Implications to existing OMP of the 2010 updated assessments of the South Coast Rock Lobster Resource

S.J. Johnston, D.S. Butterworth

MARAM
Department of Mathematics and Applied Mathematics
University of Cape Town
Rondebosch

Introduction

Johnston and Butterworth (2008) reported expected results for the final OMP 2008 for the South Coast Rock Lobster fishery. This OMP

1. has a 5% maximum TAC change constraint, and
2. has a median anticipated B^{sp} (2025/2006) of 1.20 under operating Model 3 (MARAM TVS).

Recently, a programming glitch in the operating models has been discovered. The result of correcting this glitch is reported in Johnston and Butterworth (2010). Here we compare the OMP 2008 expected performance statistics using the original 2008 operating models with those produced using the corrected operating models conditioned on the data available at that time. The current "OMP 2008" was tuned using the original 2008 Model 3 operating model.

Simple deterministic projections

Both updated 2010 Model 3 and Model 4 are used to project the resource ahead under a constant catch of 330 MT until 2015. These projections are deterministic and do not assume the same level of future variability that was assumed in the simulations used for OMP testing in 2008. Note also that they also use three years extra data (and have further estimable parameters) compared to the analyses referenced in the preceeding paragraph.

Results

Table 1 provides comparative results of anticipated OMP performance (using current OMP 2008) between the original and corrected 2008 operating models. Figure 1 compares anticipated OMP results for Model 3 using the original and corrected 2008 operating models, whilst Figure 2 compares anticipated OMP results for Model 4.

Figure 3 compares TAC and B^{sp}/K median trajectories between the original and corrected operating, using the current OMP 2008.

Table 2 reports deterministic B^{sp}/K values for the **updated 2010** assessments assuming a future constant catch of 330 MT.

References

Johnston, S.J., Butterworth, D.S. and J.P. Glazer. 2008. OMP 2008 for the South Coast Rock lobster resource. MCM document, MCM/2008/AUG/SWG-SCRL/30.

Johnston, S.J. and D.S. Butterworth. 2008. Results for the final OMP 2008 selected for the South Coast rock lobster resource. MCM document, MCM./2008/AUG/SWG-SCRL/28.

Johnston, S.J. and D.S. Butterworth. 2008. Updated South Coast rock lobster stock assessments for 2010 and comparisons to the 2008 and 2009 assessments. MCM document, MCM./2010/APRIL/SWG-SCRL/04.

Table 1: Model 3 (MARAM TVS) and Model 4 (OLRAC TVS) summary performance statistics for the final selected OMP. Medians with 5th and 95th percentiles are reported. Results are compared between the original 2008 operating model and those using the recently corrected 2008 operating model.

	Using original 2008 Operating model	**Using recently corrected 2008 Operating model**	**Using original 2008 Operating model**	**Using recently corrected 2008 Operating model**
	Model 3 (MARAM TVS)	Model 3 (MARAM TVS)	Model 4 (OLRAC TVS)	Model 4 (OLRAC TVS)
C_{ave}^{7} (2006-2012)	346 [343; 363]	343 [343; 360]	347 [343; 377]	343 [343; 363]
C_{ave}^{10} (2006-2015)	340 [323; 369]	325 [320; 355]	351 [327; 391]	323 [320; 351]
C_{ave}^{20} (2006-2025)	350 [296; 408]	306 [257; 362]	364 [302; 436]	286 [256; 350]
$C(2008)$	363 [363; 363]	363 [363; 378]	363 [363; 373]	363 [363; 392]
$C(2009)$	345 [345; 357]	345 [345; 368]	345 [345; 381]	345 [345; 373]
$C(2010)$	328 [328; 356]	328 [328; 356]	328 [328; 389]	328 [328; 354]
V^{7} (2006-2012)	4 [3; 4]	4 [3; 4]	3 [2; 4]	4 [3; 4]
V^{10} (2006-2015)	4 [3; 4]	4 [4; 4]	4 [3; 4]	4 [3; 4]
V^{20} (2006-2025)	4 [4; 5]	4 [4; 5]	4 [4; 5]	4 [4; 5]
B^{sp} (2015/2006) 90% range	1.24 [0.96; 1.68]	1.11 [0.78; 1.62]	1.19 [0.96; 1.54]	1.27 [0.80; 2.02]
B^{sp} (2025/2006) 90% range	1.20 [0.87; 1.70]	1.07 [0.68; 1.73]	1.21 [0.90; 1.69]	1.33 [0.76; 2.17]
B^{sp} (2006/K)	0.34	0.31	0.47	0.26
B^{sp} (2015/K)	0.42 [0.33; 0.57]	0.34 [0.24; 0.49]	0.57 [0.45; 0.72]	0.33 [0.21; 0.52]
B^{sp} (2025/K)	0.41 [0.29; 0.58]	0.33 [0.21; 0.53]	0.57 [0.42; 0.79]	0.35 [0.20; 0.56]
	cfinal.res cfinalt.res	Xcfinal.res Xcfianlt.res	cfinol.res cfinolt.res	Xcfinal.res Xcfinalt.res

Table 2: 2010 updated Model 3 and Model 4 deterministic results for a future constant catch of 330 MT. (NB: Note that these results are based on three years extra data to those in Table 1.).

