

Social-economic drivers in (political) TAC setting decisions

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Sustainable use of marine resources, as targeted by Ecosystem-Based Fishery Management (EBFM), is a highly ranked policy goal. However, many marine fish stocks are still overused, challenging sustainability goals. Reasons for this policy failure are disputed and they might be manifold, including economic, institutional, and social drivers. Here, we use Generalized Additive Models (GAMs) to empirically determine and quantify the importance of interacting ecological, economic, and social drivers in a political decision making process, i.e. the setting of annual Total Allowable Catch (TAC) limits. GAMs allow non linear relationships between response and explanatory variables and due to their flexibility have successfully been applied to investigate ecosystem dynamics. Here, we use this modeling approach in a novel way to quantify social-economic-ecological feed-backs on policy decisions. European fisheries policy agreed in most cases to TACs higher than scientifically advised. We recorded this deviation for all managed European fish stocks for the time-series 1987-2014. Additionally, we make use of available time-series of socio-economic and ecological variables potentially influencing the decision, including national unemployment rates, stock status, economic growth rates, employment in fisheries. We show that political decisions on TACs are not only driven by scientific advice on the ecological state of the stock, but that socio-economic variables have a significant effect on TACs – however not related to sound scientific advice. We conclude that scientific advice for a successful implementation of EBMF will have to address socio-economic driving forces more explicitly.

Keywords: GAM, TAC setting, economic drivers, social drivers, interaction, decision making, fisheries,

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