, further work relevant to alfonsino has been completed or is underway, including age and growth studies (Krusic-Golub and Robertson 2020; Brouwer et al. 2021), the alfonsino ageing protocol project ([ALF-2024-01](#), completed), an exploratory CPUE and length-frequency analysis using Cook Islands data (Brouwer et al. 2023, SC-08-INFO-14), and the current alfonsino age and growth project ([ALF-2025-01](#)), which is due to report updated growth curves and age-at-length data to SC12.

This project (ALF-2026-01) aims to update the stock assessment of alfonsino stocks in the SIOFA area, building on and improving the previous assessment (Brandão et al. 2020). The outcomes of the assessment should be collated in a report and presented to the SIOFA Scientific Committee.

As with the previous alfonsino assessment work, this assessment adopts two broad stocks as its working assumption: an Eastern stock and a Western stock of the Southern Indian Ocean. Given the limited data available, this split is likely to remain the most practical basis for the assessment; nonetheless, as a part of the project the consultant should consider whether the available CPUE, length, and age data support the current Eastern/Western split or would better support alternative stock boundaries, and should confirm the exact area boundaries used for each stock with the Advisory Panel and Secretariat at project initiation.

As a part of this project, the consultant will be required to present preliminary methods, draft reports, and results as they are developed to the project Advisory Panel for review. The draft report of this project is also going to be presented to and reviewed by the SIOFA SC.

2. Methods

Undertake an updated stock assessment of alfonsino in the SIOFA area for the Eastern and Western stocks. This should build on and improve the work of the previous assessment (Brandão et al. 2020) and the exploratory CPUE work of Brouwer et al. (2023).

The work comprises three linked components:

- Standardised CPUE indices for the Eastern and Western alfonsino stocks (the working stock structure adopted for this assessment — see above), extending the Cook Islands-only analysis of Brouwer et al. (2023) to include all fleets fishing alfonsino in the SIOFA area, standardised (to the extent possible) by area/seamount, fleet, gear, targeting behaviour, vessel flag, season and other relevant factors. Note that the SIOFA Secretariat is reviewing historical trawl records and reclassifying them as either midwater, benthopelagic, or bottom trawl using the SIOFA benthopelagic trawl classification algorithm (Annex G); this reclassification is required to be completed before the next alfonsino stock assessment, and the consultant should use the reclassified data when developing the CPUE analysis.
- Analysis of length- and age-composition trends over time (including developing scaled length and age-compositions from available length and age data), compared against the CPUE trends, to provide information on recent population trends.
- An integrated (age-structured production model) stock assessment combining the standardised CPUE indices, age-compositions, and the growth curves developed from ages determined in project [ALF-2025-01](#), to estimate the stock status of alfonsino for each stock.
- Consideration and analyses of available data to determine any revisions to estimates of the age/length at maturity and alfonsino natural mortality

The outcomes of the assessment should be collated in a report and presented to SC12 (15-24 March 2027). As a part of this project, the consultant will be required to present preliminary methods, draft results, and outcomes as they are developed to the project Advisory Panel for review, as well as present the results (via Zoom) to SC12.

3. Project objectives

1. During the project, meet with the SIOFA alfonsino assessment Advisory Panel (referred to as the pre-assessment review panel in the SC workplan) to discuss data inputs, the assessment approach, and preliminary results.
2. Develop standardised CPUE indices for alfonsino for the Eastern and Western stocks, standardising, to the extent possible, by factors such as area/seamount, fleet, gear, targeting behaviour, vessel flag, season, and other relevant factors.
3. Compare the new indices to the previously calculated CPUE indices (Brouwer et al. 2023, SC-08-INFO-14) and provide comment on recent trends in CPUE. Evaluate trends in length- and age-composition and compare these to the CPUE trends.
4. Review the previous stock assessment (Brandão et al. 2020) and all new information (including the updated growth and maturity data from project [ALF-2025-01](#), and the standardised CPUE and length- and age-composition data developed under objectives 2–3), and any other relevant information, to undertake an integrated age-structured stock assessment model to determine the stock status of alfonsino for the Eastern and Western stocks. The outcomes of the assessment should include the following:

