Projections of abalone abundance for Zone F

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Abstract

Projections are shown for different scenarios for the future commercial and poaching catches in Zone F for the two best fitting Operating Models (K = 4 500t, average poaching since 2008 = 350t and K = 3 000t, average poaching since 2008 = 250t) . Current poaching levels (average of 2014 and 2015, estimated as 438 and 314t respectively), if continued, would not be sustainable.

Introduction

This document provides projections based on the two best fitting Operating Model (K = 4 500t, average poaching since 2008 = 350t and K = 3 000t, average poaching since 2008 = 250t) for Zone F (Brandão and Butterworth, 2015). Four scenarios for future commercial and poaching catches (as done for Zones A-D) are considered and are listed below.

- Poaching only (average of 2014 and 2015 levels)
- 16 ton commercial catch only
- Both poaching and commercial catches at the above levels
- Poaching reduction necessary to keep the biomass at its current level.

Results and Discussion

Figure 1 shows spawning biomass projections for the best fitting Operating Model (K = 4 500t, average poaching since 2008 = 350t, average over 2014 and 2015 = 438t) for four scenarios for future commercial and poaching catches. Figure 2 shows the same results for the second best fitted Operating Model (K = 3 000t, average poaching since 2008 = 250t, average over 2014 and 2015 = 314t).

Figures 3 and 4 show future poaching levels for the two OMs considered here (in term of numbers and in biomass), as assumed to remain at the current estimated level (average of 2014 and 2015), and the actual removals made by the model because of the model restriction that does not allow the fully selected fishing proportion to be greater than 95%. Thus the model builds in a factor to allow for the fact that as abundance declines, it would not be possible to sustain current poaching removals. The OMs are fitted to numbers poached and in projections the numbers poached in the future are fixed. The reason that the biomass plots do not reflect the same trend as the number plots is because as the population becomes more depleted, poaching numbers will consist of a larger proportion of smaller abalone and therefore smaller biomasses.

Results show that at the current level of poaching (the average of 2014 and 2015) is not sustainable if maintained in the future and a 69% reduction in poaching level is necessary to maintain the abalone resource in Zone F at its current value for the best fitted OM or a 76% reduction is necessary under the second best fitted OM.

Reference

Brandão, A. and Butterworth, D.S. 2015. Proposed Operating Models to test decision rules for Zone F. FISHERIES/2015/JUL/SWG-AB/07.

