Output from the South African Hake OMP-2010 for the 2013 TAC recommendation

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Abstract

The TAC output from the South African hake OMP-2010 for 2013 is **156 075 t**, a 7.88% increase on the 2012 TAC.

The 2013 TAC recommendation for the South African hake resource is computed in terms of the 2010 OMP (Rademeyer *et al*., 2010) as follows:

$$C_y^{spp} = w_y C_{y-1}^{*spp}\left[1+\lambda_{up/down}\left(s_y^{spp}-T_y^{spp}\right)\right]+\left(1-w_y\right)\left[a^{spp}+b^{spp}\left(J_y^{spp}-1\right)-Pen_y^{spp}\right] \qquad (1)$$

The computations input a TAC of 144 671 thousand tons for 2012. As specified in the OMP, this is disaggregated by species assuming the 2011 species-split of the catches, i.e. 79.04% (114.351 t) *M. paradoxus* and 20.96% (30 320 t) *M. capensis* to provide the C_{y-1}^{*spp} values for input to equation (1).

The GLM-standardised CPUE series (Glazer, 2012) and survey biomass abundance estimates (Fairweather, 2012) used as inputs to the OMP are shown in Table 1 and the resulting trends in Fig. 1. Since the 2012 South Coast autumn survey has not taken place, the trend for each species for that survey is computed using only five years data (2005-2011) instead of six, as is the procedure in the event of missing data described in Rademeyer *et al*. (2010). The updated series fall within the 95% PI's projected for the Reference Set under OMP-2010 (Fig. 2). Note that the results from surveys carried out with the *Africana* with new gear have been rescaled to take the calibration factor into account (this involves dividing new gear estimates

by 0.95 for *M. paradoxus* and 0.80 for *M. capensis*), as specified in the OMP (Rademeyer *et al*., 2010)); the 'true' estimates are shown in parenthesis in Table 1.

The recent annual trend, s_y, computed from a specified weighted average of the CPUE and survey slopes is 4.47% for *M. paradoxus* and 16.06% for *M. capensis*.

The following parameters are also year dependent:

$w_{2013} = 1$, $T_{2013}^{para} = 0.75\%$ and $T_{2013}^{cap} = 0\%$.

Since $w_{2013} = 1$,we have:

$$(1 - w_{2013})\left[a^{spp} + b^{spp}\left(J_y^{spp} - 1\right) - Pen_y^{spp}\right] = 0$$

Thus the *M. paradoxus* contribution to the TAC is:

$$C_{2013}^{para} = 114351t\left[1 + 1.25\left(4.47\% - 0.75\%\right)\right] = 119668t$$

and the *M. capensis* contribution:

$$C_{2013}^{cap} = 30319t\left[1 + 1.25\left(16.06\% - 0\%\right)\right] = 36408t$$

The total 2013 TAC output from the OMP is therefore **156 075 t**. This represents an increase of 7.88% from the 2012 TAC of 144 671 t, and so is not impacted by the OMP constraint that TACs not change by more than 10% per year.

Note that the trends in all indices are positive except for the South coast survey for *M. paradoxus.* The last abundance estimate from this survey was quite low, making it unfortunate that both the autumn and spring surveys in the region had to be cancelled in 2012.

References

Fearweather T. 2012. Research Survey Hake Data - 2012 Update. Unpublished report, DAFF/2012/OCT/SWG-DEM/20. 7pp.

Glazer JP. 2012. Offshore hake species-specific standardized CPUE indices. Unpublished report: FISHERIES/2012/SEPT/SWG-DEM/18. 11pp.

Rademeyer RA, Fairweather T, Glazer JP, Leslie RL and Butterworth DS. 2010. The 2010 Operational Management Procedure for the South African *Merluccius paradoxus* and *M. capensis* Resources. Unpublished report: FISHERIES/2010/OCTOBER/DEM59.

Table 1: GLM standardised CPUE series and West coast summer and south coast autumn survey abundance estimates used as input in the 2013 TAC computations. Note that the abundance estimates in bold incorporate the calibration factors agreed for OMP application as they are for surveys in which the new gear was used on the *Africana*. The values in parentheses are the actual estimates obtained from the surveys.

