STRUCTURING DISCUSSION OF ISSUES LISTED BY INDUSTRY FOR CONSIDERATION AT NOV/DEC INTERNATIONAL ASSESSMENT WORKSHOP FOR SA LOBSTER RESOURCES

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BACKGROUND

In paper WG/09/05/WCRL19 the West Coast Rock Lobster Sea Management Association listed a number of research and management issues for consideration at the forthcoming International Assessment and Management Workshop for South African west and south coast rock lobster resources.

The purpose of this contribution is to suggest ways in which discussion of these issues might be most constructively structured, together with suggestions of associated documents requiring preparation, so that the best use is made of the limited time of the external invitees available at the Workshop itself.

Commentary by the authors inserted below is shown in *italics*, and for the most part immediately following text from the original industry submission.

1. Topics for consideration

1. 1 Industry involvement in research and management

1) **That a co-management approach be applied to future WCRL research**. The industry feels that there is potential for a far greater degree of industry-MCM collaboration over scientific research, especially in the provision of resources for conducting field work, e.g. vessels and manpower. This requires a greater devolution of responsibilities to industry, but the potential benefits are considerable. For example, industry feels that FIMS should be far more intensive, carried out throughout the year. This is probably not feasible without the sort of industry support and involvement being referred to. Industry knows how to operate vessels and catch lobsters and should therefore be responsible for the

collection of the data, backed by a training program at regional level. The economic implications of industry collection of raw data, tagging and other field work based functions need to be unpacked.

C1: See C15/16 below re the co-management issue, and C10 regarding extension of FIMS.

2) **That a much higher proportion of resources be applied to biological as opposed to quantitative methods**. The EXCO are unanimous that the balance of research resources given to (a) mathematical modeling versus (b) fisheries biology and field work is somewhat skewed and that more resources and therefore more cognizance needs to be given to good quality empirical data. There is a feeling that the models are based on a foundation that needs to be very extensively strengthened. We note for example the absence of any catch size statistics for the three year period, 1999 - 2001, and the indications that tagging may induce biases in growth rate estimates. Both suggest a need for greater fisheries biological input.

C2: Most biological data collection and experimentation in these fisheries is currently conducted/supervised by MCM staff. A bullet-point summary, prepared by MCM, on what data and experimental projects they are collecting/conducting at the moment, and their priorities for extension thereof if given further resources, would provide a helpful basis to initiate discussion.

3) **That there be joint decision making in respect of future research planning and management.** This is an extension of the point regarding the need for a co-management approach. Co-management is only meaningful if there is a serious sharing of decision making. Industry are paying a levy towards research, however have little or no say in how these funds are utilized. Industry needs to know what M&CM is spending the annual levies of R3/4 per kg on. While accepting the user pays principle, the industry also has a right to know how M&CM are spending these levies. EXCO are of the view that industry should have joint decision making powers in this regard, or be extensively consulted.

C3: See C15/16 below.

4) **We need to study both the Australian and New Zealand rock lobster research and management programmes.** EXCO feels that these two countries may provide a useful model and/or experience in regard to co-management approaches. It would be valuable to pick the brains of the international participants at the international workshop in order to get their views on such topics as industry decision making powers in regard to research and/or the use of industry infrastructure for research. This would also be important for us to:

    a) Discern what we can learn from our competitors – how they monitor & manage their resources

b) Determine to what degree management processes are privatized or outsourced elsewhere in the world.
c) Understand what role the industry plays in the collection of data in other countries.

C4: An early agenda item during scientific discussions could request the invitees to briefly summarise verbally the scientific basis used for assessment and recommending management actions in the rock lobster fisheries in which they have been active. For the other comments raised see C15/16 below.

1.2 The credibility of the mathematical models and recent trends in the industry

In general the industry and EXCO feel that the workshop presents an opportunity to revisit the mathematical models at a fundamental level. There are a large number of assumptions that are being made in the stock assessment models that the industry would like to see critically debated at the international workshop. The general view is that we need to reappraise the existing model from the bottom up.

C5: For both the west and south coast resources, a bullet point list of the major assumptions underlying the current assessment methods should be compiled to provide a background to any such discussions.

In some respects industry experience appears to be contrary to the scientific views that are developing. In others, EXCO feels that scientific interpretations of the data need to be sensitive to industry experience.

