



Abstract

Marine Recreational Fishing in Portugal: Social and Biological Perspectives for Improved Management [†]

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Abstract

Introduction: Marine recreational fishing (MRF) is a socially, economically, and ecologically important activity. However, the absence of systematic monitoring and research in Portugal has limited a comprehensive understanding of the sector and its broader implications. Addressing these gaps is essential to support evidence-based and adaptive recreational fisheries management. **Objective:** This work aimed to improve understanding of marine recreational fishing in Portugal by integrating social and biological perspectives across national, regional, and local scales. **Methodology:** A multidisciplinary approach was applied. At the national scale, online questionnaire data were combined with licencing information and regional effort estimates to quantify fishing effort, catches, release rates, catch composition, and direct trip expenditures. The same survey framework was also used to identify recreational fisher profiles based on motivations, behaviours, fishing practices, and attitudes toward management. At the local scale, shore angling surveys conducted before the implementation of the Natural Marine Park of the Algarve Reef were used to estimate fishing activity and establish a baseline for future monitoring. From a biological perspective, field-based catch-and-release experiments were conducted to assess post-release mortality and physiological disturbance, using indicators such as mortality, condition, capture and handling variables, and blood biomarkers of stress and recovery. **Results:** The national estimates documented substantial fishing effort, catches, and direct expenditure, confirming the relevance of MRF in Portugal at both ecological and socio-economic levels. Portuguese recreational fishers were also shown to be heterogeneous in their motivations, behaviours, and practices, reinforcing the need for management approaches that reflect this diversity. At the local scale, shore angling estimates from the Natural Marine Park of the Algarve Reef provided an important pre-protection baseline for the now established Marine Protected Area, enabling future comparisons and long-term assessment of management effects. Biological experiments showed that recreational fishing can generate measurable physiological disturbance in fish, with post-release condition influenced by capture and handling factors. Among the variables examined, hook location emerged as particularly important, with deep-hooked fish showing greater impairment and higher mortality risk. **Conclusions:** Together, these findings show that improving recreational fisheries management in Portugal requires integrating social patterns, fishery magnitude, and biological responses to capture and release. Long-term monitoring programmes, combined with management approaches adapted to different fisher profiles and fishing contexts, are essential to support more effective and sustainable recreational fisheries governance.



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