GOVERNING BOTTOM TRAWLING IN THE MEDITERRANEAN SEA – A MALTESE CASE STUDY

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Abstract
A case study approach was used to investigate the effectiveness of the current legislative framework, and the implementation of management measures which govern bottom trawling in the central Mediterranean Sea. The general perception amongst key stakeholders interviewed in the Maltese Islands was that the current legal framework is sufficient, but that improvements in regional enforcement and control are required if shared stocks are to be exploited sustainably.

Keywords: Fisheries, Demersal, Conservation, Mediterranean Sea

Introduction
Several scientific studies show that bottom trawling negatively impacts the marine environment [1, 2, 3], and that such impacts can potentially affect entire ecosystems [4, 5]. The Mediterranean region has a long and active tradition of fishing, and is characterized by high fishing intensity and vulnerability of resources [6]. Consequently, it is of great importance to assess whether or not the legislative framework and fisheries management measures currently in place are providing an adequate basis to achieving sustainable stock exploitation rates, and protecting vulnerable species and habitats. In addition, potential barriers to achieving sustainability for the bottom trawling industry in the Central Mediterranean need to be identified, together with the means of addressing such barriers.

Materials and Methods
A desk-based study of legislation governing the bottom trawl fishing industry in the Mediterranean Sea in general and the Maltese Islands in particular was complemented with semi-structured interviews of key stakeholders. Interviewed stakeholders included scientists, NGO representatives, government employees and fishing cooperative representatives. A SWOT analysis based on perceptions of interviewed Maltese stakeholders was used to evaluate the strengths, weaknesses and opportunities of, as well as threats to the current bottom trawling management regime.

Results and Discussion

Strengths	*Weaknesses*
• Malta's 25 nautical mile FMZ and related management regime of bottom otter trawlers. • Small size of Maltese fishing industry (possibility of good communication). • Small size of Maltese trawling fleet and consequent low levels of exploitation. • Necessary support by local law enforcement bodies to improve compliance.	• Characteristics of bottom trawling as a fishing gear – potential for high environmental impacts. • Short data time series, limited data to support implementation of EAFM. • Lack of political will in implementing stricter measures to protect stocks and the environment. • Poor financial incentives for best practices. • Limited stakeholder participation in design of management measures and management processes.
Opportunities	*Threats*
• Existing legislative framework (local, EU, regional laws). • EU steer towards collective goals at regional level. • Ongoing efforts to increase implementation of EAFM at regional level. • Ongoing development of regional fisheries management plans at GFCM level. • Regional cooperation projects and programmes.	• Increasing number of vessels from third countries fishing in the Central Mediterranean • Lack of enforcement and control of management measures at regional level and inadequate corrective measures in cases of non-compliance. • Continued existence of IUU fishing in the region. • Challenging economic/political situations in several Mediterranean countries.

Fig. 1. SWOT- analysis on achieving sustainable bottom trawling in Malta and the central Mediterranean Sea based on perceptions of interviewed stakeholders. Abbreviations: EU – European Union; EAFM – Ecosystem Approach to Fisheries Management; FMZ – Fisheries Management Zone; GFCM – General Fisheries Commission for the Mediterranean; IUU – Illegal, Unreported and Unregulated.

Stakeholders generally consider the legislative framework applicable in the central Mediterranean sufficient to ensure sustainable levels of resource exploitation. However, a perceived lack of implementation, due to poor levels of enforcement and control on a regional level was a concern for stakeholders. The main barrier identified on a local level by some stakeholders was that further improvements in fostering stakeholder participation in the design and implementation of management measures are required in the Maltese Islands.

Stakeholders noted that some barriers hampering the management of fishing resources in the Mediterranean are related to the current economic and political challenges in the Mediterranean region, which clearly extend beyond the remit of fisheries managers. Stakeholders attributed other barriers, such as the perceived limited participation of stakeholders in governmental processes, limited financial incentives for best practices, and inadequate corrective measures in cases of non-compliance, to political will at both local and regional levels.

There was agreement between stakeholders that legislative frameworks will remain ineffective without adequate levels of compliance based on effective implementation, enforcement, and control. The fact that it is difficult to evaluate the effectiveness of specific regulations when management measures are only partly implemented, implemented too late, or not implemented at all was identified to be a critical issue. Given the poor status of fisheries resources [7], it is clear that current levels of monitoring, control and surveillance need to be stepped up in order to eradicate IUU fishing and to achieve sustainable stock exploitation levels in the Mediterranean Sea.

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