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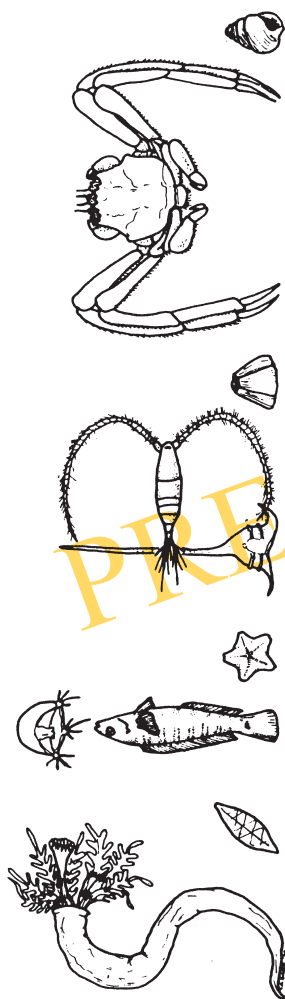
PRESENTAZIONE VOLUME

Workshop on

REFERENCE POINT

Rome, April 20-21, 2004
Palazzo Altemps, Via de Gigli d'Oro, 21

PRESENTAZIONE VOLUME

**Scientific Advisory Committee of the GFCM
Sub-Committee Stock Assessment**

**Directorate for Fisheries of the
Italian Ministry for Agriculture and Forest Policy**

FOREWORD

The workshop on Reference Points was held in Rome on April 20-21, 2004 on behalf of the Scientific Advisory Committee (SAC) of the FAO-GFCM and the Sub-Committee Stock Assessment (SCSA). The Directorate for Fisheries of the Italian Ministry for Agriculture and Forest Policy was the hosting institution of the workshop that brought together 60 researchers and fisheries biologists from different Mediterranean countries. Besides the introducing talks, 15 scientific communications were presented by researchers and 1 communication by the fishermen associations. The latter mainly underlined the needing of understandable reference points and the incorporation of social and economical issues into the advices. The approaches illustrated in the communications varied from the classical population dynamics modelling to the empirical indicators of populations, to the multispecies and ecosystem indicators. The submitted papers were examined and selected for publication by independent referees and peer-reviewed.

The presentation's session was followed by a remarkable discussion session chaired by Giuseppe Lembo (Coordinator of the workshop), Alain Bonzon (GFCM secretary), Corrado Piccinetti (SAC Chairman), Riccardo Rigillo (Italian Directorate for Fisheries) and Matthew Camilleri. During this session John Caddy and Jordi Lleonart were acting as facilitators addressing few pertinent questions:

1   Which are the indices and reference point (RP) currently applied to Mediterranean fisheries, and which others have never been applied and why?
2.   What level of reliability have the indices and RP used in the Mediterranean? How can this reliability be improved?
3.   Has any multispecies index or multispecies reference point (MSRP) ever been applied to the Mediterranean? If so, in what circumstances?
4.   Ecosystem Approach to Fishery (EAF) is a main issue. There are some papers published on this topic but, have had any impact on assessment?
5.   How can use common information from different areas or gathered with different methods to standardize indices and reference points?
6.   On the light of the previous items, which kind of recommendation, regarding indices and reference points, can be addressed to the SAC-GFCM?

There was consensus that reference points in the Mediterranean have so far been applied to stock assessment exercises and were not used within a management framework. It was noted that most of the papers presented during the workshop focused on biological reference points which needed to be assessed, on the basis of their characteristics, for their feasibility and usefulness in the precautionary approach. It was underlined that the indicators should be characterised by the following desirable features:

a)   easy compilation and processing procedures;
b)   minimization of basic assumptions;
c)   reliable performance with respect to interactions between fishery, environment and resources;
d)   applicability to different scenarios;
e)   comprehensibility for the stakeholders;
f)   easy integration and comparison among indicators coming from different sources.

As far as the group was aware, mainly monospecific models have been used in the Mediterranean and problems are being encountered to translate the EAF and related models to management interventions.

On exploring the overall scenario, the discussion stated that establishing reference points should be an activity carried out by scientists, but should be understood by fishers and other stakeholders. It was suggested that RPs should have three uses: (a) monitoring (b) management implementation (c) determination of state of stock/restoration. It was also noted that demersal stocks are more vulnerable and need focused attention with defined recovery plans which set target values or RPs.

It was proposed that initially limit reference points should be established in order to implement management interventions and target reference points could be considered at a later stage. The group believed that data should be analyzed on a large scale basis in order to smoothen out variability and that an integrated multispecies approach should be the preferred option.

Life expectancy was identified by some as a robust indicator of survival which is a tool to assess the well-being of the stock, as well as to simulate the effects of different management strategies. Total mortality was also identified as a suitable indicator to set a limit reference point and it was noted that trawl surveys are useful in this regard, since they provide seasonal and interannual fluctuations in this parameter. It was also suggested that CPUE is itself a simple and reliable indicator.

The group discussed the problem of the commercial catch data unreliability and the quality of data collected through direct and indirect methods, which depend on the sampling strategy employed. The issue of the reliability of indicators depends on what they are used for. Since there have been no applications of fisheries control rules using indicators and RPs, there is no history of experience to study. Caution was expressed in the use of specific modelling frameworks to generate RPs before a broader view of the situation is obtained. A method of examining a large number of indicators together is proposed as a preparatory approach before setting up a modelling framework.

Concern was also expressed with the use of "steady state" assumptions in modelling, such as Ecopath or Y/R models.

The discussion highlighted that the uncertainty of reference points could be reduced through collaboration and sharing of data and experiences, as well as calibration of data. It added that whilst the indices presented at the workshop should be used as a foundation for future work on this subject, data and information originating from landings, direct methods and simulation should be retained and an effort should be made to integrate socio-economic aspects. It was emphasized that in using this approach, researchers must keep in mind that the ultimate goal is to manage fisheries and not to focus singly on biological aspects of stocks, whose status depends on several other biotic and abiotic influencing factors. Furthermore, the use of a "traffic light approach" for assembling different indicators into a baseline of information for management decision was suggested before going deeply into modelling on a narrow range of assumptions.

In trying to reach a conclusion, it was suggested that in addition to indicators and reference points for single different stocks, specific indicators for each fishery or Operational Unit should be identified (poly-indicator system), which would be better understood by all stakeholders. Moreover, it was proposed that each reference point should undergo a robustness and/or sensitivity test before being applied.

The discussion pointed out that indicators and reference points could be obtained through catch assessment surveys and direct methods to get information mainly on the catch size spectrum (individual species and all species), mortality rates (e.g. Z_{med}, Z_{MBP}, $F_{0.1}$), recruit and spawner indices (e.g. R/S, SSB/SSB_0, SSB/B, B/R), abundance indices, condition factors and estimates of the area extend of the stocks surveyed. Further indicators could be derived by examining historical data sources for past changes in overall ecosystem indicators (e.g. pelagic/demersal ratios, piscivore/planktivore ratios, $PPR\text{-}TL_{catch}$), diversity indices as overall indicators of ecosystem change (e.g. BOI index), change in basic ecosystem productivity and other environmental variables such as meteorological data.

Finally, the discussion highlighted the needing that the SAC-GFCM should continue to promote the reference point issue as a priority research area in order to define clear management goals at regional level as soon as possible.

We trust that the compilation of papers in these Proceedings, intended to serve as a showcase for the developments of fishery science in the Mediterranean and to give technical guidance to managers.

Dr Giuseppe LEMBO
President of Necton and Fishery Committee of S.I.B.M.

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