**The 2010 Operational Management Procedure for the South African *Merluccius paradoxus* and *M. capensis* Resources**

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**Introduction**

The algorithm for the 2010 Operational Management Procedure (OMP) to provide TAC recommendations for the South African *Merluccius paradoxus* and *M. capensis* resources is empirical. It combines an increase or decrease of the TAC in relation to a) the magnitude of recent trends in CPUE and survey abundance estimates for both species and b) the relative level of recent CPUE and survey abundance estimates compared to a target level. The basis for the associated computations is set out below, with the tuning parameters given in Table 1. Details of the computation procedures for the CPUE and catch data are provided in Appendix A, and for the survey estimates of Biomass in Appendix B.

**The 2010 OMP**

The formula for computing the TAC recommendation is as follows:

 (1)

with

 (2)

where

 is the total TAC recommended for year *y*,

 is the intended species-disaggregated TAC for year *y*,

 is the achieved catch[[1]](#footnote-1) of species *spp* in year *y*-1,

 is a year-dependent tuning parameter,

 are tuning parameters;  is used if  and  is used if ,

 is the year-dependant target rate of increase for species *spp*,

 is a measure of the immediate past trend in the abundance indices for species *spp* as available to use for calculations for year *y*,

, ,  and  are tuning parameters, and

 (3)

where

 is a measure of the immediate past level in the abundance indices for species *spp* as available to use for calculations for year *y.*

*Measure of recent trend*

The trend measure  is computed as follows from the species- and coasts- disaggregated GLM-CPUE ( and ), west coast summer survey () and south coast autumn survey () indices:

* linearly regress  and  *vs* year *y*’ for  to , to yield two regression slope values  and ,
* linearly regress  and  *vs* year *y*’ for  to , to yield two regression slope values  and ,

where *p*=6 is the length of the periods considered for these regressions. Note that the reason the trend for surveys is calculated for a period moved one year later than for CPUE is that by the time of year that the TAC recommendation would be computed for the following year, survey results for the current year would be known, but not CPUE as fishing for the year would not yet have been completed. Note also that surveys carried out using the old gear are made comparable to those carried out using the new gear by multiplying them by a species specific calibration factor (0.95 for *M. paradoxus* and 0.8 for *M. capensis*).

Then:

 (4)

 (5)

*Measure of recent level*

The measure of the immediate past level  in the abundance indices is computed as follows:

 (6)

 (7)

with

 (8)

 (9)

 and (10)

 (11)

with

*para*= 1.67 and *cap* = 1.50,

*Maximum allowable change in TAC*

While the maximum allowable annual increase in TAC is 10%, the maximum allowable decrease in TAC from one year to the next is:

 (12)

where

 (13)

and

 is a tuning parameter.

**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*

1. 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.*
2. 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.

**Table 1**: Tuning parameters for OMP-2010

|  |  |  |
| --- | --- | --- |
|  | *M. paradoxus* | *M. capensis* |
|  | 1.25 | |
|  | 1.50 | |
|  |  | 0% |
|  |  | |
|  | 104.5 | 40 |
|  | 60 | 20 |
|  | 180 | 20 |
|  | 0.75 | 0.75 |
|  | 0.75 | |

1. Implemented by applying the species ratio of the catch in year *y*-2 to the TAC for year *y*-1, as the species ratio for year *y*-1 would not yet be known by the time at which a recommendation for the TAC for year *y* would be required. [↑](#footnote-ref-1)