

Benthic community response to a scallop dredging closure within a dynamic seabed habitat

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ABSTRACT

Fishing with bottom towed gear is widely considered an invasive form of fishing in terms of its impacts upon seabed habitats and fauna. Fishery closures or marine protected areas provide baseline conditions against which to assess the response to the removal of fishing disturbance and thus shed light on their use as fisheries management tools. We conducted repeat underwater camera surveys inside a recently established area that is permanently closed to scallop fishing and a seasonally fished area in Cardigan Bay, UK, to test for differences in scallop abundance and epibenthic community structure and to examine recovery processes over a 23 mo study period. Changes in scallop density and epifaunal diversity and community composition were primarily driven by seasonal fluctuations; no differences were found between the permanently closed area and the seasonally fished area. Temporal changes in epibenthic community inside the permanently closed area were not related to recovery processes associated with the cessation of scallop dredging. Sediment composition and bedforms shifted between surveys, suggesting that this community is exposed to a dynamic environment. It is likely that scallop dredging at the resent levels of fishing may be insufficient to induce changes large enough to be detected in the presence of strong natural disturbance. We highlight the importance of considering the physical nature and dynamics of the environment and the nature of the species concerned throughout the process of designating closed areas, to avoid negative impacts on fisheries and limited conservation benefits.

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