- a) Evaluation of each stock against the SIOFA interim reference points (Target = 40%B₀ and Limit = 20%B₀). A range of other reference points should also be considered, and estimates of stock status, fishing mortality, and biomass should be provided in the terminal year of the assessment and over time, including, at least but not limited to, status in relation to B40% and B20%, MSY, SB_{msy}, SB₀, SB_{F=0}, SB/SB_{msy}, SB/SB_{F=0}, SB/SB₀, F, F_{msy}, F/F_{msy}.
 - b) Appropriate sensitivities to model structural assumptions, choices of biological parameters, and the CPUE, length-frequency, and age-composition data inputs.
 - c) Estimates of 20-year projected status (at 5-year intervals) under a range of future catch scenarios and appropriate estimates of future productivity (i.e., year class strengths). Analysis should include projections using constant catch and constant fishing mortality strategies, with both annual and 5-year changes in catch limits.
 - d) Kobe I (stock status trajectories) and appropriate Kobe II (strategy risk matrix) summaries of the stock assessment results.
5. Consider whether the available CPUE, length-, and age-composition data support the current Eastern/Western stock structure for alfonsino, or whether alternative stock boundaries would be better supported by the data. Given current data limitations, the Eastern/Western split is expected to remain the most practical basis for the assessment, but this should be tested and reported on as part of the project.
 6. Undertake analyses of available data or literature review to estimate age/length at maturity and natural mortality for alfonsino, for inclusion in the integrated stock assessment.
 7. Provide relevant text to update Section 6 of the SIOFA Fisheries Summary: alfonsino (see <https://siofa.org/publications>).

4. Relevant SIOFA information

1. SIOFA data (provided by the SIOFA Secretariat upon request), including alfonsino catch and effort data from all fleets, and the Cook Islands CPUE dataset used in Brouwer et al. (2023).
2. The age, growth, and morphometric data and growth curves produced by project [ALF-2025-01](#) (available from the Secretariat once that project reports, due end of January 2027).
3. SIOFA spatial data layers. Available at: https://github.com/SIOFASecretariat/SIOFA_SC_Spatial_layers
4. SIOFA reporting templates. Available at: https://github.com/SIOFASecretariat/SIOFA_Reporting_templates
5. SIOFA reports: SC, SC Working Group, and National Reports; MoP reports; and SIOFA technical and scientific reports (public reports and abstracts of restricted reports are available from siofa.org; full restricted reports will be made available by the SIOFA Secretariat to the project consultant upon request and after approval of the relevant CCPs).

5. Key project indicators

1. Follow the project timeline as detailed in this agreement, including the submission of deliverables, to meet the project objectives.
2. Collect any necessary data as early as possible, e.g., by submitting a data request to the SIOFA Secretariat, including the [ALF-2025-01](#) age data as soon as it is available.
3. Attend the project pre-assessment virtual meeting with the Advisory Panel (composed of members of the SIOFA Scientific Committee, including the [ALF-2025-01](#)/ALF-2026-01 project leads, and the SIOFA Secretariat) to discuss the project setup and development. Further engage, as requested, with the Advisory Panel during the project to assist the consultant access and interpret reports, data, and obtain the Advisory Panel's advice on relevant analyses, methods, and data interpretation for the project.
4. Present preliminary results during the project, as required, to the project Advisory Panel, and respond to and revise any project outputs based on their review.
5. Provide regular (i.e., every 2 months) proactive updates to the Project Coordinator and the Advisory Panel throughout the project, in particular informing promptly of any unforeseen delay or variation to the project, including any delay in receiving the [ALF-2025-01](#) age data.
6. Submit deliverables on time and appropriately formatted, as required. Each deliverable will go through a SIOFA review process to ensure it meets the quality targets and the project objectives set out in these Terms of Reference.
7. Appropriately acknowledge the project funding source (SIOFA) within each deliverable.
8. Take into reasonable account the outcomes of the SIOFA review, or any comments made by meeting attendees, when revising the deliverables.

6. Deliverables

1. Attend (virtually) the project Advisory Panel meetings.
2. A Draft Report that addresses the project objectives and tasks laid out in this contract. Revise and update the Draft Report based on review by the project Advisory Panel and the SIOFA Scientific Committee. The report should follow the guidelines and format available at https://github.com/SIOFASecretariat/SIOFA_Reporting_templates. In particular, the report should include a concise (max 300 words) summary, and should detail the methods, the outcomes, conclusions, and concise recommendations. The Draft Report will also be submitted to the SIOFA Scientific Committee.
3. Presentation of the Draft Report to the SIOFA SC annual meeting (SC12, 15-24 March 2027).
4. A Final Report that follows the guidelines and format available at https://github.com/SIOFASecretariat/SIOFA_Reporting_templates and includes any review comments from the SIOFA Scientific Committee on the Draft Report. The Final Report will also be submitted to the next SIOFA Scientific Committee.
5. Provide all the information collected as a part of this project to the SIOFA Secretariat (including that sourced from the Secretariat) before the final payment of the contract. Such information includes electronic data files (including the standardised CPUE indices, length-

and age-composition data, and the maturity and natural mortality estimates), analysis code, and other relevant data where applicable.

