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Towards an ecosystem approach to fisheries management: participatory planning and decision support for the West coast of Scotland mixed fisheries

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The revised Common Fisheries Policy and the Marine Strategy Framework Directive include a commitment to pursue an Ecosystem Approach to Fisheries Management (EAFM). Mixed fisheries, and the marine ecosystems that sustain them, are highly complex entities, and inevitably involve multiple, and often conflicting, management objectives and stakeholder interests. This complicates the identification of management approaches that satisfy biological, economic and social policy requirements while being acceptable to affected stakeholder groups. A transition towards EAFM therefore invites the development of tools and processes to support cooperation and planning aimed at promoting sustainable exploitation of marine resources within healthy ecosystems for societal benefits. We outline a Decision Support Framework designed to facilitate participatory planning within an EAFM context, and report from work with applying it to the demersal fisheries of the west coast of Scotland ecosystem. This ecosystem supports several fisheries (mixed demersal, shellfish and pelagic), of which some face significant challenges, such as the depletion of key stocks and increased predation of commercial fish species by seals. Management alternatives and variables of interest were identified in collaboration with stakeholders. Simulations, using the Ecopath with Ecosim ecosystem model, were conducted including all commercial species along with their prey, predators and associated fishing fleets. Using Multi Criteria Analysis, the performance of management alternatives were compared with regard to their ability to achieve pre-defined biological, economic and social objectives. Preliminary outcomes of applying the DSF to the West coast of Scotland fisheries are presented, and limitations of the approach are discussed.

Keywords: Ecosystem approach to fisheries management, decision support, mixed fisheries, Ecopath with Ecosim, stakeholders.

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