

## Overview of Hake Documents

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A short summary of each of the Hake documents for the November-December 2016 MARAM International Stock Assessment Workshop is provided below.

### Background Documents:

**BG1:** Butterworth DS. 2016. This document

**BG2:** Ross-Gillespie A. 2016. Response to the review panel report for the 2015 International Fisheries Stock Assessment Workshop: Hake.

- Lists the recommendations from the 2015 Panel that relate to hake, together with response on progress made.

### ***Hake Assessment:***

#### Primary Documents:

**P1:** Rademeyer R and Butterworth DS. 2016. Reference Set results and projections under the current OMP for the South African hake resource.

- Provides projections under the present OMP as a basis to judge whether a revision should be advanced one year to speed recovery and secure a shorter period of TAC reduction.

**P2:** Rademeyer R and Butterworth DS. 2016. Further projections under the Reference Set for the South African hake resource.

- Shows the trade-offs that result from a TAC reduction for 2018 which is greater than allowed under the current OMP.

### Background Documents:

**BG1:** Rademeyer R and Butterworth DS. 2014. Final CMP Projections for the South African hake resource.

- Projections under the current OMPO (OMP-2014) at the time that OMP was selected.

### ***Hake Modelling Predation:***

#### Primary Documents:

**P1:** OLRAC SPS. 2016. Method used to include cannibalism and inter-species predation in the species, sex, age and size disaggregated hake stock assessment model.

- A summary of the technical details of the Bergh *et al.* hake predation model.

**P2:** Ross-Gillespie A and Butterworth DS. 2016. Hake cannibalism and inter-species predation model: A summary of the PhD thesis and the development of the model since IWS 2015.

- A summary of technical details of the Ross-Gillespie hake predation model.

**P3:** Fourie A, Ross-Gillespie A, Bergh M and Butterworth DS. 2016. A comparison between the hake cannibalism and inter-species predation models in Bergh *et al.* (2016) and Ross-Gillespie (2016).

- Tabulation of points of similarity and of difference between the two hake predation models.

**P4:** Ross-Gillespie A and Butterworth DS. 2016. The hake predation model: future developments and research.

- Suggestions for future research directions.

**P5:** OLRAC SPS. 2016. The Bergh *et al.* (2016) hake cannibalism and inter-species predation model with the predator/prey preference, the daily ration of hake predators and the diet of the predators from the Ross-Gillespie (2016) model.

- Results from changing some aspects of the Bergh *et al.* hake predation model to resemble the Ross-Gillespie model more closely.

#### Background Documents:

**BG1:** Ross-Gillespie A. 2016. Modelling cannibalism and inter-species predation for Cape hake species *Merluccius capensis* and *M. paradoxus*. PhD thesis.

- Detailed background on the Ross-Gillespie hake predation model.

#### ***Hake GeoPop:***

##### Primary Documents:

**P1:** Jansen, T., Kristensen, K., Kainge, P., Durholtz, D., Strømme, T., Thygesen, U.H., Wilhelm, M.R., Kathena, J., Fairweather, T.P., Paulus, S. and Degel, H. 2016. Migration, distribution and population (stock) structure of shallow-water hake (*Merluccius capensis*) in the Benguela Current Large Marine Ecosystem inferred using a geostatistical population model. *Fisheries Research*, 179: 156-167. **PUBLICATION**

- Application of the GeoPop model to *M. capensis*.

**P2:** Jansen T and Thygesen U. 2016. Geostatistical modelling of the spatial life history of post-larval deep-water hake (*Merluccius paradoxus*) in the Benguela Current Large Marine Ecosystem. 34pp.

- Application of the GeoPop model to *M. paradoxus*.