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ECOSYSTEM MODELING FOR FISHERY MANAGEMENT. CASE STUDY: ROMANIAN TURBOT FISHERY

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This paper aims at presenting the requirements of implementing the ecosystem approach to marine fisheries management (EAFM) in Romania developed within a project NIMRD is partner in, together with the relevant scientific community of the European Union, namely MareFrame (FP7 Project: Co-creating Ecosystem-based Fisheries Management Solutions: 2013-2017).

The implementation is realized using modern tools, like ecosystem modeling: GADGET and EwE (Ecopath and Ecosim). For the first time in the Black Sea, in the frame of FP7 project MareFrame, the restoration of turbot fisheries to more productive levels, considering both the effect of fisheries and the ecosystem change occurred in the last 30 years will be analyzed. GADGET and EwE will be implemented in the western sector of the Black Sea (Romanian coasts). These ecological models include different functional groups of the whole ecosystem, from lower to higher trophic levels (i.e. from primary producers to top predators) and detritus groups (natural detritus and detritus generated by discarding during fishing operations). GADGET allows to include a number of features of the ecosystem into the model. The Ecopath and Ecosim modelling tool (EwE) has been widely used to quantitatively describe aquatic systems and the ecosystem impacts of fishing. In the Black Sea model applications, turbot is considered the key species, while prey species are: whiting, gobies, sprat, anchovy, mussels; the predator species are cetaceans. Additionally, environmental and socio-economic factors will be considered in the modeling. In all scenarios, as a first management measure, Ilegal, Unreported and Unregulated (IUU) fisheries will be eliminated. Depending on the results obtained after first run of the model using the elimination of the IUU catches, other management measures will also be considered in the model, such as: spatial restrictions; temporal restrictions; effort restrictions; minimum size; participatory restrictions. The application of the ecosystem approach to fisheries in the vulnerable ecosystem of the Black Sea is a permanent objective of the scientific community. The outcomes of this project will underpin the future implementation of EAFM in Romanian Marine Fisheries.

Keywords: GADGET, EwE, modeling, turbot, Ecosystem-Approach to Fisheries Management