

The Ordovician reefs of Baltica

BJÖRN KRÖGER¹, LINDA HINTS², OLIVER LEHNERT³

¹ *Finnish Museum of Natural History, PO Box 44, FI-00014 University of Helsinki, Finland,
(correspondence: bjorn.kroger@helsinki.fi)*

² *Institute of Geology at Tallinn University of Technology, Ehitajate tee 5, 19086, Tallinn,
Estonia*

³ *Geo-Center of Northern Bavaria, Friedrich-Alexander University of Erlangen-Nürnberg,
Schlossgarten 5, D-91054 Erlangen, Germany*

Widespread growth of reefs formed by a framework of biogenic constructors and of frame-lacking carbonate mounds started on Baltica during the Ordovician. Previously, Ordovician reef and mound development on Baltica was considered to be sporadic and local. A review of all known bioherm localities across the Baltic Basin reveals a more consistent pattern. Ordovician reefs and mounds grew in a wide E/W stretching belt across the Baltic Basin and occur in several places in Norway. The development started nearly abruptly and massively during the late Sandbian / early Katian interval and climaxed during the late Katian.

The current spatiotemporal distribution of bioherms is a result of interdependent factors of post depositional erosion, relative sea level and climate during the time of deposition. The likelihood that bioherms are preserved from long time erosion is higher when deposited during low sea level in deeper parts of the basin. At the same time, oceanographic conditions were likely more favorable during times of cooler global climates, low sea level and glacial episodes.

A main factor for the timing of the reef and mound evolution was Baltica's shift toward palaeotropical latitudes during the Late Ordovician. The time equivalence between initial reef growth and the Guttenberg isotope carbon excursion (GICE) suggests that global climatic conditions were important. The long lasting stability, the resilience of individual mounds, and the increasing taxonomic diversity of the reefs/-mounds suggest a significance of biological factors for the reef formation.