

# Spatial distribution of dinoflagellate resting cysts in Recent sediments of Kiel Bight, Germany (Baltic Sea)

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## **Abstract**

The occurrence and distribution of dinoflagellate resting cysts in Recent sediments was investigated at 9 locations in Kiel Bight, Baltic Sea. The assemblage comprised 25 known cyst species and 4 unknown cyst types and is characterized by the dominance of *Protoperidinium* cf. *divergens* with a maximal abundance of 1695 living cysts/cm<sup>3</sup> in the upper half centimeter. Cysts of the potentially toxic dinoflagellates of the *Alexandrium excavatum/tamarense* group and *A. minutum* were scarce. Micro-reticulate resting cysts of the toxic, unarmoured *Gymnodinium catenatum*, whose motile cell has not been recorded in Northern European waters, are reported for the first time from Recent sediments of the Baltic Sea. In the top 2-cm of sediment up to 1200 living dinoflagellate cysts/cm<sup>3</sup> were found and the following trends were noted: Cysts were primarily associated with sediments dominated by mud, sandy stations exhibited the lowest cyst abundance. Highest cyst concentrations were found at the deepest stations and the small-scale vertical distribution of cysts usually exhibited maximum concentrations below the sediment surface. Empty cysts constituted 16.5-64.0% of total cyst abundance. These results suggest that the spatial distribution of several cyst species is controlled by water circulation patterns. The wide distribution of living and empty cysts of *Peridinium dalei*, *Protoperidinium denticulatum* and *P. punctulatum* and corresponding germination experiments suggest that the motile forms, which have not previously been recorded in the area, are common members of the plankton community in the western Baltic Sea. The cysts of *Gonyaulax polyedra*, *P. dalei* and *Protoceratium reticulatum* exhibited a reduced length of processes compared to individuals from marine habitats.

Key words: Dinophyceae, benthic resting cyst, Recent, Baltic Sea, Kiel Bight, distribution