Implications of Questions concerning the 2008 West Coast Survey Results for the 2009 TAC recommendation for Hake

R.A. Rademeyer and D.S. Butterworth

MARAM (Marine Resource Assessment and Management Group)
Department of Mathematics and Applied Mathematics
University of Cape Town, Rondebosch 7701, South Africa

November 2008

Questions have been raised in the DWG about whether the environmental conditions under which the 2008 west coast hake survey took place were of a nature that renders the results of that survey inappropriate for use as input to the OMP because of "non-comparability", i.e. that these conditions were outside the range customary for these surveys in the past, and .such as to have an appreciable negative impact on hake catchability.

The purpose of this note is NOT to debate that issue, though clearly a high bar must be set for the strength of scientific evidence needed to sustain a conclusion of such "non-comparability", and be applied when considering the results of investigations of this matter currently underway.

Rather the intent here is to clarify the implications of a possible conclusion that these survey results are indeed inappropriate to use. This would be equivalent to assuming that this survey did not take place, i.e. a "missing data" situation. The document detailing OMP-2006 for hake (Rademeyer and Glazer, 2007) specifies the procedure which applies in such circumstances:

"Procedure in event of missing data

CPUE data
Non-availability of data to compute the GLM-standardised CPUE series for each species is not anticipated.

Survey data

a) If at most two of the four survey estimates are not available in a given year, the computations continue as indicated, with the missing data omitted from the regression estimates of slope.
b) If more than two such estimates are missing, or if for more than one survey two years have been missed, computations will continue on the basis in a), but an OMP review will commence immediately. "

Thus in the event that the 2008 west coast survey is found by the DWG to have been "non-comparable" to the other surveys, and consequently paragraph a) above applied, the revised survey trend estimates would be as shown in Fig. 1 below, with the *M. paradoxus* contribution to the TAC then being:

$$C_{2009}^{para} = 105672t\left[1 + 0.68\left(0.20\% - 2.4\%\right)\right] = 104088t$$

and the *M. capensis* contribution:

$$C_{2009}^{cap} = 24826t\left[1 + 1.73\left(-11.98\% - 0\%\right)\right] = 19680t$$

The output from the OMP in that case would therefore be a recommended TAC of 123 768t.

Reference

Rademeyer R.A. and Glazer J.P. 2007. The 2006 Operational Management Procedure for the South African *Merluccius paradoxus* and *M. capensis resources*. Unpublished report, MCM, South Africa. 2007:WG-Dem:H:1. 18pp.

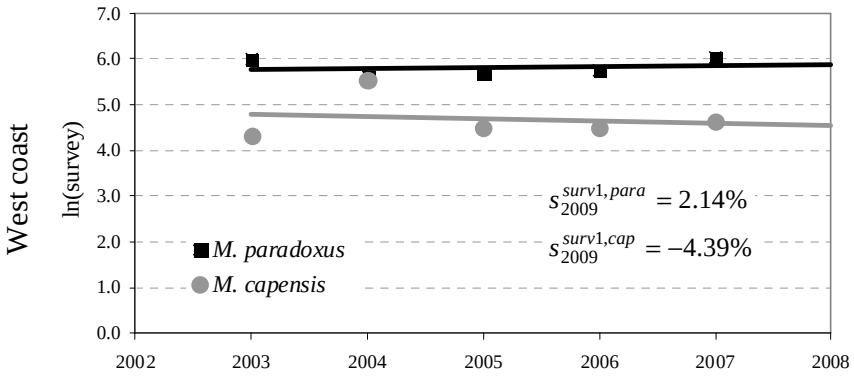

Fig. 1: Recent trends west coast summer survey abundance indices for *M. paradoxus* and *M. capensis* if the 2008 survey is omitted.