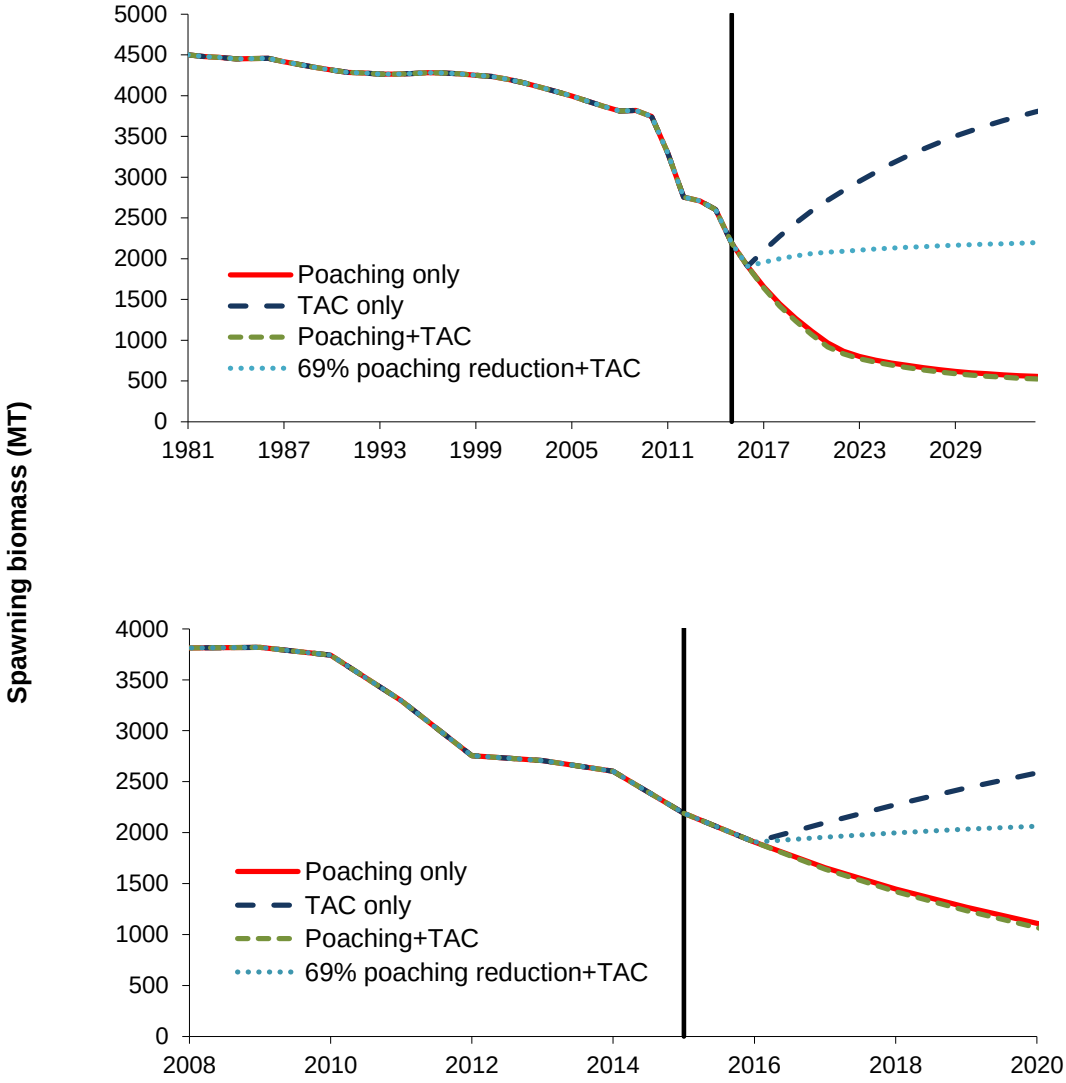

Figure 1. Spawning biomass trajectories shown for Zone the best fitted Operating Model (K = 4 500t, average poaching since 2008 = 350t). The 20-yr projections shown (after the vertical bar) represent five different scenarios for future commercial and poaching catches. Unless a zero amount is assigned, future poaching levels are assumed to remain at the current estimated level (average of 2014 and 2015) and future commercial catches are set to the current TAC of 16 tons. The bottom plots zoom in on a shorter period to be able to distinguish the curves more clearly. In each plot, the required reduction in poaching necessary to keep the resource stable at its present level under the current TAC is also shown, with the required reduction indicated in the legend.

