

DO TECHNICAL MITIGATION MEASURES MAKE SENSE IN MANAGING A FISHERY?

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Fisheries management is urged to implement effective measures for the conservation of ecosystem structure and functioning. To that end a wide range of potential measures exist such as TAC/Quota, effort management (including Marine Protected Areas, MPAs) and technical measures, and it is likely that none of these measures will provide the solution in isolation. For example: for the protection of highly mobile species and species that are not habitat-specific, such as cod (*Gadus morhua*), MPAs might not be the most suitable measure. Therefore, knowledge and management of the type and level of fisheries management that can be used to sustain these species is crucial.

The sustainability of different levels of fishing effort has been widely investigated and policies are put in place for balancing the fishing potential with its capacity. However, fishing gears can have very different catch efficiencies and catches per unit of effort for different species, especially in mixed fisheries. This notion has triggered fishing gear technology research to seek technical modifications that change the interaction of species or taxa and the fishing gear. The implications of technical mitigation measures are mapped carefully at the level of the individual fishing operation, e.g. at the level of a fishing trip. However, the implications for the fisheries and their impact on the ecosystem are not.

A conceptual framework for the assessment of technical mitigation measures (TMMs) is presented. In a first step the short-term, direct mortality of a particular fishing gear is estimated for the most impacted ecosystem components. In the second step, the development and analysis of TMMs are reviewed and indicate the changes in species mortality. The third step will upscale the results to the level of the fishery and the ecosystem. In the final step the results are used to estimate the effects of the proposed TMMs at the ecosystem level. A retrospective assessment is performed as well, to ensure that the effectiveness of TMMs is not undermined by any unforeseen additional adverse effects.