SESSION 5: WRAP-UP
FUTURE CHALLENGES FOR ECOSYSTEM-BASED MANAGEMENT OF HIGHLY VARIABLE FISH POPULATIONS

SESSION 5: FUTURE CHALLENGES FOR ECOSYSTEM-BASED MANAGEMENT OF HIGHLY VARIABLE FISH POPULATIONS

Conveners: Rick Fletcher (Department of Fisheries, WA, Australia), David Reid (Irish Marine Institute, Ireland), Merete Tandstad (FAO, Fisheries and Aquaculture Department), Andres Uriarte (AZTI, Spain)

Plenary speaker: Kwame Koranteng, FAO & Invited speaker: Verena Trenkel, IFREMER
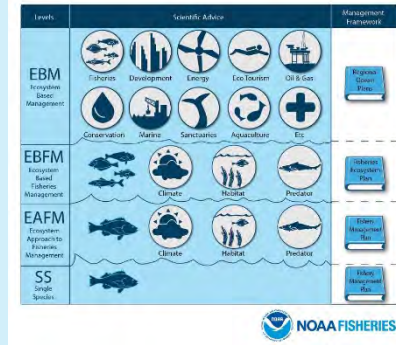
Overview

- A gender balanced session: Overall 16 presentations - 8 by women and 8 by men;
- 5 presentations were made by early career scientists.
- 2 posters

- **The presentations brought evidence of work from all corners of the globe:** the Northeast Atlantic, Northeast Pacific, the California Current, Atlantic coast of Africa (Central/Southern and Northwest Africa), southern Chile, Peru, Bay of Biscay, Gulf of Cadiz, the Baltic sea and India, as well as general methodological studies focusing on highlighting the importance of certain processes or parameters.

Anchovy, sardine, mackerel, sardinella, horse-mackerels, sprat, general small pelagics and seabirds

Principles and approaches: EBM, EBFM, EAF

The Plenary and invited speakers provided an overview of common perspectives with respect ecosystem approaches, and in particular with respect to EAF and EBFM, as well as EBM, pointing to examples of use and implementation in Africa and Northeast Atlantic :

Key messages:

1. Approaches are complementary

2. Importance of objectives, and the need to balance between multiple objectives

3. Tools are available, including for step-wise approach towards implementation and modelling

4. Examples exist

5. Not a replacement of existing methodologies- need to build on what is existing

Subject areas covered

1. FOOD WEB ANALYSIS AND MULTISPECIES MODELLING

2. CONSIDERATION OF EXTERNAL DRIVERS

3. TOOLS FOR EVALUATING IMPACTS OF MANAGEMENT DECISIONS AND HARVEST STRATEGIES

4. PARTICIPATORY AND ADATIVE MANAGEMENT, ECOSYSTEM MONITORING AND CROSS-JURISDICTIONAL COLLABORATION

FOOD WEB ANALYSIS AND MULTISPECIES MODELLING

Key messages:

- Multispecies models are available that can be used to identify important prey and predator species in a system

- Models can assist with evaluating the effect of harvest of pelagic species on other vulnerable predators, and exploring roles of different species in the food web.

- Models of different complexities are available and comparative testing showed similar results

- It was proposed that comparative analysis between outcomes from multispecies models and single species models can be used to advance ecosystem based fisheries management, including through comparative analysis of MSY.

- It was suggested that these analysis can lead to improved understanding of interactions between other important fisheries species.

CONSIDERATION OF EXTERNAL DRIVERS

Key messages:

- Modelling of impacts of <u>natural</u> and <u>anthropogenic</u> factors, can be used to understand the key factors that influence fluctuations in a fishery resource, both at adult and juvenile state.

- Example: Land-based activities (dams) can impact the recruitment process of juvenile species such as anchovy, and subsequently the adult anchovy population; Conflicting use needs to be considered in any assessment.

- New techniques that can investigate complex datasets, are available that can be used to investigate different drivers of main pelagic stock recruitment for example, which can then be included in stock assessment in an ecosystem based framework context.

- Scientists and fishermen may have different opinions of the reasons for observed fluctuations or changes.

- Importance of collaboration between scientists and fishermen, the need to look at all components of ecosystem for monitoring, and the role of management measures.

TOOLS FOR EVALUATING IMPACTS OF MANAGEMENT DECISIONS AND HARVEST STRATEGIES

Key messages:

- Management strategy evaluation frameworks can be useful as a tool to facilitate understanding of how management decisions for small pelagic fisheries can impact other species, or it can be used to optimize the decision framework against set criteria through scenario testing.

- It can also be used as a tactical tool to improve existing management systems
  - A practical example was provided from the Bay of Biscay where recruitment uncertainty had been integrated to optimize the setting of TAC and harvest control rules.

- Such frameworks can be adapted to different situations (data rich and data poor)

PARTICIPATORY MANAGEMENT, ECOSYSTEM MONITORING AND CROSS-JURISDICTIONAL COLLABORATION

Key messages:

- Existing adaptive management approaches, while focused on single species, can contribute to EBFM.

- Participation of stakeholders is key to build EBFM

- Modelling should be supported by quantitative monitoring of the ecosystem.
  - This can be achieved by using fishing vessels

- Research surveys provide key information for ecosystem monitoring.

- Cross-jurisdictional collaboration for the assessment and management advice for small pelagic species stimulate ecosystem wide assessments; setting standards and agreeing on common approaches and priorities
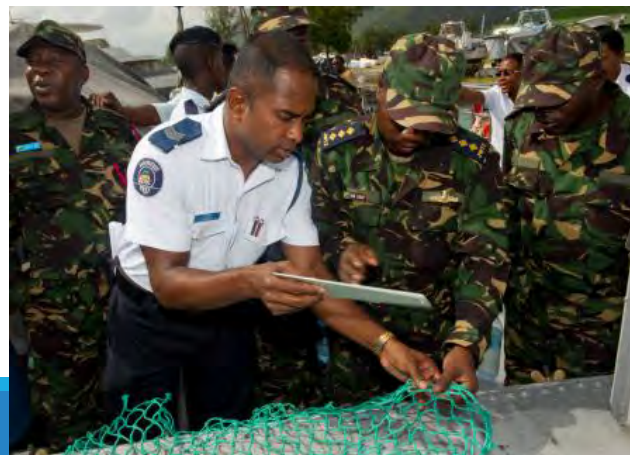
Overall Observations
Knowledge of ecosystems and interactions

Management of human activities

Misconceptions

The EA requires a paradigm shift in management institutions and science support

REALITY:The Ecosystem approach is a
management framework that
can be best achieved through an
evolution, not a revolution.

There is broad agreement, however, that what is needed is mainly a change in people's mindset, particularly as regards long-term sustainability as compared to short-term gains.

Source: Alarcon

Knowledge about ecosystems and Ecosystem approach to fisheries management are all Work in progress

Special thanks to all presenters