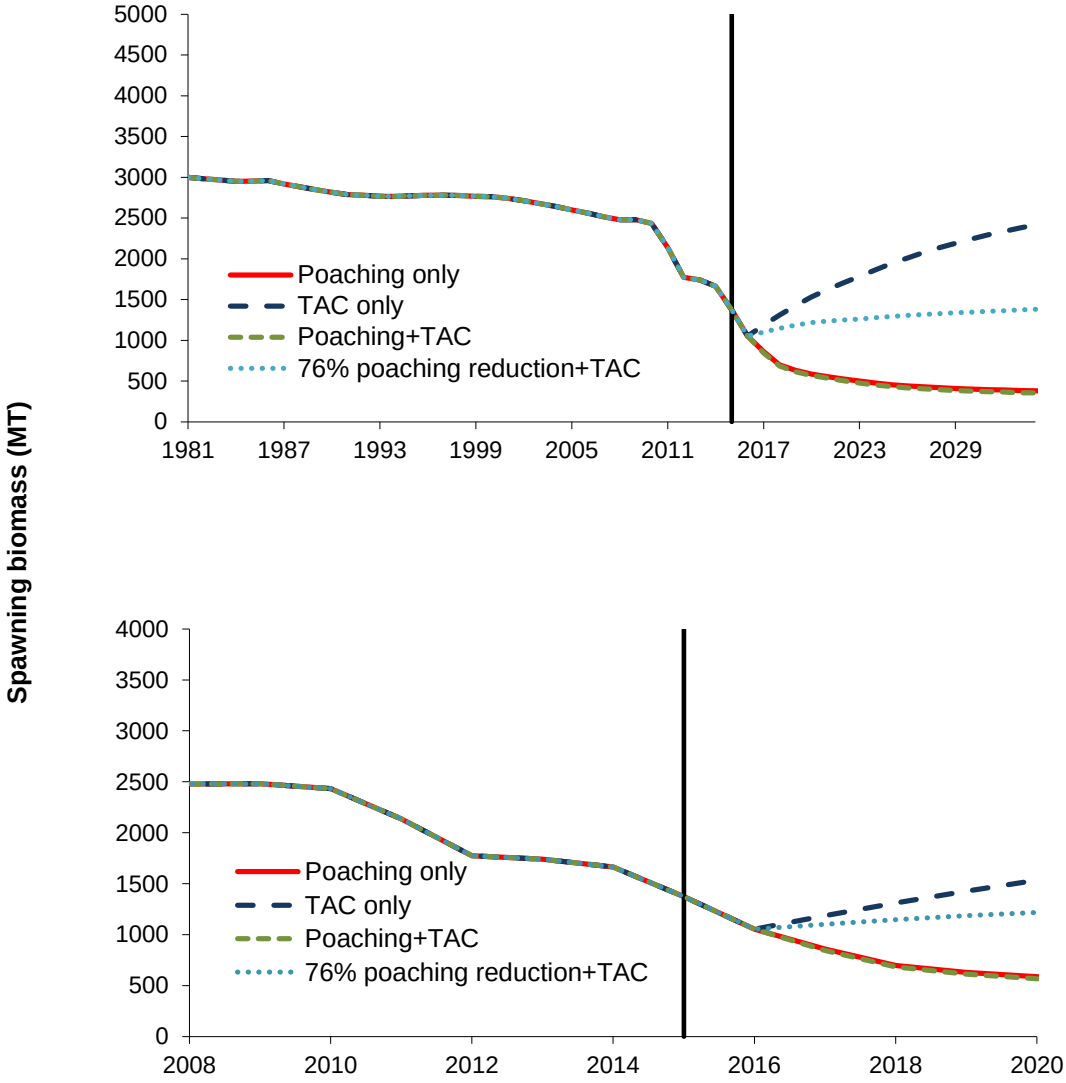

Figure 2. Spawning biomass trajectories shown for Zone the second best fitted Operating Model (K = 3 000t, average poaching since 2008 = 250t). The 20-yr projections shown (after the vertical bar) represent five different scenarios for future commercial and poaching catches. Unless a zero amount is assigned, future poaching levels are assumed to remain at the current estimated level (average of 2014 and 2015) and future commercial catches are set to the current TAC of 16 tons. The bottom plots zoom in on a shorter period to be able to distinguish the curves more clearly. In each plot, the required reduction in poaching necessary to keep the resource stable at its present level under the current TAC is also shown, with the required reduction indicated in the legend.

