

Theme Session O – Flying outside the ICES Assessment WG paradigm – Alternative approaches to providing fisheries management advice

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The background to Theme Session O was that ICES Assessment Working Groups see analytical assessments using fishery dependent catch at age data and fishery independent stock size indices at age as the standard they are trying to achieve for all stocks in their mandate. However this approach may not be appropriate in relation to providing ecosystem or community advice or for stocks that are data poor or where the biological information is not available, for example when individuals cannot be aged. Fishery independent information and stakeholder involvement may provide effective means to diagnosing the status of marine resources and communities and identifying management alternatives. The session was intended to review the state of the art in methods for diagnostics for exploited marine resources based on research survey information, fishers' knowledge and other sources of information. The session welcomed methodological developments as well as case studies and experience with implementing alternative management systems. Presentations (32 communications and 10 posters) at this theme session covered three themes: alternative assessment methods and models for single stocks ranging from the use of indicators to stock assessment models; fishers' involvement in relation to knowledge and objectives; and alternative approaches to management. Presentations included alternative approaches to assessing the status of stocks that are currently assessed within the ICES Assessment Working Group paradigm.

In relation to alternative assessment methods, a series of papers emanating from the EU-funded project on *Fishery independent survey-based operational assessment tools* (FISBOAT) were presented. These papers reviewed the results of the FISBOAT project by providing a review of fishery-independent methods (O:4, O:16), described the manual produced from the project (O:27), provided case studies (O:10), and provided examples of the application of techniques (O:3, O:7). Papers in this section also considered how to deal with uncertainty in stock assessments (O:36, O:15) and estimating spawning stock biomass from ichthyoplankton surveys (O:12) and *Nephrops* burrow densities from videos (O:32). Several presentations relating to the EU-funded Poorfish project (Developing probability model applications in data-poor fisheries) (O:25) and other projects provided examples for the use of alternative data sources in Bayesian stock assessment (O:29, O:31, O:18) and management (O:35, O:30). The use of a length structured assessment model was also shown (O:26). There were also 7 posters that addressed alternative assessment methods including mark-recapture models (O:19, O:43), ZooScan imaging (O:44) analysis of length structures (O:40, O:47), random effects modelling (O:42) and fish body condition (O:39).

The sub-session on fishers involvement and alternative data sources had five presentations covering topics ranging from obtaining fishers knowledge on species biology and fish community (O:5, O:6) to governance organisation issues. The importance of the use of fishers' knowledge, communication across different organisational scales (O:2) and implication of fishers in harvest control rule selection were demonstrated in practice (O:20) and by simulation (O:17). There were also two posters addressing bycatch monitoring schemes (O:45) and maturity ogives (O:46).

The sub-session on management issues included 10 presentations dealing with a variety of approaches to the recurrent problem of management requirements in situations when there is lack of data or when data are of poor or uncertain quality. This issue was approached from

different angles in the 10 presentations and 1 poster, often employing common methodological or operational solutions. Some authors adhered partly to the conventional ICES assessment paradigm, as fisheries data may have allowed (O:1, O:11, O:14, O:28), while others employ alternative approaches (O:8, O:9, O:11, O:23, O:48). Some of the papers deal with simulation models to test hypotheses and management regimes (O:8, O:9, O:28), others explore the theoretical avenues to alternative management (O:22, O:33). In some cases the authors are “forced” by the newness of the resources and the poor availability of data combined with management pressure, to establish management programmes (O:9, O:11, O:14, O:30) which commence with less than certain expectations. The conclusion is that there is a variety of possible solutions to the same management problems (O:33), and the presentations highlighted the importance of not wasting resources and time to improve data availability or quality where this often seems a hopeless expectation or when the value of the fisheries is relatively low. In these circumstances, it is not absolutely essential to stick to a common paradigm, but to ensure rigorous data analysis employing a suite of available statistical and simulation techniques, as sticking to conventional assessment paradigms tends to restrict managers’ acceptance of alternative solutions when they are needed.

The final discussion led to two proposals:

- 1) Include a Theme Session on alternative assessment methods and management on a regular basis in the ICES Annual Science Conference, perhaps the next one in 2009 or 2010.
- 2) Within the new ICES organisation of stock assessments encourage Working Groups to use the autumn meetings to test the use of alternative stock assessment methods alongside traditional methods for selected stocks as a means of complementing current methods. This will increase the experience with these new methods and eventually should lead to "best practice" guidelines.