The following points are noted with respect to the above preamble:

1) **Growth rate:** The industry's production statistics suggest that the population size structure is increasing. A number of graphs are attached to illustrate this (see Figs 1, 2 and 3 – these figures are based on the following whole weight tonnages between 1999/2000 and 2004/2005: 754, 987, 1026, 395 and 1184 MT). The industry suspects that their data are indicative of good growth rates in the resource. This appears to be contrary to the scientific view that the growth rates are low relative to the growth rates in the 1970s and 1980s. Industry's worries in this regard are heightened by recent studies into the impact of tagging on growth rate. This research indicates that the methodology / timing of tagging has changed to be closer to the moult cycle (see Figs 4a and 4b), and that this could have caused additional retardation of estimated growth rates since about 1990. Industry have been advised that these findings are not supported by in situ data, and that the use of data from a managed aquarium are not necessarily applicable to the field situation. Nevertheless, the suggestions are worrying and common sense strongly suggests a causal link between the change in the dates of release and the reduction in the estimated growth rates since about 1989. Industry also feel that there should have been an improvement in growth rates following reductions in the incidence of damaged lobsters in the early 1990's.

C6: It is not clear here whether the term "growth rate" as used above is intended to apply to somatic growth only, or also to growth in abundance of the resource. If part of the argument is rooted in change in catch-at-length distributions over time, this could equally well indicate changed selectivity or recruitment levels; the point being made needs to be spelt out more explicitly, together with reasons why other explanations are rejected.

Regarding recent studies on the effect of time-of-tagging on somatic growth, a summary of this work and its conclusions to date need to be prepared for the workshop. This particularly needs to clarify what questions remain open at this stage, for example:

i) whether, if there is such an effect, its magnitude could be sufficient to appreciably bias current perceptions of the trend over time in somatic growth for west coast rock lobster, and

ii) whether there is the possibility of a tag-related decrease in somatic growth by an amount independent to year or time of release.

2) CPUE

The data reflect a decline in CPUE over the past three years. These trends must however be interpreted with an appreciation of the prevailing operational imperatives which include the following:

(a) At present companies are striving for quality, not quantity. The scientific interpretation of the CPUE trends makes no distinction between catches in the early to the mid 1980's when greater than 80% of production from the industry was in the form of frozen tails. More than 90% of industry production is now in the form of whole lobsters, predominantly live, where quality and appearance is key.

(b) Lobsters are generally being caught later in the annual cycle as a result of administrative delays, accommodation of nearshore rights-holders and the deep water fishery in Area 8. One major fishing company's lobster catch rate is approximately 20% down this past year. But they were fishing about 1.5 months later than the previous year at Dassen Island because of soft shell lobsters. Perhaps the easterly shift of lobster is affecting resource abundance on the traditional fishing grounds. Industry's view is that the lower catch rates are due to a combination of environmental changes (catchability) and operational changes.

C7: In principle the concerns raised here are covered by appropriate GLM-based standardization of the CPUE data PROVIDED sufficient data for the detection of such effects and the related resultant standardization are collected. A summary document is needed listing:

i) what data are collected and taken into consideration for current GLM-standardisation exercises;

ii) what effects have been found to have sufficient impact to be included in the final CPUE GLMs;

iii) what data are presently being added to the previous standardly collected set to allow possible extension (e.g. a greater number of spatial strata) of the current GLM approach?

This would allow invitees to comment on how this compares with their experience elsewhere, and hence on any factors they consider are being missed, so that sampling schemes should be expanded to collect them.

3) **CPUE and Long term environmental studies:** Industry are of the view that recent declines in CPUE may also be the result of environmental change, perhaps linked to an eastward shift of the resource. This means that long term environmental data needs to be gathered and studied in relation to trends in the CPUE.

C8: Studies of this nature generally require very long time-series to reduce the chance of spurious results. A check first needs to be made of what, if anything, has already been attempted on this topic, to avoid re-inventing wheels. Then a list needs to be made of variables that are already or could be collected routinely together with other sampling data at a scale that could throw light on this issue, bearing in mind that unless the variables suggested have already been collected so that a lengthy series is already available to extend, any potential benefit from such an investment is likely more than a decade away.

4) **CPUE trends and simplistic interpretations:** The industry feels that simplistic interpretations of the commercial CPUE data trends, for example ascribing them to overexploitation effects, are mitigated by the stability of the size structure of the resource (see Figs 4a,b – 6a,b), and the relatively large estimates of resource biomass.

C9: This would seem to dovetail primarily with the approach suggested under C7 above. The comment about size structure needs further clarification. Stability of this structure does not necessarily suggest that resource abundance is likewise stable, e.g. size structure can remain stable if abundance and recruitment are both increasing or both decreasing. The existing assessments allow for estimation of (broad scale) trends in recruitment, so would appear to already cover the concern raised, unless there is more to this not originally stated.

5) **FIMS**: Industry are of the view that for FIMS to be of any real use it should be carried out on a much more intensive basis, throughout the year. Lobster catch rates are just too variable during the year, and annual patterns change from year to year, for a 2 week survey to reliably capture the annual signal of resource abundance. Also there is an absence of qualitative checks and balances onboard the charted vessel(s). The variability in the data suggests little confidence in the trends, particularly at the level of the super-areas proposed for spatially disaggregated resource assessments.

