



Main consistent patterns of Stromatoporoid Development in the Late Ordovician and Silurian in the North Urals Palaeobasin

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In the history of the Earth there have been no basins with similar characteristics. The North Urals palaeobasin had its own unique features. The dominant benthic organisms of basin ecosystem during the Ordovician and Silurian were stromatoporoids, corals, and brachiopods. This fauna is vitally important for the aims of stratigraphy so long as conodonts are extremely rare in sections of the Northern Urals area. The most complete ordering of stromatoporoid complexes has been established and made it possible to estimate rates and measures of extinction at a level of the province. It was also found out that stromatoporoids were organisms responsive to subtle changes of environment and that they accommodated differently to those changing conditions.

The evolution of stromatoporoids was accompanied by phylogenetic reorganization and formation of endemic communities in the Late Ordovician and Early Silurian. In the Late Silurian taxonomical diversity of stromatoporoids was mainly controlled by migration processes and cosmopolites with wide palaeogeographic links prevailed in the palaeobasin. Therefore palaeobasin at that time was open to stromatoporoid fauna migration which is confirmed by the occurrence of genera and species that disperse in coeval deposits of many areas, for example, Baltic States, Sweden, Ukraine (Podolia), Western Siberia, Arctic islands of Russia, Mongolia, Canada (islands).

The evolution of stromatoporoid communities in the Ordovician-Silurian was intermittent by biotic crises. The analysis of stromatoporoid development helps to define crucial points of ecosystem's reorganizations coinciding with critical geological and biotic events in the history of the North Urals palaeobasin existence, as well as global events during the Ordovician and Silurian (Hirnantian Event, Ireviken Event, Lau Event).

The analysis of crises indicates local dependence of stromatoporoid biodiversity on depositional environments. Large local biocenos reorganizations and biotic crises were connected with regressive phases of basin development. Maximum diversity was associated with transgressions. Forming buildups in Middle Llandovery, Wenlock and Early Ludlow favoured development of stromatoporoid migration. Distinct changes of communities are confined to large taxa boundaries.

A lot of factors influenced dispersal and development of stromatoporoids: the depth of palaeobasin, temperature and water salinity, shape of bottom, food chains and etc. In different times some factors dominated thus causing reorganization of communities, alteration of their taxonomical composition, expansion or extinction of communities. In its turn the above-listed factors were defined by geologic events.