**Abstract:** The present paper analyzes the suitability of weak and strong sustainability assessment in the context of fisheries management. This topic is a mainstream issue in the field of ecological economics, but its application to fisheries is rather unexplored, even though fisheries have been the focus of many pioneering studies related to natural resource management. An overview of the current debate in the topic together with an application of a multi-disciplinary technique designed to assess fisheries sustainability (Rapfish) allows the closing of this gap. This is achieved by looking to the potential trade-offs among the multiple dimensions of fisheries sustainability and by analyzing the role of critical thresholds in such an assessment.

The study of the Basque trawl fisheries operating in the North East Atlantic in the period 1996–2005 shows that the utility of weak sustainability is limited to the comparison of sustainability between fisheries. In contrast it is found that it is the strong sustainability concept together with the definition of critical thresholds that provides management with the tools for improved management and policy within a fishery.