C10: First a brief summary document of the current FIMS exercise (and the newer inshore component), together with the resources required to maintain these is needed, as well as of the method used at present to convert the FIMS data into an annual index of abundance. Secondly

current methods of estimating the FIMS variance, and that of the CPUE index of abundance, need to be summarised for review, because these variances define the relative reliability of the present FIMS, and provide a basis to evaluate initially what might be gained from an extension of the exercise.

6) **The spatially disaggregated model**: EXCO noted that there are a larger number of assumptions underlying the spatially disaggregated model. These include assumptions about the absence of any long shore population shifts, how the historic catch should be divided amongst areas, and how growth rate information is filled in for missing years for specific areas. These factors need to be properly understood in deciding between the prevailing spatially aggregated assessment approach and a spatially disaggregated approach.

C11: Once again a prerequisite for an effective discussion on this issue, which is a central one for the workshop, is a brief document listing these assumptions, and setting down a brief pro's and con's comparison for the two options (spatially aggregated or disaggregated) as a framework for debate. Cognisance must also be taken of the fact that three previous international workshops (the 2000, 2001 and 2002 events of the BENEFIT series), ending with a very strong recommendation from the external scientists that the disaggregated approach be pursued for the west coast resource.

7) **Running the population model from 1870**: EXCO would prefer to view the resource from a base of say 1980 onwards or thereabouts, since assumptions about growth rates, levels of compliance and other critical input data and assumptions for the period 1870 – 1968 are very weakly supported by empirical data, if at all. If this is not possible, then the additional uncertainty implied by these assumptions needs to be properly reflected in the final quantities put forward for resource management. The only benefit of running the model from 1870 seems to be estimates of levels of depletion.

C12: Once more a brief pro's and con's document needs to be compiled to assist discussion. Note that other aspects that need to feature in such a composition include how to specify a commencing age-structure for a model starting +-1970, the information (in at least qualitative terms) provided by the differing levels of historic catches in the various "super-areas", and the fairly universal admonishment of fisheries management elsewhere about succumbing to "shifting baselines".

8) **The concept of an OMP**: In general EXCO acknowledge the need for some sort of OMP but expressed a view that there should be provision for qualitative inputs such as environmental information, and there should be some degree of flexibility. EXCO notes with concern the problems that have been experienced in the implementation of the OMP w.r.t. to the paucity of growth information available in some years, and none available in

certain years. This has at times led to ad hoc decisions about how to produce a growth rate index.

C13: A document circulated separately as a potential template for OMP revision and output adjustment across all SA fisheries using this approach, might provide one useful baseline for discussion. The "flexibility" aspect sought needs to be broadened in another document for the workshop, to clarify what is meant and to give examples of different ways to achieve such a goal, e.g. allowance of 10% (say) quota under-/over-runs each year. If environmental information is to be input, it is necessary first to have reasonably established relationships between such data and the resource – but no such relationships are yet available, so the reason for raising this point is unclear. Yet another brief document needs to be developed which sets out problems experienced in the past with lack/unreliability of fundamental input data, and what mechanisms have thus far been put in place to address them

Finally the industry finds itself in a situation where there is financial pressure on operating / trading profit margins. Research must be skewed to a cost benefit basis for industry. Furthermore industry need co-operation from the authorities to enable and facilitate the collection of voluntary levies. The industry needs these funds to manage many facets of the WCRL fishery that M&CM are unable to do themselves.

C14: See C16 below.

Co-management-related issues

A number of issues are raised above by industry in this context, primarily and specifically:

I) Collaboration in research, particularly field work.
II) Joint decision making on research planning
III) Joint decision making on management
IV) Accounting for research levy on industry
V) Privatisation and outsourcing of parts of the management process.

C15: The invited externals could be asked to provide brief commentary about external practices on a list of issues along the lines above. At the simplest level this could purely be for information, with questions related purely to clarification of the "way such things work" elsewhere, without getting into any debate related to a comparison with the current South African situation.

C16: PROVIDED pertinent MCM management staff are available and agree to participate, as well as to such a discussion being held, the discussion suggested in C15 could be followed by one which does briefly open up a comparative debate in relation to current South African practice. However, it seems questionable whether that should proceed beyond issues I) and II) above, and in particular the prospect of sliding towards a debate between locals to which the externals cannot contribute must be avoided, so that their time is not wasted on issues that could as well be discussed on a separate local occasion.

Note that present planning envisages at most one 90 minute session being scheduled for discussion on these co-management-related points. However, particularly if MCM management staff could attend for more than such a single session, perhaps there should be flexibility to allow a slightly longer period if needed.