A new method of assessing human impacts on seafloor habitats suggests that over a third of habitats in the Baltic Sea have an ‘unfavourable’ status. The method is presented in a recent study which concludes that the tool can be effective in helping implement the EU’s Marine Strategy Framework Directive (MSFD).

The MSFD\(^1\) states that the structure and function of seafloor ecosystems must be safeguarded against harm from human activities. To achieve this, the MSFD also requires each EU Member State to monitor pressures on the ecosystems and take actions which lead to a ‘good environmental status’ by 2020.

In this study, researchers set out to develop and test a method of mapping the impacts of human activities on diverse seafloor ecosystems. Using the Baltic Sea as a case study, the researchers used habitat data collected under the EUSeaMap project\(^2\), and considered 13 different human activities that can affect seafloor ecosystems. These included, amongst others, trawling, dredging, wind farms and nutrient pollution. The intensities of the activities were scored either on a continuous scale or as presence or absence for the entire Baltic Sea.

To translate each activity into its actual impact, the scores were weighted (i.e. given more or less importance) by experts who focused on impacts on ecosystem function, resilience and recovery time after the impact. The impacts of the different activities were then added together to provide an overall measure.

The researchers caution that they have assumed that the impacts of each of the activities are ‘additive’, i.e. an activity will have the same impact if it occurs in isolation as when it occurs in combination with other activities. However, it is possible that an individual activity’s impact could be even greater if it occurs alongside other activities, but there is currently not enough data to establish such effects.

The results demonstrated that the southern areas of the Baltic Sea suffered higher impacts than further north. Sensitive deep sea habitats are also more affected than those in shallower regions, but this was caused by oxygen deficiency, which results from nutrient enrichment, and is now a more or less continuous feature of the central Baltic Sea.

A key objective of developing the tool was to inform implementation of the MSFD. However, there is as yet no firm quantitative definition of what ‘good environmental status’ entails. The researchers therefore used a definition from the EU Habitats Directive\(^3\) which states that any habitat in which more than 25% of the area is significantly affected has an ‘unfavourable’ or ‘bad’ status. They therefore considered any habitat with less than 25% of its area significantly impacted to have a ‘good’ environmental status, but believe that the threshold should be stricter.

Under this definition, only 37% of the habitats mapped in the Baltic Sea had a good environmental status. Of the impacts considered, wind farms and cables had the lowest impacts on the seafloor habitats of the Baltic Sea, whereas anthropogenic hypoxia (human induced oxygen deficiency), trawling and shipping were among those with the highest.

The study’s authors conclude that this tool could be of great use in implementing the MSFD and that relevant authorities should invest in collecting spatial data on human pressures to improve the method’s accuracy. They add that a clear definition of the thresholds for ‘good environmental status’ is also urgently needed.