MareFrame

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Participatory planning and decision support for the West coast of Scotland mixed fisheries

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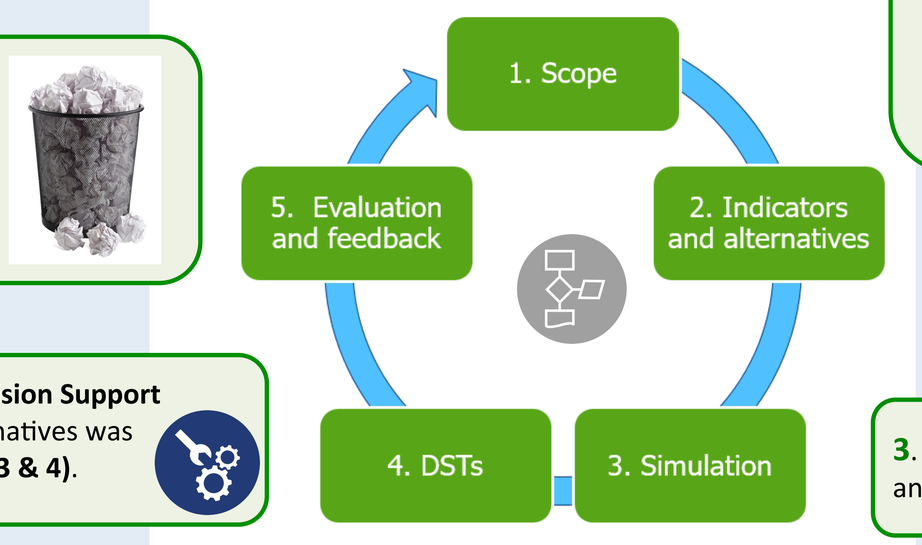
Approach

In cooperation with stakeholders from the NWWAC, industry organisasions, and environmental NGOs we developed and used a Decision Support Framework for scenario based planning in relation to Ecosystem Based Fisheries Management (Figure 1).

1. The **scope** of the case study is mixed demersal fisheries in ICES area VIa. The main case study objectives are: to recover cod and whiting stocks, assess seal predation impact on whitefish recovery, and suggest Multispecies Maximum Economic Yield.

2. **16 Indicators** defined to reflect policy and stakeholder objectives in the short and long term: Revenue and profit for 3 fleets, SSBs for 6 stocks, and 4 ecosystem health indicators.
6 management alternatives defined to meet case study objectives (**Table 1**).



3. Outcomes of the alternatives were estimated with an Ecopath with Ecosim model (**Figure 2**).

4. Scenario outcomes were analysed using **Decision Support Tools (DSTs**). The relative performance of alternatives was evaluated using **Multicriteria Analysis (Figures 3 & 4)**.

5. The process steps were repeated to improve the approach and scenario formulations.

Figure 1: The approach to develop, simulate and evaluate management scenarios.

Figure 3. Using Multicriteria Analysis in a structured evaluation of alternatives (Workshop 25.08.16, Aberdeen)

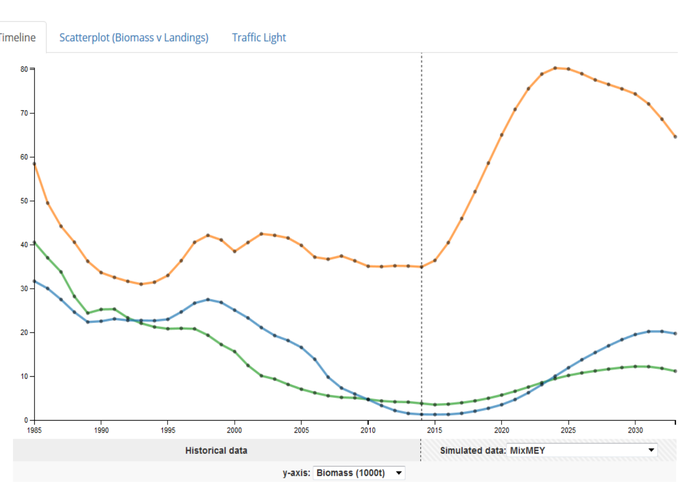


Figure 2. An interactive visualisation tool helps users to analyse and compare senario outputs from the ecosystem model.

Alternatives	Rationale
Mixed MEY	Maximum Economic Yield across stocks within F ranges
Gadoid Recovery	Cod and whiting recovery: no targeted fisheries for cod and whiting and high fisheries mortality for saithe
Status Quo F	Baseline scenario: F2013 for all species
MSY	Maximum Sustainable Yield policy
Gadoid recovery & seal cull	As "Gadiod Recovery" but with seal cull. This scenario was used to assess impacts of seal predation; seal culling is not considered viable in the UK
Spatial F	Cod and whiting recovery by spatial fishing pressure considerations

Table 1: The management alternatives

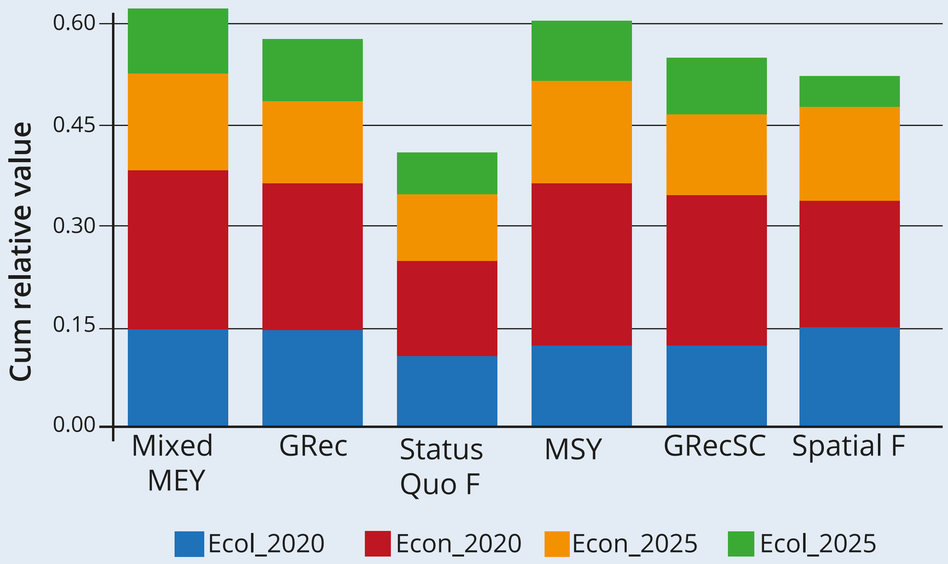


Figure 4. Summarised outcomes of a structured evaluation of the management alternatives with MCA. The evaluation was based on preferences defined by stakeholders in a workshop (figure 3).

The Mixed MEY alternative performs best overall, mainly as it performs well for economic indicators. In the evaluation, short-term economic concerns (fleet revenues and profit) were given a higher priority than ecological concerns (stocks and foodweb).

Conclusions

We developed and tested a structured approach to identify, model and evaluate management alternatives in cooperation with stakeholders. The approach proved feasible.

Limitations: Stakeholders expressed concerns regarding the reliability of detailed model outomes and found if difficult to assign decision weights in the MCA.

Link to case study information and decision support tools: http://mareframe.mapix.com/west-coast-of-scotland.html

MareFrame Scientific Conference "Advances in Ecosystem-based Fisheries Management"

14th December 2017 Venue: Comics Art Museum - Brussels, Rue des Sables 20, 1000