

Science for Environment Policy

Deeper seafloor habitats most at risk from bottom trawling

Bottom trawling—dragging nets along the sea floor—reduces biodiversity most severely in deeper, species-rich habitats, a study suggests. New research in the Dutch North Sea has shown that this type of trawling had less effect on species richness in shallow areas with coarse sediments. These results suggest that efforts should be made to reduce trawling in these kinds of sensitive habitats, the researchers say.

Across the globe, bottom trawling has become commonplace. This form of fishing uses heavy equipment to hold the net open, stirring up sediments, destroying habitats and threatening many marine species.

Understanding how bottom trawling affects different seafloor ecosystems could help policymakers to develop effective marine protected areas, reducing trawling activities in areas where ecosystems are more sensitive. However, trawling affects vast areas of the seafloor over long periods of time. To date, research examining the impacts of trawling has been limited to small areas and short time spans.

This study examined how the intensity of trawling affects biodiversity over a large area over six years. The researchers investigated how the impacts of trawling varied, depending on the characteristics of the ecosystem, such as biomass, water depth and sediment grain size.

The researchers collected data on ecosystem characteristics and species richness—the number of different species—from 80 seafloor sampling stations, in the Dutch part of the North Sea. These were combined with estimates of trawling intensity in the area, based on vessel monitoring data from satellites.

As expected, sites which were more intensively trawled had lower species richness. The results showed that the negative effects of trawling on species richness were worst in relatively species-rich, deep areas of the sea that had fine-grained sediments. Shallow areas with coarse sediments suffered fewer ill effects on species richness from trawling, even those that experienced intensive trawling. This could be due to habitats in shallower areas having adapted to greater levels of natural disturbance, lowering the relative impact of trawling. Alternatively, trawl disturbance in the past could have changed species richness to such an extent that there are now few additional effects.

These findings suggest that protecting the species richness of sea floors could be effectively achieved by reducing the intensity of trawling in deeper waters and especially those areas with fine-grain sediments. However, species richness is only one aspect of overall ecosystem health. Future studies will be needed to better understand how trawling affects other factors, such as changes in the mix of species present and the overall functioning of the ecosystem.



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