	M. paradoxus						*M. capensis*					
	WC CPUE	SC CPUE	WC summer survey		SC autumn survey		WC CPUE	SC CPUE	WC summer survey		SC autumn survey	
2006	2.3493	1.3728	315.31		34.80		0.5593	1.1829	88.42		130.90	
2007	2.8069	1.4456	**417.95**	(397.05)	**136.47**	(129.65)	0.6034	1.0361	**102.55**	(82.04)	**88.68**	(70.94)
2008	3.4487	1.3953	**259.52**	(246.54)	**41.58**	(39.51)	0.5073	1.6126	**63.60**	(50.88)	**135.24**	(108.20)
2009	3.5306	1.6148	**347.62**	(330.23)	**108.25**	(102.83)	1.0150	2.9403	**219.11**	(175.29)	**155.01**	(124.00)
2010	3.6790	1.8976	589.53		169.56		1.0408	2.3867	163.54		184.96	
2011	3.4062	2.0806	**365.35**	(347.08)	**25.37**	(24.11)	1.2556	3.4007	**111.74**	(89.39)	**146.53**	(117.22)
2012			**397.38**	(377.52)					**115.74**	(92.59)		

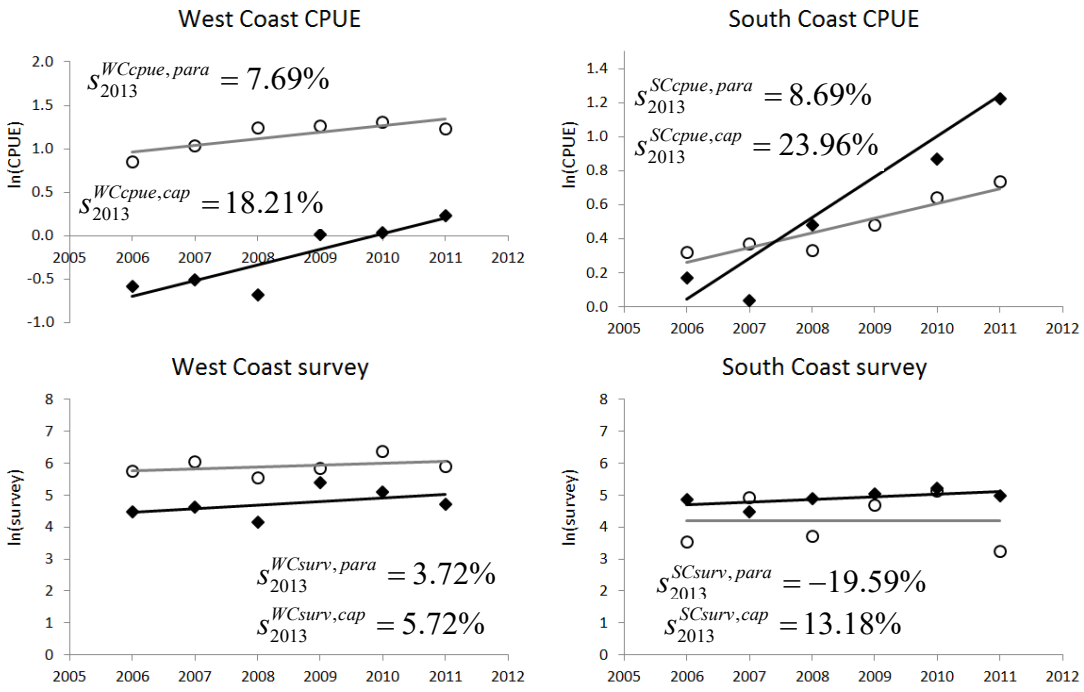

Fig. 1: Recent trends in the GLM-standardised CPUE and survey abundance indices for *M. paradoxus* (open circles) and *M. capensis* (black diamonds) which are used in the TAC computation. The survey abundance estimates shown incorporates the calibration factors specified in the OMP for the years in which the new gear was used on the *Africana*.

