

ON THE CLIMATIC AND OCEANIC CONDITIONS FAVOURING RUGOSE CORAL DIVERSITY RISE IN THE BALTIC LATE ORDOVICIAN

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Corals colonized the Palaeobaltic Sea in the middle Caradoc. In the late Ordovician their diversity increased steadily, yet with some set-back. Using biodiversity as a measure, the timing of the evolutionary changes (morphological novelties) of the groups and possible influence of some ecological conditions are discussed.

The late Ordovician East Baltic Gulf was a pericratonic sea on the western margin of Baltica, with an eastward epicratonic extension reaching episodically Central Russia. Coral-bearing carbonate rocks show cyclic alternation of different limestones, marlstones and also reef-like structures at a few levels. Local climate was influenced by drifting of Baltica from mid-latitudes to a subequatorial position during the Ordovician as well as by global changes in the climate resulting in glacial conditions in the early Hirnantian. New carbon isotope studies provide evidence about the existence of several pre-Hirnantian cooler climate episodes in the middle and late Caradoc and early Ashgill.

The oldest rugose corals of the region (*Primitophyllum*, *Lambelasma*) that appeared in the earliest middle Caradoc were simple lambelasmatisms with monacanthine septa and partly without tabulae. Later in the Caradoc the septa became longer and a calicular boss was formed (*Coelostylis*). Dissepiments appeared in a lambelasmatisid skeleton in the Ashgill (*Neotryplasma*). The first streptelasmatisms (*Streptelasma*, *Helicelasma*) that appeared in the late middle Caradoc show an advanced septal apparatus and tabularium, but a complicated axial structure became common only in the early and middle Ashgill (*Grewingkia*, *Bodophyllum*). Several morphological novelties like septofossulae (*Ullernelasma*), dissepiments (*Paliphyllum*, *Strombodes*), colonial forms (*Cyathophylloides*), etc. appeared in the Hirnantian.

Rapid radiation of lambelasmatisms in the middle Caradoc caused the first diversity rise of the Baltoscandian rugose assemblage. The second notable diversification event commenced in the middle Ashgill and peaked in the Hirnantian, supported by the novelties noted above. The diversity low between these events in the early Ashgill is not a sudden event as the decrease began already in the late Caradoc. The end-Ordovician mass extinction is well expressed only on the species level.

Changes in rugose coral biodiversity are sufficiently well correlated with global warming of the late Ordovician climate. The general diversity rise was slowed down by repeated coolings in the late Caradoc and early Ashgill. Along with the development of a favourable temperature regime, changes in oceanic conditions influencing the origination and distribution of suitable habitats are of great importance. The Hirnantian glaciation, accompanied by a serious sea-level fall, brought about good conditions for coral evolution on many cratonic shelves, which helped corals survive the severe conditions of the glacial time.

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