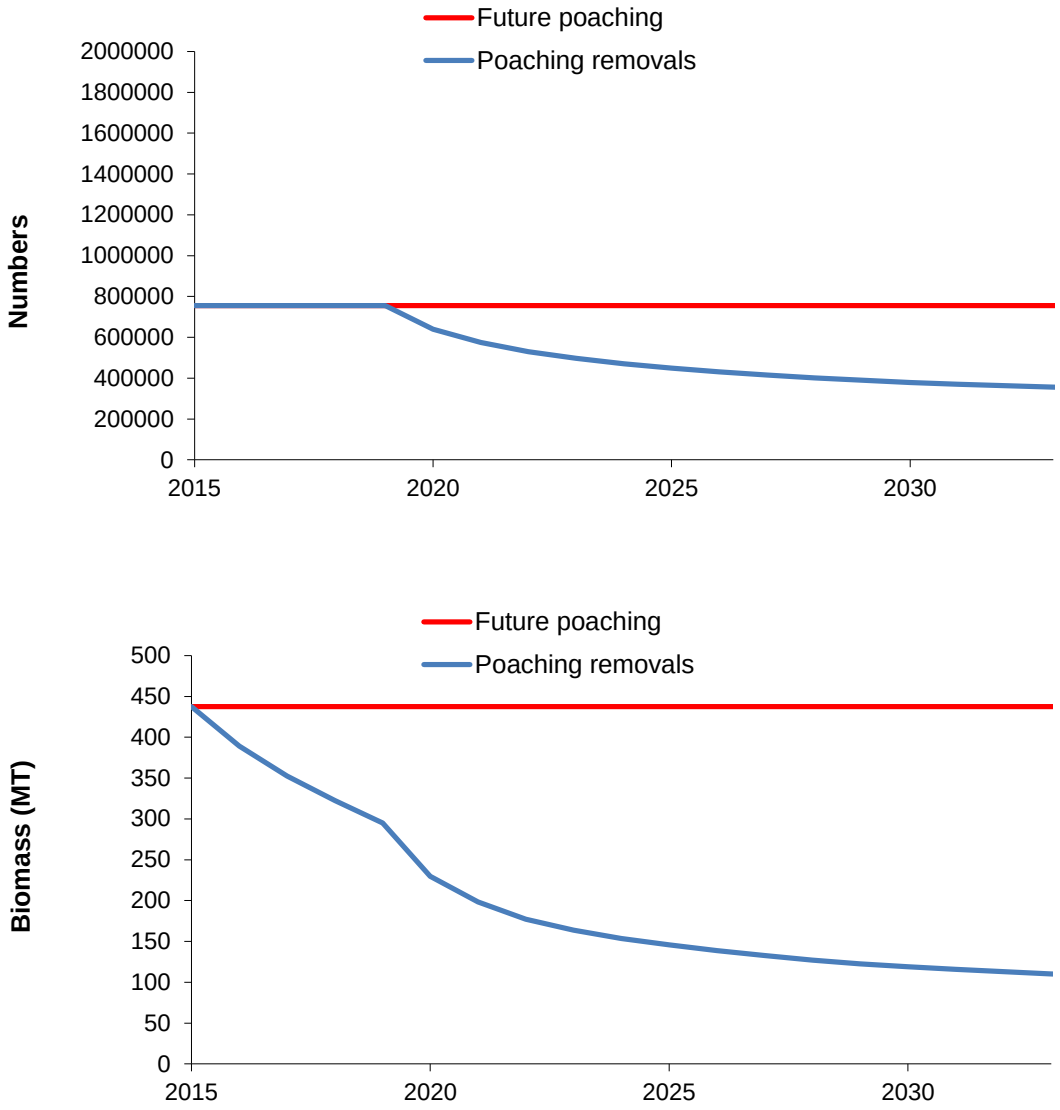

Figure 3. Future poaching levels (in term of numbers (top) and biomass (bottom)), as assumed to remain at the current estimated level (average of 2014 and 2015), and the actual removals made by the model because of the model restriction that does not allow the fully selected fishing proportion to be greater than 95%. Thus the model builds in a factor to allow for the fact that as abundance declines, it would not be possible to sustain current poaching removals. Results shown are for the the best fitted Operating Model (K = 4 500t, average poaching since 2008 = 350t) for Zone F.