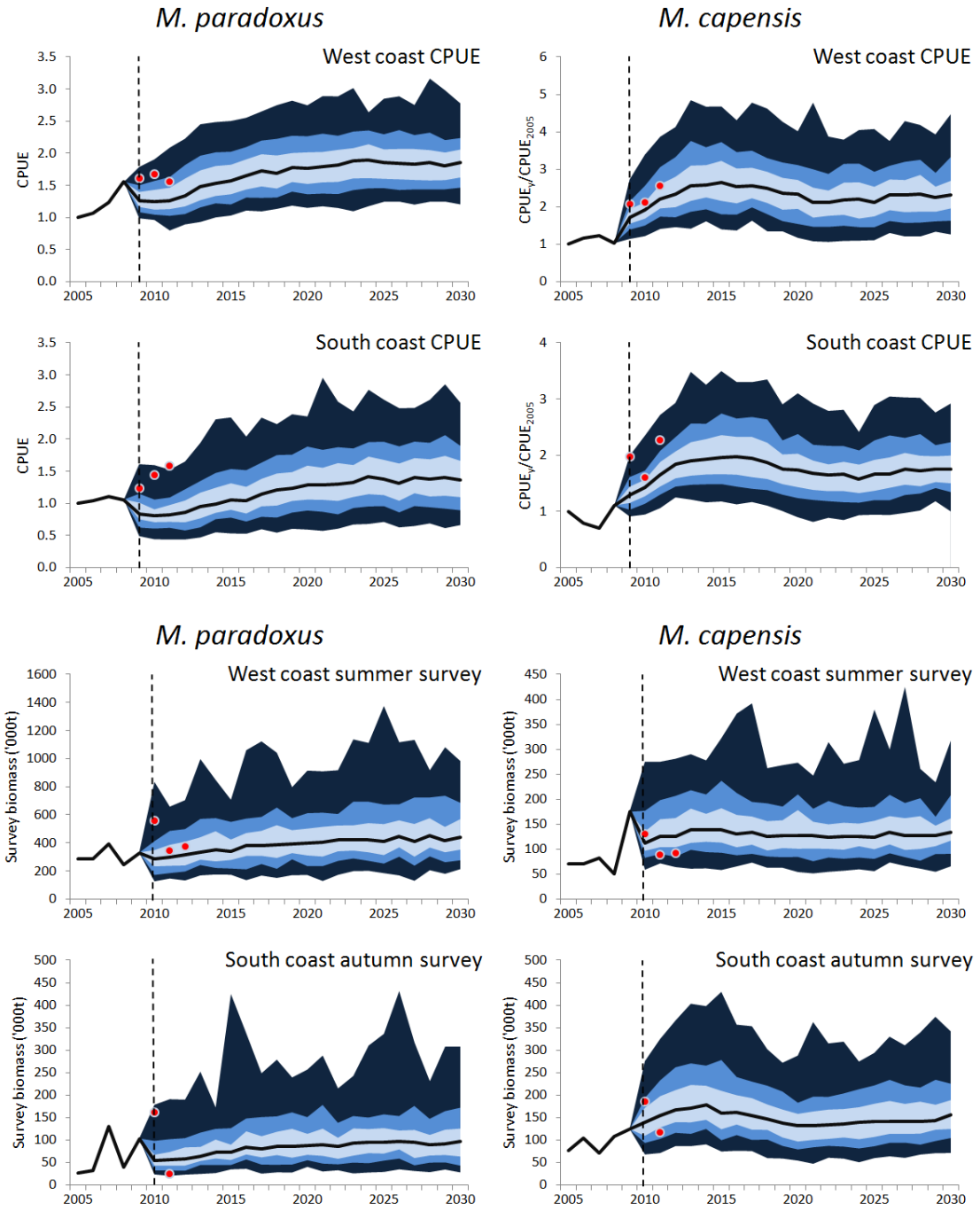

Fig. 2: Projections (95%, 75%, 50% PI and medians) for the Reference Set under OMP-2010 compared with the most recent two years' resource abundance index data. The red dots show the new data points.