



Mental Models and Compliance: Towards nonverbal assessment

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Abstract:

Lake Victoria supports one of the largest fresh water fisheries in the world. The Nile perch is the most important export fish from the lake - it is estimated to support 4 million people (Mkumbo & Marshall, 2015). However, the future sustainability of the Nile perch fishery is threatened because many fish are caught before they have grown to optimal size ("growth overfishing"). Growth overfishing is prevalent in many fisheries around the world (Diekert, 2012). It is not only harmful economically, but it also jeopardizes the very existence of the fish stock.

Policy makers at Lake Victoria are aware of the threat of growth overfishing, and a number of regulations have been decided upon, particularly in terms of gear restrictions. However, it is essential to improve fishers' compliance with them (Mkumbo & Marshall, 2015). We posit that one key aspect that determines compliance is the way fishers perceive the issue of a falling Nile perch catch. In particular, one would expect that fishers that are aware of how growth overfishing threatens the ecosystem and hence their future livelihood, are more willing to comply with regulations aimed at reducing the catch of undersized fish. This suggests that fishers' **mental models** (or mental representations of a complex and dynamic system that guides people's interactions with it Özesmi & Özesmi, 2004; Maas et al. 2017) of Lake Victoria Nile perch ecosystem affect their ability to regulate their own fishing behaviour, and to avoid overfishing.

In order to study whether this is indeed the case, we must be able to **assess the mental models of fishers** at Lake Victoria. Given the comparatively low literacy of fishers around Lake Victoria, we cannot rely on typical verbal assessment methods. MENTALCOMPLY thus seeks to **develop and validate a nonverbal assessment tool, NV-ECOMENTAL**.

The development and testing of NV-ECOMENTAL is a critical step for our application to the BMBF that addresses mental models of tipping points and fishing behaviour at Lake Victoria in collaboration with local stakeholders (with 3 + 3 years of funding). MENTALCOMPLY would allow van den Broek, Diekert, and Fischer, a dedicated team of early-career researchers that combines the strengths of psychology and economics, to develop a solution for a practical problem that would allow investigating mental models and regulation of behaviour in natural resources in illiterate populations. Importantly, NV-ECOMENTAL also presents a significant scientific contribution that will result in a high-impact publication on its own. This tool will be designed and validated in a way that it can be employed by the global scientific community to assess mental models in (illiterate) populations in relation to diverse environmental problems, or even other societal issues.

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