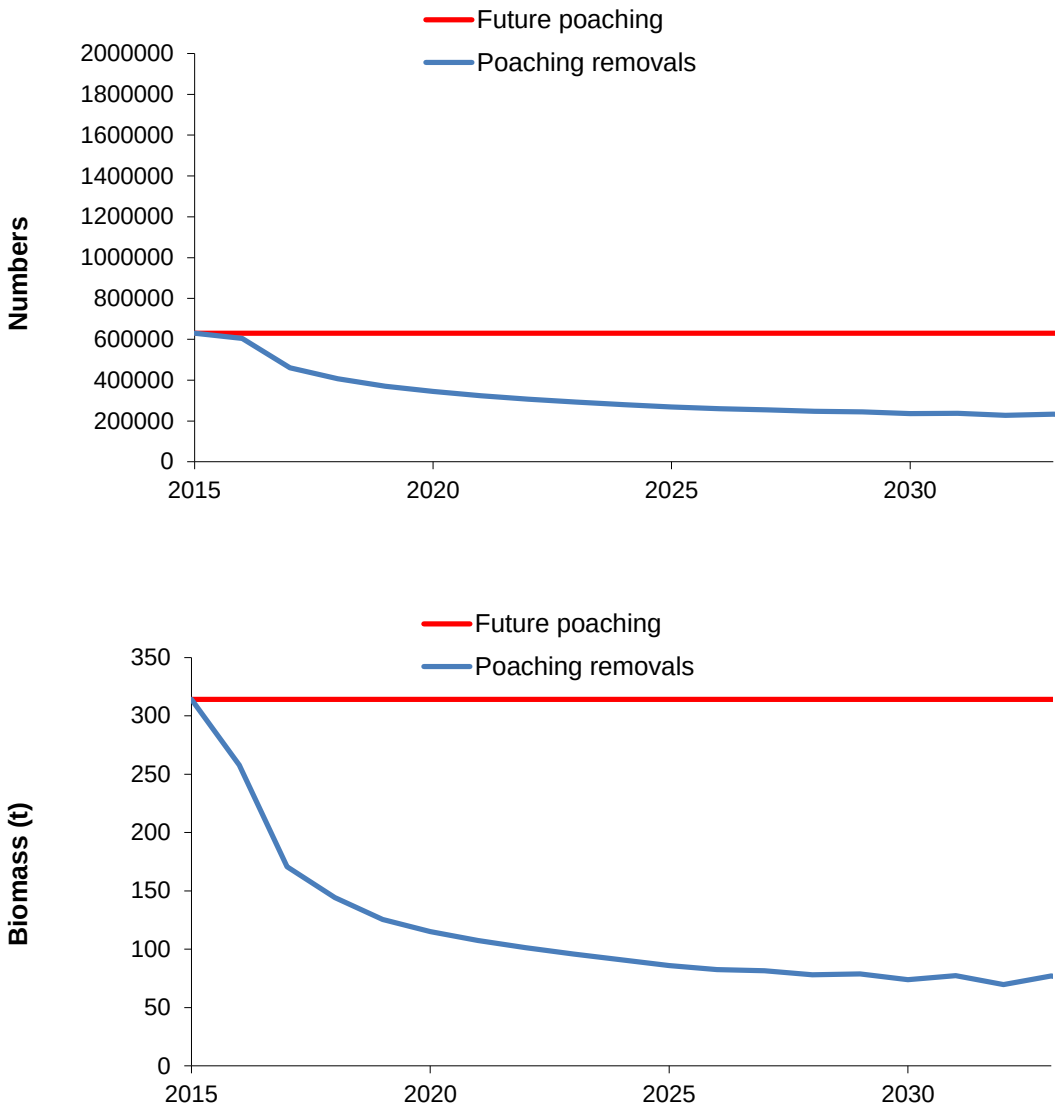

Figure 4. Future poaching levels (in term of numbers (top) and biomass (bottom)), as assumed to remain at the current estimated level (average of 2014 and 2015), and the actual removals made by the model because of the model restriction that does not allow the fully selected fishing proportion to be greater than 95%. Thus the model builds in a factor to allow for the fact that as abundance declines, it would not be possible to sustain current poaching removals. Results shown are for the the second best fitted Operating Model (K = 3 000t, average poaching since 2008 = 250t) for Zone F.