ON DESIRABLE EXTRACTIONS, EVALUATIONS AND CLARICATIONS, POSSIBLY BEFORE THE FIRST MEETING OF THE PENGUIN MODELLING GROUP

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Given the recommendation forthcoming from the "penguin" subgroup to proceed with planning an experimental programme of closures to pelagic fishing around penguin colonies, it would seem desirable that plans are made to address the following. A number of these investigations might be better completed *before* the planned penguin modelling task group has its first meeting.

Extractions

For each colony or group of colonies to be considered for closure arrangements:

1) A graphical representation of available information (e.g. from birds with continuous data-recorders) of the distribution of feeding for birds caring for offspring.
2) Based on 1), two proposals for the area to be closed: one to encompass the complete range of such feeding, and the other to encompass most but not all of this range, with these proposals to take account of the practicalities of easier observance by the fishers and readier compliance checking.
3) Indication of the period for which closure would be proposed within a calendar year.
4) Extraction of the proportion of the total pelagic catch by directed sardine and anchovy fishing during each of the past ten years for the two areas proposed in 2).

The motivation for two proposals under 2) is to check whether restriction to, say, 90% of the distributional area might result in a much smaller area overall, and considerably less imposition on the industry in terms of 4).

Evaluations

It has been agreed that the power of the experimental design to detect effects within the medium term (5 years perhaps) needs to be evaluated.

To this end, at least one penguin index to be regularly monitored at each colony or group of colonies to be considered for closure needs to be specified. Furthermore multi-variate regression analyses along the lines of those presented in Crawford *et al.* – SWG/EAF/SEABIRDS/JAN07/04 need to be developed, with the proposed index treated as the dependent variable. The objective of this exercise is to identify (as in the aforementioned paper) other co-variates so that the explanatory power of the regression is enhanced. These evaluations would in turn allow improvement of the power of the experiment to detect any effects of fishing, and are necessary prerequisites to the evaluation of that power.

Clarifications

Unless pelagic fishing **does** really cease in the areas and at the times specified in the design, the experiment will be compromised with the credibility of its outcome in disarray. A necessary condition for this, which should hopefully be obtainable, is buy-in from the Industry Association to the exercise.

But this is not a sufficient condition. Anecdotal accounts suggest fishing within some areas closed in the past under cover of darkness. If one fisher starts to operate within closed areas, either others will see themselves disadvantaged and likely follow suit, and/or grapevine comment will again prejudice the credibility of the eventual results.

Hence I would conclude that effective implementation of compliance is a pre-requisite for the success of the exercise. Unless VMS monitoring is practical, and there is confirmation from MCM's Compliance section that they **will** certainly prosecute offenders, efforts towards what seems likely to be a very valuable exercise will be wasted. I suggest therefore that the views of the Compliance section be sought immediately, given that I am concerned that for a similar proposal for area closures and vessel monitoring in another fishery, the response given was that this was currently impractical.