

Stochastic projections for the 2019 Base case assessment model of the toothfish resource that take cetacean predation into account

A. Brandão and D.S. Butterworth

Marine Resource Assessment and Management Group (MARAM)

Department of Mathematics and Applied Mathematics,

University of Cape Town,

Rondebosch 7701, South Africa

October 2019

ABSTRACT

Projections reported in Brandão and Butterworth (2019) did not take cetacean predation into account in reporting the implications of future trotline catches. Projections for the Base case model have now been corrected to take cetacean predation into account.

INTRODUCTION

Projections reported in Brandão and Butterworth (2019) did not take cetacean predation into account in reporting the implications of future trotline catches. This correction has now been applied to the Base case model projections.

RESULTS AND DISCUSSION

Figure 1 shows the median spawning biomass depletion together with twenty year projections assuming future stochastic recruitment under constant future annual catches of 0, 200, 400, 543 and 643 t for the **New Base case** model. Projections assume that in future all catches are made by the trotline fishery, as has been the case since 2014, that there are no illegal removals, and that the same cetacean predation assumed by the assessment model is also applicable to future catches. These are compared to similar projections reported last year, though note that in that earlier case, neither the assessment nor the projections incorporated any allowance for predation by cetaceans.

REFERENCES

Brandão, A. and Butterworth, D.S. 2018. Stochastic projections for the toothfish (*Dissostichus eleginoides*) resource in the Prince Edward Islands vicinity. DAFF Branch Fisheries document: FISHERIES/2018/OCT/SWG-DEM/66.

Brandão, A. and Butterworth, D.S. 2019. Stochastic projections for the 2019 assessment of the toothfish (*Dissostichus eleginoides*) resource in the Prince Edward Islands vicinity. DEFF Branch Fisheries document: FISHERIES/2019/OCT/SWG-DEM/33.

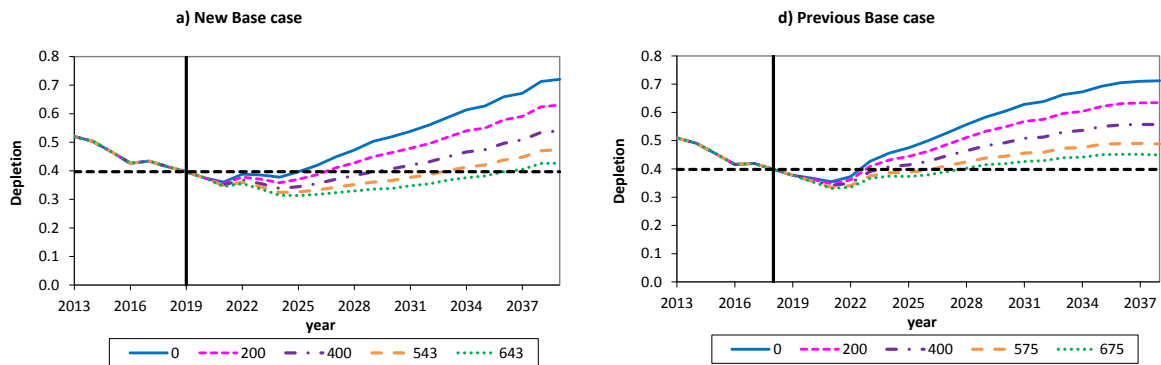


Figure 1. Median spawning biomass depletion projections (shown after the vertical line) assuming stochastic future recruitment and under future annual catches of 0, 200, 400, 543 and 643 tonnes assumed to be all taken by trotlines (as is the case for catches taken since 2014); furthermore, the same cetacean predation on trotlines that is assumed by the assessment applies to future catches. The plots shown on the left are conducted for the **New Base case**. The dashed horizontal line shows the current (2019) depletion value for that case. The plot on the right shows depletion projections under various annual catches for the Base case model reported in Brandão and Butterworth (2018); there the horizontal dashed line refers to the 2018 depletion as estimated last year.