6. Presentations of reports to the Scientific Committee may be given virtually and travel to the meetings is not obligatory. All project meetings will take place virtually. No additional travel costs will be paid.

7. Acceptance of Draft and Final Reports

1. Draft and Final Reports must be submitted in Word format (and in English) to the Project Coordinator at the SIOFA Secretariat.
2. Draft and Final Reports will be reviewed using the procedures outlined in paper MOP-09-12 (Annex B), see also:
https://github.com/SIOFASecretariat/SIOFA_Reporting_templates/tree/main/SC%20reports/Review%20template%20for%20consultant%20reports.
3. Payment of contract milestones will be subject to acceptance of the submitted reports by SIOFA.

8. Intellectual property clause and confidentiality

The Consultant shall submit all the information collected to the SIOFA Secretariat (including that sourced from the Secretariat) before the final payment of the contract is made to the consultant.

Such information includes electronic data files, analysis code, and other relevant data if applicable. Any arrangements for ownership, storage, or disposal of physical samples or CCP-held data (e.g., Cook Islands and Japan otolith and CPUE data used under this and related projects, such as [ALF-2025-01](#)) shall be agreed by SIOFA as a part of the contract. All Intellectual Property generated as a part of this contract shall become the property of SIOFA unless otherwise excluded in the proposal and agreed by SIOFA in the contract.

The Consultant shall not release confidential data provided for conducting this study to any persons nor any organisations, other than the SIOFA Secretariat.

The Consultant shall delete all the confidential data upon completion of the contract.

9. Work timeline and payment schedule

The funds for this project, budgeted under the SIOFA budget as project ALF-2026-01, allow for a maximum total budget of EUR 50,000 (including all costs and any travel-related expenses), funded by the SIOFA MoP.

The consultant shall follow the indicative timeline described in Table 1 below.

Table 1: Indicative timeline for payments, milestones, and report submission.

Milestone	Date	Activities
Initiation of contract	October 2026	First instalment payment (30% of the total contract sum) upon contract signature.

Milestone	Date	Activities
Standardised CPUE indices and length-frequency trends completed	15 December 2026	Interim results (CPUE indices, length-and age-compositions, and biological parameters) shared with the Advisory Panel. This work depends on ALF-2025-01 , and on the SIOFA Secretariat completing the mid-water trawl reclassification (benthopelagic vs bottom trawl)
Delivery of draft report	18 January 2027	Second instalment payment (30% of the total contract sum) upon satisfactory submission of the draft report, in a format suitable for submission to SC, to the Project Coordinator.
Presentation of preliminary results	SC12 (indicatively 15-24 March 2027 – exact date to be confirmed)	Presentation of the draft report to the SC12 meeting (virtual).
Delivery of final report	30 April 2027	Submission of final report in a format suitable for submission to SC, and submission of all project information to the Project Coordinator. Final instalment payment (40% of the total contract sum) on acceptance of the final report by the Advisory Panel and final submission of project information.

10. Submission of applications

1. A brief proposal (indicatively 3–4 pages) outlining the proposed methods and analyses, including a description of how the objectives of the ToR will be achieved, and how the applicant will develop and use CPUE and length- and age-compositions. This proposal should include:
 - Any proposed exclusions to the intellectual property clause or variations to the work timeline and payment schedule.
 - The proposed consultancy price (including all consultant expenses and project-related costs), noting the available budget for this work indicated in Section 9.
 - Identification of any project risks and associated mitigation and management required to successfully complete the project, in particular the risk that the [ALF-2025-01](#) age data is delayed.
 - A statement that identifies any perceived, potential, or actual conflicts of interest of the applicant(s), including those described in paragraph 4 of the SIOFA recruitment procedure (see Section 12)
2. A current CV that summarises the applicant(s)' relevant educational background and professional experience.
3. Any additional relevant information the applicant(s) wish to submit.

The applicants must have appropriate experience and knowledge of similar work in their portfolio.

Applications must be submitted to the SIOFA Science Officer Marco Milardi (marco.milardi@siofa.org, CC secretariat@siofa.org). Only those applications received before 6:00 AM (2:00 AM UTC) on Friday, 25 September 2026, Reunion Island time, will be considered.

