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Differential effects of electrical pulse and conventional beam trawl fisheries on sediment biogeochemistry

The controversial use of electrical stimulation as a fishing aid for commercial fisheries may provide a more environmentally friendly alternative to conventional beam trawl methods. Traditional trawling techniques can be particularly damaging to benthic habitats, however, little is known about the effects of electrical pulses on sediment biogeochemical processes and ecosystem functioning. This project will compare and analyse the impacts of electric pulse and conventional fishing methods on the benthic ecosystem with an emphasis on sediment biogeochemistry. We hypothesize that the two methods will produce contrasting effects on species survival and/or activity, along with differing biogeochemical repercussions. We will investigate this topic through a series of field sampling campaigns and controlled experiments. Short and long-term effects of both fishing methods on sediment nutrient cycles will be assessed. North Sea benthos and their functional characteristics will also be determined. This research will provide a better understanding of the biogeochemical consequences related to electric pulses on marine ecosystems. Additionally, these results will contribute to a more comprehensive assessment of this new fishing method.

Keywords: Electrical stimulation, fisheries, ecosystem functioning , biogeochemistry, sediment, North Sea