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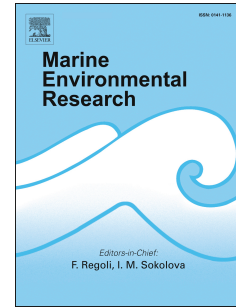
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Associations between fish and cold-water coral habitats on the Icelandic shelf.

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Abstract

The association between fish assemblages and cold-water coral habitats was evaluated based on analysis of longline catches in the Lónsdjúp trough, SE-Iceland. In 2009 and 2010, longlines were set in locations with varying coral cover within the trough. The study site is characterised by a depression (50-100 m deep), intersected by several ridges. Colonies of the cold-water coral *Lophelia pertusa* and other coral species were mainly found on the ridges. Among the fifteen fish species recorded, tusk (*Brosme brosme*) contributed ~80% to the total fish abundance in both surveys and their catch per unit effort was twofold greater on the ridges than in adjacent flat areas. Multivariate analyses showed differences between the structure of fish communities on and off the ridges. Constrained redundancy ordinations followed by variance partitioning revealed that the structure of the fish community varied with seabed complexity, cold-water coral coverage and geographical position. It was not possible to separate between the effects of seabed complexity and coral cover, as these were strongly correlated.

Key words: Longline, cold-water coral, fish, tusk, multivariate analysis.

1. Introduction

Structurally complex habitats, including coral gardens and reefs, sponge aggregations and boulder fields can influence the distribution of demersal fish species (Söffker et al., 2011, Komyakova et al., 2013, Trebilco et al., 2015). Fish may prefer structurally complex habitats as they provide shelter (Auster et al., 2003, Koenig et al., 2005), or serve as spawning or nursery grounds (Fosså et al., 2000, Costello et al., 2005, Baillon et al., 2012, Miller et al., 2012). Habitat complexity may also influence fish feeding behaviour (Weber et al., 2010), such as when fish use different habitat types during foraging and as shelter (e.g. Vaslet et al., 2012). Elucidating the underlying causes for the association between fish and structurally complex habitats can be difficult, as they are likely to occur at specific spatial and temporal scales (Auster, 2007).

In the last decade, there has been intensive research on the role of cold-water corals for fish (e.g. Auster, 2007, Kutti et al., 2015, Ross et al., 2015), in particular during the EU funded CoralFISH project (<http://eu-fp7-coralfish.net/>). Overall it appears that the associations between fish and coral habitats are mostly of facultative nature, i.e. species that are recorded on coral grounds are also found in other habitat types, although their abundances may differ (e.g. Kutti et al., 2015). Obligate associations between fish and cold-water coral habitats

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