11. Evaluation criteria for the selection of candidates

An evaluation panel, the SIOFA Secretariat, and the Chair and Vice-Chairs of the SIOFA Scientific Committee will select one successful applicant for this contract. The selection criteria will include the following:

1. Adequate submission of information to allow the panel to evaluate the proposal
2. Demonstrated ability to undertake and complete the analyses or work required in this ToR, including CPUE standardisation and integrated (age-structured) stock assessment modelling
3. The track record and previous experience relevant to the ToR and to similar work in other contexts
4. The candidate(s)' ability to comply with confidentiality provisions required for the project
5. The quality of conflict of interest and risk mitigation statements
6. The ability to comply with the data submission and intellectual property terms required in this ToR, and
7. Financial and resourcing considerations, including the proposed contract price.

12. Conflicts of interest – Paragraph 4 of SIOFA's Recruitment Procedure

To ensure that situations relating to potential and actual conflicts of interest are avoided, persons falling into the following categories may not normally be considered for SIOFA consultancy: (i) any person designated as a designated representative or alternate representative of a CCP to the Meeting of Parties (MOP) as per Rule 3.1 of the Rules of Procedure, and to the SC and any other subsidiary bodies of the MOP, as per Rule 21.3 of the Rules of Procedure; (ii) any person fulfilling the function of Chair or Vice-Chair of the MOP or Chair or Vice-Chair of a SIOFA subsidiary body or working group; (iii) any person acting as a member of a delegation involved in the SIOFA decision-making process resulting in recommendations and/or approval for the SIOFA work requiring the engagement of a consultant; and (iv) individuals who were SIOFA Secretariat staff members at the time when the recommendations and/or approval for the SIOFA works were adopted, or who are members of the immediate family (e.g., spouse or partner, father, mother, son, daughter, brother, or sister) of any Secretariat staff member or of the persons identified in 4(i), (ii), and (iii).

13. Contacts

Project Coordinator – SIOFA Science Officer (Marco Milardi, marco.milardi@siofa.org)

Administration – SIOFA Executive Secretary (Thierry Clot, thierry.clot@siofa.org)

14. References

- Andrews, A.H. 2023 Age, growth, and lifespan investigations of Splendid Alfonsino (*Beryx splendens*) of the Indian Ocean using bomb radiocarbon dating. <https://siofa.org/science/sc-works/SER2022-BYS2>
- Brandão A., Butterworth D.S., Johnston S. 2020 Age-Structured Production Model (ASPM) assessments of the Alfonsino (*Beryx splendens*) resource in the SIOFA area of the Southern Indian Ocean. SC-05-29 <https://siofa.org/sites/default/files/documents/meetings/SC-05-29%20Age-Structured%20Production%20Model%20assessments%20of%20the%20Alfonsino.pdf>
- Brouwer S., Wragg C., Flanagan B., Heaphy C. 2021 Alfonsino growth, length and maturity estimates from fish sampled Cook Island trawl vessels in SIOFA. SERAWG-03-09-rev1 https://siofa.org/meeting-file/meeting-documents/3rd_stock_and_ecological_risk_assessment_working_group_serawg3/SERAWG-03-09%20Alfonsino%20growth%2C%20length%20and%20maturity%20estimates%20from%20fish%20sampled%20REV1.pdf
- Brouwer S., Nicholas T.-R., Heaphy C. 2023 Cook Islands SIOFA fishery and data collection SC-08-INFO-14. <https://siofa.org/media/570>
- Hoyle, S., Mormede, S. 2025 Determination of Biological Reference Points (BRPs) for key SIOFA fish stocks (SIOFA PAM-2024-02 Final Project Report). <https://siofa.org/science/sc-works/PAM-2024-02>
- Krusic-Golub, K. and Robertson, S.G. 2020. Ageing of Alfonsino (*Beryx splendens*) for the Southern Indian Ocean Fisheries Agreement (SIOFA). <https://siofa.org/science/sc-works/SER2020-02>
- Middleton, D. A. J., Hill-Moana, T., and Neubauer, P. 2023. Stock structure of alfonsino and orange roughy in the SIOFA area. Final report for SER2022-BYS1 and SER2022. <https://siofa.org/science/sc-works/SER2022-BYS1>
- Mormede, S., Hoyle, S. 2025 Development of harvest strategies for key SIOFA fish stocks (SIOFA PAM-2024-03 Final Report). <https://siofa.org/science/sc-works/PAM-2024-03>
- Wakefield C.B., Widdrington J.B., Andrews A.H., Krusic-Golub K., Barnes T.C., Pons A.J.E., Ariihee B., Hashimoto M., Tanaka M., Okuda T., Nicol S.J., Brouwer S. 2025 Paradigm shift in ageing protocols for splendid alfonsino (*Beryx splendens*): international workshop on whole vs sectioned otoliths, bomb radiocarbon dating, biometric age prediction and sclerochronological growth variability. <https://siofa.org/science/sc-works/ALF-2024-01>