	Model 3	**Model 4**
B^{sp} (2006/K)	0.36	0.45
B^{sp} (2009/K)	0.37	0.45
B^{sp} (2015/K)	0.38	0.45
B^{sp} (2015/2006)	1.07	0.99

Figure 1: Comparison between the 2008 original and corrected **Model 3** Operating models: Median annual TAC and B_{sp} with the 5th and 95th percentiles are shown for the final OMP 2008 –original OM (left panel) and corrected OM (right panel). The vertical shows the start of the projected series.
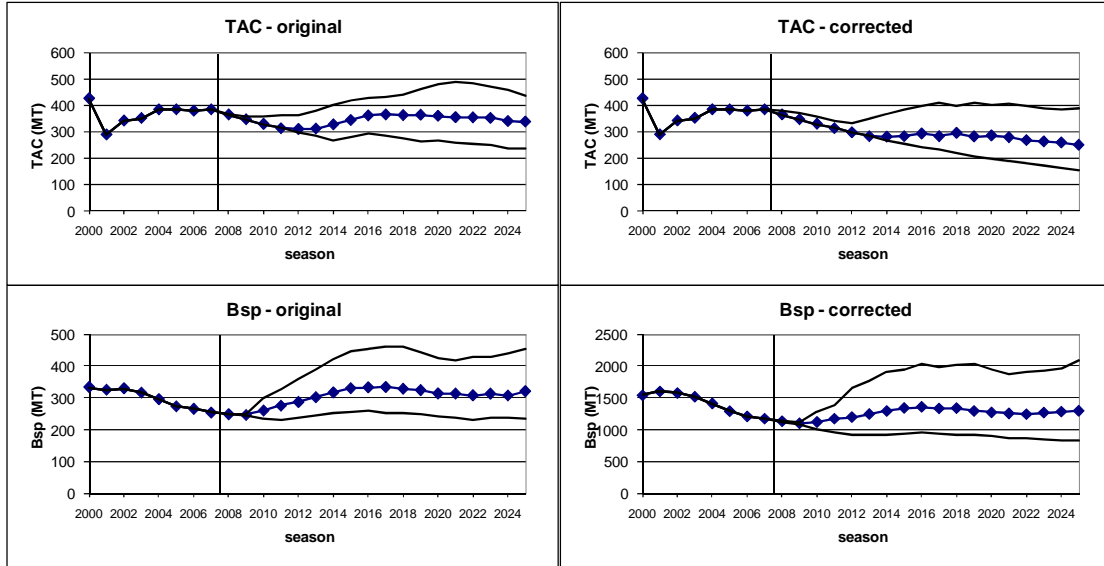
Figure 2: Comparison between the 2008 original and corrected **Model 4** Operating models: Median annual TAC and B_{sp} with the 5th and 95th percentiles are shown for the final OMP 2008 –original OM (left panel) and corrected OM (right panel). The vertical shows the start of the projected series.
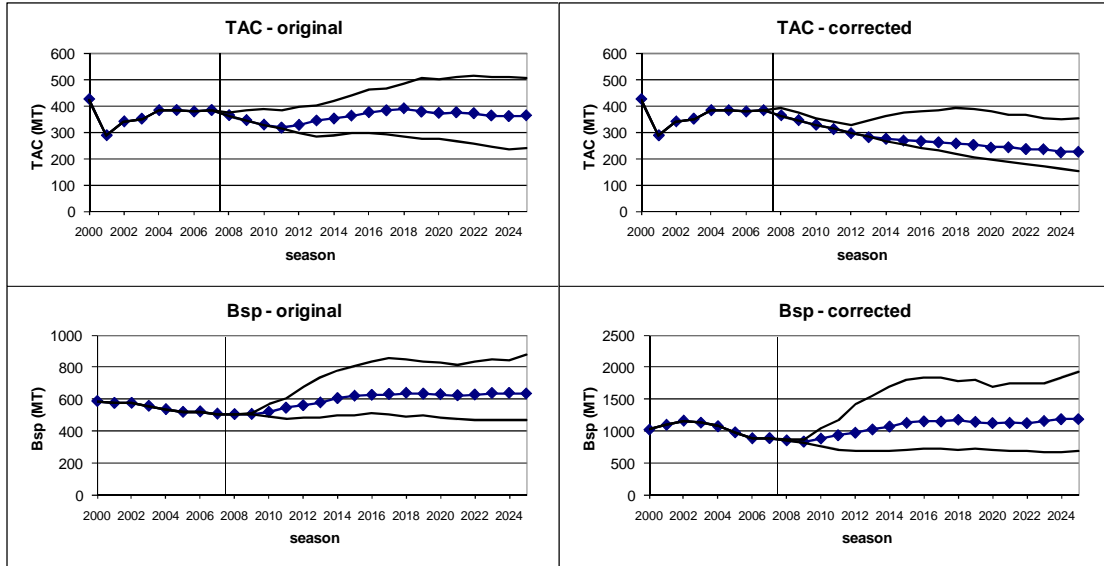
Figure 3: Comparison between projected median TAC and B^{sp}/K trajectories using the original 2008 operating models, and the corrected operating models, using existing OMP 2008.