

A starting point for objectives for the next South African joint sardine-anchovy OMP

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The objectives used to develop and tune OMP-18 for managing the South African sardine and anchovy fisheries are listed to assist in drafting objectives for the next OMP.

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Introduction

Management Strategy Evaluation involves simulating testing alternative Management Strategies (Procedures) to determine which best meet the pre-defined management objectives (Punt *et al.* 2016). The ability for each candidate Management Procedure (under a range of uncertainties) to meet these objectives is primarily evaluated with quantitative performance statistics linked to each of the tactical objectives.

The objectives for the next South African sardine-anchovy Operational Management Procedure (OMP) need to be set. This document lists the objectives used during the development and tuning of the last OMP (OMP-18, de Moor 2017, 2018) to serve as a starting point. The objectives were separated into three 'tiers', with the non-negotiable objectives focusing on the target resources only, while the core and trade-off objectives considered not only the target resource, but also socio-economics and the ecosystem.

'Non-negotiable' objectives

The non-negotiable objectives have been incorporated into the Risk criteria. OMP-18 was tuned to satisfy $Risk_S < 0.153$ and $Risk_A < 0.089$, where:

$Risk_S$: the probability of the sardine west component effective spawner biomass being below that of the 2007 level over the projection period.

$Risk_A$: the probability of the anchovy spawner biomass being below that of the 1996 level over the projection period.

Core decision objectives

Target resource

P1: Avoid the resource declining to an unacceptably low level

P2: Sound resource at the end of the projection period

Industry socio-economics

S1: Maximize average directed sardine and anchovy annual catch, subject to the known trade-off between these directed fisheries

S2: Minimize average inter-annual variation in the directed sardine and anchovy catches

S3: In the two-area sardine TAC MPs, minimise the variation of the ratio of west:south directed sardine quotas

Ecosystem

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E1: Avoid an unacceptable fishery-induced impact on top predators. (As a first step, it has been agreed that considering the impact of alternative candidate MPs on the dynamics of penguins on Robben Island would be used as a proxy index for top predator/ecosystem impacts.)

Trade-off objectives

Target resource

P3: If the resource does drop to an undesirably low abundance at any point during the projection period, the Critical Biomass metarules¹ should be used, and on a basis that the probability of false positives and false negatives should be minimised

P4: If the resource does drop below the Critical Biomass¹ threshold, it must recover quickly to above that level

Industry socio-economics

S4: Exceptional Circumstances should not be declared too frequently

Ecosystem

E2: Ensure the biomass of sardine remains sufficient over time both west and south of Cape Agulhas

E3: Ensure a combined sardine and anchovy biomass sufficient to avoid potential catastrophic ecosystem implications

Summary

The acceptable risk criteria are always re-evaluated for a new OMP given the updated perception of the resource obtained from the new Operating Models conditioned on longer time series of data. The risk thresholds were changed for OMP-18 from previous OMPs given a revised understanding of stock structure and to better align with international practices. It has already been suggested that the ecosystem objectives should move beyond only considering the impact on penguin dynamics. Further input towards developing these objectives for the next OMP is welcome.

References

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¹ Called 'Exceptional Circumstances' in de Moor (2017) prior to the change of name (de Moor 2018).