

Chair's Introduction

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Movement and migration can have important implications for management and understanding of the nature of the species concerned. However, most of the techniques used to estimate rates of movement and migration lead to vast quantities of data, which require model-based methods for interpretation, in addition to a well-designed experimental programme. For example, the results from tagging studies can only be interpreted meaningfully once they have been analysed in conjunction with information on the probability of a tagged animal being recaptured (which may depend on whether it has grown and where it has moved to).

The methods of fisheries science have always included approaches to estimating movement and migration (e.g. Ricker 1954). However, even the application of simple methods can be computationally prohibitive and this has limited detailed analysis and modelling of data on movement. Recently, however, the availability of computing resources of sufficient power has meant that some more realistic spatial models can now be considered. These, combined with the more rigorous statistical treatment of the data (using, for example, maximum likelihood or Bayesian approaches), means that management advice based on models that explicitly recognise and handle movement and migration may be close at hand (or here already).

The papers in this session reflect the broad range of techniques being applied in this rapidly developing area of fisheries science. The particular analysis approach applied will differ if the objective of the work is to produce a model primarily for management purposes or primarily to be used to generate

hypotheses for further investigation. The papers in the session also reflect different choices for the scales (both spatial and temporal) at which data are analysed and the processes included in the model (which need to be selected carefully to avoid throat cutting using Occam's razor). A particular challenge associated with spatial modelling is that the models are extremely complicated and considerable effort needs to be taken to make the assumptions and model output transparent to stakeholders, managers and other scientists.

References

- Ricker, W. E. (1975). Computation and interpretation of biological statistics of fish populations. *Bulletin of Fisheries Research Board of Canada* **191**.