Is MSYL Currently an Appropriate Target Level for the Namibian Hake Resource?

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The management objective for the Namibian hake resource is maximum sustainable yield, and management actions over the last decade or so have broadly been aimed at securing resource recovery towards the corresponding abundance level (MSYL).

Specific implementation of this ("MSYL") objective does, however, lead to three areas of difficulty.

a) The ratio of the current abundance to MSYL (B^{curr}/MSYL) is not well determined by the data (see Table 1 and Fig. 1). Under the Reference Case assessment (1a) of Rademeyer and Butterworth (2004), estimation precision is reasonable, but the estimate itself is questionable because of trend incompatibility between the GLM CPUE and biomass survey results. However, omitting this CPUE series sees expanding imprecision. If further the ICSEAF CPUE series, which is subject to scepticism, is dropped as well the resultant imprecision becomes substantial. Furthermore, point estimates of B^{curr}/MSYL are clearly very sensitive to data input selections.

b) Assessments or OMPs which try to attain MSYL as their objective (having to refine its estimation as more data become available) are necessarily complex ("black boxes"), and hence difficult for other than stock assessment specialists to comprehend.

c) The assessments tend either to reflect a surprisingly low value of steepness h (reflecting low sustainable yields), or if not require low values of q for recent surveys, suggesting that these substantially underestimate the hake biomass present in absolute terms. A possible resolution of this conflict is to postulate a regime shift, with carrying capacity K having decreased over time rather than remained constant, but that introduces further uncertainties as regards specifying MSYL.

Given also that resolution of input data reliability issues will take time, and likely will need further resource monitoring data, we pose the question for debate:

"Would it be better, for the time being, to agree a surrogate for MSYL for the Namibian hake resource along the lines of say, 20% above current abundance, with a focus of assessment/OMP work for the moment on attaining that objective over the next 10 (say) years?"

Reference

Rademeyer RA and Butterworth DS. 2004. Further updates of an assessment of the Namibian hake resource, including both catch-at-age and catch-at-length information. Document BEN/DEC04/H/NA/4b.

Table 1: $B^{sp}_{2003}/MSYL^{sp}$ and $MSYL^{sp}/K^{sp}$ with 90% Hessian-based CI for a) the Reference Case, b) excluding the GLM-standardised CPUE series, c) excluding the GLM-standardised CPUE series as well as the ICSEAF CPUE series and d) including the seven-vessel CPUE series. Assessment case reference numbers are as used in Rademeyer and Butterworth (2004).

	$B^{sp}_{2003}/MSYL^{sp}$ with 90% Hessian-based CI		$MSYL^{sp}/K^{sp}$ with 90% Hessian-based CI	
Reference Case (1a)	0.129	(0.066; 0.192)	0.450	(0.413; 0.488)
Excl. GLM CPUE (4)	0.460	(0.003; 0.917)	0.439	(0.405; 0.473)
Excl. GLM and ICSEAF CPUE	11.673	(1.494; 21.852)	0.082	(0.014; 0.149)
Incl. seven-vessel CPUE (5a)	1.906	(1.129; 2.684)	0.346	(0.280; 0.413)

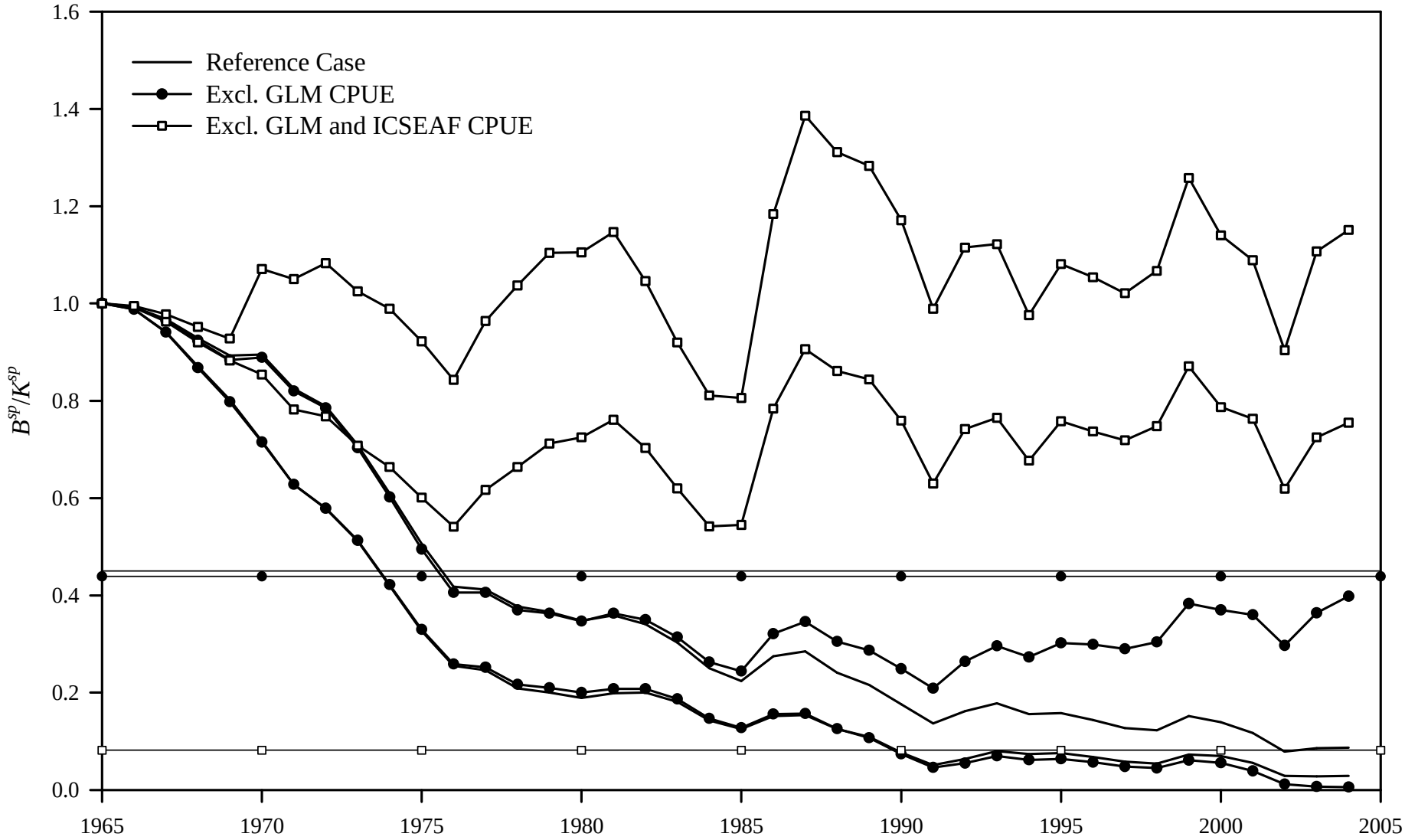

Fig. 1: Spawning biomass trajectories (in terms of pre-exploitation equilibrium level) for a) the Reference Case, b) excluding the GLM-standardised CPUE series and c) excluding the GLM-standardised CPUE series as well as the ICSEAF CPUE series for the Namibian hake resource. MSYL is shown for each case. Option d) of including the seven-vessel series is not included here to avoid cluttering the plot – that plot is however shown in Fig. 14 of Rademeyer and Butterworth (2004).