

The Lower Cambrian Trilobite Zonation of Estonia

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Trilobites, a group of the earliest arthropods, appeared in the fossil record in the lower Cambrian, marking the base of the Cambrian Series 2 on the global scale. They emerged on most major palaeoplates during the Age 3 or Age 4. Interestingly, they show little connection between the faunas palaeogeographically, and thus cannot be readily used for global correlations. Regionally, trilobites are more useful, albeit they are seldom preserved when they first appear. They diversified rapidly and became numerous and valuable in biostratigraphy over the Baltoscandian palaeobasin. Already in 1970s the regional correlation scheme of the East European Platform included the following zones based on trilobites: Pre-trilobite, *Schmidtiellus*, *Holmia*, *Protolenus* correlated to the Lontova, Dominopol, Vergale, Rausve ages accordingly in the former “Lower Cambrian”.

Later, the *Holmia* Zone was divided, *Protolenus* renamed and Ljuboml and Dominopol ages established. The most recent addition is the *Rusophycus* zone in the lower part of the Dominopol Stage, marking the level where trilobite remains have not been found or not preserved, but the traces have been recorded. In northern Estonia, only the first two zones and regional stages crop out, allowing a detailed study of these early arthropods that are in need of a fresh overview.

The old trilobite collections at the museums in Tallinn, Tartu, and St. Petersburg were restudied, and new material, including the trace fossils gathered together with the observations on the distribution of those mainly in three localities: Saviranna, Kakumäe and Kunda. The latest data allow upgrading the existing biostratigraphic zonation of trilobites, and the trace fossils — *Rusophycus* and *Cruziana* — most probably left behind by the trilobites.

The type material of *Schmidtiellus mickwitzi* originates from the Kunda River bank next to the old Cement Factory, and belongs to the Kakumäe Member of the Tiskre Formation, while *Schmidtiellus reetae* is described from the older beds — the upper part of the Lükati Formation. It is worth establishing a new biozone to recognise the age difference. The lower part of the Lükati Formation also reveals some fragmentary trilobites, which may represent a new species of *Schmidtiellus*?, but that needs well-preserved specimens to be proved. The ichnofossils *Rusophycus* and *Cruziana* occur in several levels through the Lükati and Tiskre formations, representing the suitable taphonomic conditions preserving them rather than the biostratigraphic marker bed. Nevertheless, they possibly do mark the level of trilobite existence and thus the Series 2; however, it is not advised to use as an independent zone below the *Schmidtiellus mickwitzi* Biozone as often used.

Keywords: Baltica, *Schmidtiellus*, *Rusophycus*, *Cruziana*, biostratigraphy.