

Physical impact of beam trawling revisited: sediment resuspension and disturbance of tickler chain and pulse beam trawling

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Beam trawling uses heavy gear combined with tickler chains that are dragged across the seabed disturbing the upper layers of sediment and causing damage or mortality to benthic organisms. Recently, Dutch fishermen have replaced the tickler chains of the beam trawls by electrodes as alternative stimulation for catching flatfish. The pulse is claimed to have less of an impact on benthic organisms than the traditional beam. In June 2013, sea trials were conducted in Dutch coastal waters to compare and quantify the direct mortality of the traditional beam and the pulse gear on benthic fauna. Fauna was sampled using a triple-D sledge before and after trawling by beam and pulse trawls with a non-fished area for comparison (BACI). Densities were calculated before and 48 hours after trawling. Boxcore samples measured the depth distribution of infauna. As individual species showed no particular patterns of impact in relation to the two trawling types, all species were combined into one analysis and categorised by traits. Each species was assigned to one of the groups based on a traits database: Resistant, intermediate or susceptible to trawling. Results showed that the area was populated by a community of mostly resistant species prior to the experiment, which may explain the difficulty in identifying direct mortality effects. However, overall a decrease in densities was observed following trawling, mostly due to a decrease in the group categorised as susceptible. Although the pulse trawl not show a lower impact than the beam trawl, the beam trawl area had been fished with a lower intensity and it may be concluded therefore that the beam has a larger impact. Nevertheless, it is also evident that impacts of trawling in an area with mostly resistant species appear minimal. The context-dependency of trawling impacts should therefore always be taking into account."