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## How fast do Trawlmarks degenerate? A field study in muddy sediments near Fehmarn Island, German.

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Bottom trawling is a fishing technique in which a net held open by otter boards is dragged across the seafloor to harvest bottom living resources. This action induces high levels of stress to ecosystems by overturning boulders, disturbing and resuspending surface sediment, and plowing scars into the seabed. In the long term the trawling impact on benthic habitats becomes problematic when the time between trawls is shorter than the time it takes for the ecosystem to recover. Since quantitative information on the intensity of bottom fishing is particularly important but rarely available, our study is crucial to reveal the extent and magnitude of the anthropogenic impacts to the seafloor. As part of the MGF Baltic Sea project, a multibeam-echosounder was used to record high-resolution bathymetric data in a small, heavily fished focus area at a 1-year interval. Based on bathymetric data, we present an automated workflow for extracting trawlmark features from seafloor morphology and deriving parameters that qualitatively characterize trawlmark intensity. We also demonstrate how the seafloor surface of an exploited area develops within a year and what can be derived from this for regeneration indicators.