Recommendations made at the December 2005 Rock Lobster International Workshop relating to South Coast Rock Lobster – Progress Made

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A. South Coast (and West Coast) rock lobster

A.1 (H). **Add an ecosystem section to the annual report to MCM management giving scientific advice of measures such as TACs.**
Although information on ecosystem impacts is not currently used directly in OMPs in South Africa, such information is increasingly becoming a focus for fisheries management and should be included in the document on management advice.

PROGRESS: None to date. This would be appropriate to take further once the EAF Working Group have carried out their risk assessment exercise.

A.2 (H*). **The basis for developing standardized catch-rate indices should be revisited starting with model selection. During this exercise, it is necessary to: a) compare the standardized and nominal catch-rate series and determine which factors cause the standardized catch-rate indices to differ from the nominal catch-rate series, and b) examine all of the standard regression diagnostics (e.g. standardized residuals versus predicted values; q-q plots; residual trends with time).**
The models and methods used for catch-rate standardization were selected by the MCM Rock Lobster Working Group several years ago and it is now appropriate to revisit these given new information and techniques. Consideration should be given to treating the logarithm of catch as the dependent variable if measures of effort are to be included in the catch-effort standardization. In addition, the number of years that each vessel has used GPS and plotter should be considered as a factor if the relevant data are available.

PROGRESS: Efforts in this area have focused first on spatial disaggregation, as separately reported.

A.3 (H). **Convene a meeting to discuss the best way to expand the data recorded in logbooks.**
It is possible, in principle at least, to explore the relative probabilities of alternative explanations for changes in standardized catch-rate over time by analyzing data reported at a fine spatial scale. In addition, collection of further data, e.g. on fishing location, could be used to refine the indices of relative abundance. Possible additions to the existing information in logbooks that merit incorporation include: location (at a level sufficient to determine depth), soak time, and the catch in numbers (in addition to that in mass).

PROGRESS: None to date.

A.4 (H). **Examine the sensitivity of the results of the assessment to choice of width of each length-class.**
The speed with which calculations can be conducted, and hence the number of scenarios that can be examined, depends in part on the width of each length-class. The sensitivity of the results to these widths should be examined to determine whether it is possible to assume wider length-classes than is currently the case.

PROGRESS: Whilst no detailed analyses comparing results using different length-classes have been presented, OLRAC are developing a size-structured assessment model for SCRL where a length-class of 2mm is used. In addition, OLRAC ran a 2 mm version of a complex model for West Coast rock lobster (previously structured using a 1 mm size class width) and found a dramatic improvement in runtimes with a negligible change in model fit.

C. South Coast rock lobster

C.1 (H). **Tabulate the number of lobsters, trips and grids sampled on which each annual length-frequency is based. If these numbers vary considerably inter-annually, it may be necessary to weight the data for each year by the sample size in some way (e.g. Xi He *et al*. 2005: Status of the widow rockfish resource in 2005: available from the Pacific Fishery Management Council).**
The data on the length- and age-composition for each year were given equal weight in the assessments presented to the Workshop. In principle, the weight assigned to the data for a given year should reflect the sampling effort on which the length-frequency data for that year are based.

PROGRESS: These data were tabulated and presented at a task group meeting. They did not appear to warrant immediate weighting adjustments, but full consideration has yet to be given to this.

C.2 (H). **The stock assessment of South Coast rock lobster should be based on a sex- and length-structured population dynamics model fitted to catch-rate, length-frequency and moult increment data.**
The assessments presented to the Workshop are sex-aggregated (even though there is strong evidence for sexual dimorphism) and are fitted to catch-at-age data determined using cohort-slicing. Annex D provides an outline of the data analyses and assessment calculations needed to conduct an assessment that uses the available data more fully and is based on a sex- and length-structured population dynamics model.

PROGRESS: MARAM are extending the current ASPM model to be sex- and area-disaggregated and to fit to catch-at-length data. OLRAC are developing a fully length- and sex-structured model which takes into account movement between areas.

C.3 (M). **Exclude further catch and effort data for the Hout Bay Fishing Company when standardizing CPUE data.**
Only the 1997/98-2000/01 data were excluded from the catch-effort standardization, but it seems that the data for earlier years may also have been contaminated.

PROGRESS: Such exclusions have not yet been applied.

C.4 (M). **Examine whether it is possible to include interactions with grid by: a) modelling these interactions as random effects; and b) defining sets of grids as 'areas' (based on examining plots of, for example, catch-rate) and consider interactions at the level of "area".**
The GLM used to standardize the catch-rate data include a factor for grid, but the large number (291) of grids means that it is not possible to examine interactions with grid even though such interactions may provide an important indication of changes in the fishery.

PROGRESS: The existing GLM has been modified to allow for the determination of area-specific indices of abundance. The grids were grouped into larger areas (super-grids) and a the interaction between year and supergrid, treated as a random effect, was included in the model as a sensitivity test.

C.5 (M). **The decision to ignore the tagging data should be revisited once the assessment is revised to be based on a length-transition matrix, as this revision may reduce the ability to estimate age-specific quantities such as the rate of natural mortality.**
Tagging data were included in the assessment in the past, but this is no longer the case.

PROGRESS: To date the tagging data have not been included directly in the assessments, although they have been used to estimate sex and area-specific growth curves.