Wild fish as experimental animals: research and conservation viewpoints

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Wild fish constitute a major component of aquatic ecosystems and food webs, but they are also used for human consumption, which makes monitoring their population status a priority. Handling and marking of fish are prerequisites of sustainable fisheries due to the major limitations of effective, non-invasive monitoring. On the other hand, research on fish bred in captivity cannot replace studying individuals in their natural environment, and many questions are only feasible to study using long time series collected from the wild with consistent methodology, which requires fish handling. Such data sets are particularly valuable for the aim of mitigating the impacts of climate change on ecosystems and humans. A challenge in wild fish research and legislation is that the tens of thousands of known teleost species differ vastly in their optimal environments and tolerance to procedures. Consequently, there are many knowledge gaps in maximizing animal welfare for wild fish during experiments and data collection, even though general principles can be applied across species.