

Cold water coral - fisheries interactions: Bioeconomic modelling comparing Norway & Iceland's redfish fisheries

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Abstract

This paper shows that the importance of fish habitat depends in part on the management of the fishery. Two cases of cold water coral - fisheries interactions are studied in a bioeconomic model setting: Norwegian and Icelandic redfish fisheries. The two countries have applied different types of management; Norway's management has been closer to open access, while Iceland has had a property rights system of individual transferable quotas (ITQ) in the time period studied. Using the production function approach and assuming an essential fish habitat connection, the cases are studied using time series data of catch and effort in the fisheries, while estimating for possible outer limits of cold water coral decline. In both countries there are indications of economic losses due to cold water coral decline. However, the open access nature of the Norwegian fishery seems to exacerbate these losses. The assumed loss of 30-50% of cold water coral gives an estimated marginal change in annual harvest of between 0.15% and 0.24% for the Icelandic fishery. For Norway, cold water coral decline results in a percentage marginal change in annual harvest of between 0.29% and 0.46%, twice that of the optimally managed fishery. The results of this study give indications of how habitat loss may affect fisheries. It points to the importance of management of fisheries when bringing in broader ecosystem connections. The greater losses due to habitat decline when fisheries are unmanaged raises the stakes of fisheries management.