

Plenary Lecture on Factoring uncertainty into management advice – have fisheries scientists got their act together?

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Abstract

Worldwide one finds a wide range of approaches for conducting assessments, and in particular for specifying risk levels for and factoring uncertainty into the associated scientific management advice. Thus this process can potentially result in a recommended catch limit, say, that lies anywhere within wide bounds for any particular stock. The extremes of the well-intentioned specifications of the USA's Magnuson–Stevens Act will be contrasted to the Management Procedure Approach (MSE) as developed in the International Whaling Commission's Scientific Committee. The former, which takes the single "best assessment" paradigm to its natural limit, fails to explicitly address uncertainty aspects and is handicapped in implementation by the inadequacy of the science. For example, given the data typically available, it is generally not possible to reliably estimate key required quantities such as an MSY target abundance directly. On the other hand, the latter's very thorough structure for taking explicit account of uncertainty still leaves some key problems incompletely resolved, such as how to plausibility-weight across alternative models used to assess the resource, and is too complex and time consuming to be practical universally. Are there improved and practical middle road options available, such as an integrative approach across alternative plausible assessment models in utilizing assessment outcomes, or a focus on very simple management procedures which through their use of feedback can still achieve management objectives satisfactorily? Over recent years, the practice of peer review of assessments has proliferated, but are these now too frequent, too superficial, and too lacking in continuity and hence consistency in their conduct and recommendations? While MSC certification has certainly brought improvements to the conduct and implementation of fisheries assessment and management, is its over-frequent audit/review process absorbing so much of the available expertise in the field as to appreciably subtract from resources needed for research activities? Is the MSC initiative heading towards inconsistency and unsustainability, which will ultimately damage the achievement of its laudable objectives? The issues of approaches to take climate change and multi-species/ecosystem aspects into account will be addressed briefly, together with reference point choice: should an alternative be sought to the generally inestimable target of MSY, and do F-based reference points make biological sense? The key concern, given the wide and variable nature of current scientific fisheries management advice, is the risk that credibility with stakeholders will be lost, and that managers will revert to "TACs by negotiation" as the science will be perceived to have failed – does the process of developing this scientific advice need to be changed to pre-empt this?

Biography

Professor Emeritus Doug Butterworth, who is a South African based in the Department of Mathematics and Applied Mathematics at the University of Cape Town, was originally an elementary particle physicist, obtaining his PhD in that field from University College, University of London in 1977. He moved on from there to specialize in mathematical modelling approaches to the assessment and development of management procedures for renewable marine resources. This has included making contributions to and participating in the scientific committees responsible for providing advice on appropriate levels of catch for all South Africa's major fisheries, and internationally for whales (in the IWC), Antarctic krill (at CCAMLR), and tuna where he has had a lengthy involvement in bluefin tuna analyses at ICCAT and CCSBT. His participation in over 350 international fishery-related meetings includes involvement in

FAO consultations on CITES and ecolabelling, and he has been invited to provide advice on fisheries matters by government departments in twelve, and by fishing industry associations in ten countries. He was recently awarded the Order of Mapungubwe – Silver (the country's highest award) by the South African President for his scientific contributions to fisheries management in South Africa and internationally.