Filling gaps in knowledge of North Sea benthic biodiversity: Identifying priority areas for conservation

García Silvia, Perry Allison L., Alvarez Helena, Blanco Jorge, Conlon Suzanne, Maaholm Jasper D. and Aguilar Ricardo

Oceana, Gran Vía 59, 9, 28013 Madrid, Spain
E-mail: sgarcia@oceana.org

The North Sea is one of the best-studied marine areas in the world, yet serious gaps remain in the knowledge – and therefore also the protection – of its benthic biodiversity. Although the current network of marine protected areas (MPAs) covers roughly 22% of the North Sea, most of these MPAs are designed to target only pelagic species and birds, and benthic protection is particularly lacking in offshore areas. We carried out two research cruises, in 2016 and 2017, with the aim of helping to fill those information gaps, by documenting benthic habitats and communities in areas that had previously been identified as being of ecological importance, but from which data on benthos were lacking. Over a total of 16 weeks, we surveyed 25 areas in the waters of five countries (Denmark, Germany, Netherlands, Norway, and the United Kingdom), using a combination of: visual sampling via a remotely operated vehicle (ROV) and filming by professional SCUBA divers; acoustic seafloor mapping with a multibeam echosounder; and benthic grab sampling. Roughly 1400 taxa were identified (with more than 900 to species level), from depths ranging from 8 to 460 m. We present the main findings of these surveys, with an emphasis of the distribution and abundance of key community types of ecological interest, including biogenic reefs, gorgonian gardens, deep-sea sponge aggregations, sea pen and burrowing megafauna communities, pockmarks and worm aggregations. We also highlight areas of particular importance for threatened species and habitats (such as *Arctica islandica* and *Sabellaria spinulosa*), vulnerable marine ecosystem (VME) indicator species (such as *Virgularia mirabilis* and *Isidella lofotensis*), and commercial species. These results are used as the basis for specific management and conservation proposals for outstanding areas, based on the occurrence of features that have been prioritised for protection under national and European legislation, and/or relevant international conventions.

Keywords: benthic communities; biodiversity; conservation; management; MPAs; North Sea; threatened species; threatened habitats; VMEs