An overview of the key points pertaining to a no survey scenario for South African sardine and anchovy and MP-related risk calculations

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No survey data

In the event of no survey data being available for input into the joint sardine and anchovy OMP, the following was agreed in 2010 as a procedure to follow (see de Moor *et al*. 2010)

> No survey estimate of November 1+ biomass: "...updates of the latest sardine and anchovy assessments (results at the posterior mode only). Retrospective runs would be carried out for the past ±6-8 years to compare the difference between the model predicted November 1+ biomass (including estimated bias) and the survey observation in each final year. The model predicted November 2010 1+ biomass (with estimated bias) will then be reduced by either the maximum difference between these historic model predictions and survey estimates, or one standard error of the projection estimate, whichever is greater. This reduced estimate of 1+ biomass will be used to input into the OMP-08 formulae to calculate the directed sardine and initial anchovy TACs and initial sardine TAB for 2011."
>
> No survey estimate of May recruitment: "The normal season anchovy TAC and sardine TAB will remain unchanged from that recommended at the start of the year. By default there will be no additional season. However, if there is a survey in..." the previous November "...updates to the assessment models, along the lines of those mentioned above, will be attempted. Projections under OMP-08 with the allowance for some additional season TAC/B will be simulated."

The intention has been to test such rules, or modifications thereof, during the development of OMP-13, perhaps also incorporating a 'penalty' in the event of two or more consecutive survey results not being available. The simulation testing framework being used during the development of OMP-13 is described by de Moor and Butterworth (2012a).

In anticipation of a possible no survey scenario in November 2012, de Moor and Butterworth (2012c) have simulated distributions of survey estimates of November 2012 1+ biomass, and suggest the use of the 16th percentile of these distributions as input into the OMP should no survey estimate of biomass be obtained. The harvest control rules of the current OMP, OMP-08, are described in de Moor and Butterworth (2008), with a similar style of rules recently agreed for "Draft OMP-13[1]" (de Moor and Butterworth 2012b).

Discussion is sought both on the generic aspect of the optimum formulation of such rules, and on the more specific issues or appropriate more immediate action in the event of either of both of the November 2012 and May 2013 surveys not being satisfactorily completed.

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[1] To be used to set initial 2013 TAC/Bs and to updated/replaced with OMP-13 during 2013.

Risk

- There is a trade-off between maximising directed anchovy catches, with an unavoidable juvenile sardine bycatch, and maximising directed (adult) sardine catch.
- The trade-off between these catches is primarily constrained by limiting the risk to both resources.
- Risk is defined in terms of levels of historic biomass ('risk thresholds')
- The MP is tuned such that future biomass is projected to fall below these risk thresholds a limited proportion of times ('risk level')
- As understanding of the productivity of a resource changes with new and revised data available for new assessments, the risk level cannot be maintained from one assessment to another.
- An objective method of comparing the lower percentiles of the simulated catch v no catch distributions has been previously employed (de Moor and Butterworth 2010), such that the "leftward shift" from the no catch to catch scenario is maintained to be the same from one MP to another (specifically at the 20 percentiles of these distributions).
- However, for anchovy the updated base case assessment has resulted in a change in the underlying stock recruitment curve (from Hockey Stick with inflection point fixed at 0.2K to Beverton Holt) and an increase in median natural mortality.
- de Moor and Butterworth (2012d) describe a method followed to try to consider both the ideal of maintaining a similar "leftward shift" in the 20 percentiles of the catch v no catch distributions as well as accounting for the change in resource productivity.

Time permitting, discussion is sought on the optimal approach to define risk in developing Management Procedures (OMPs) for these resources, with a particular focus on the method mentioned in the final bullet above. What has become clear in recent analyses is the high extent of sensitivity of risk-related results to the detailed form of the stock-recruitment relationship at low spawning biomass levels.

References

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