



Estonian Journal of
Earth Sciences
2023, 72, 1, 153

<https://doi.org/10.3176/earth.2023.07>

www.eap.ee/earthsciences
Estonian Academy Publishers

ABSTRACT

Received 30 March 2023
Accepted 30 March 2023
Available online 16 June 2023

Keywords:

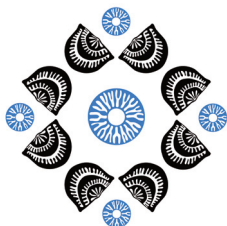
Upper Ordovician, Baltoscandia,
biostratigraphy, conodonts, correlation,
Amorphognathus viirae

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Citation:

Paiste, T., Männik, P., Stouge, S. and
Meidla, T. 2023. Towards a revised
Sandbian conodont biozonation of Baltica.
Estonian Journal of Earth Sciences, 72(1),
153. <https://doi.org/10.3176/earth.2023.07>



14TH ISOS
ESTONIA 2023

Towards a revised Sandbian conodont biozonation of Baltica

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One of the key objectives of the studies proposed by the Ordovician Subcommittee is the improvement of regional stratigraphy for further advancements in global correlation. The results of this work can be found in numerous updates and reviews published in the recent *Geological Society, London, Special Publications* 'A Global Synthesis of the Ordovician System'. Several of these papers refer to the Baltic Ordovician conodont biozones. While different schemes share many common features, their correlation with stages and biozones differ in detail. Considering the recent developments in the studies of the Sandbian stratigraphy in the Baltoscandian region, it is possible to complement the current conodont biozonation.

Pygodus anserinus, *Amorphognathus tvaerensis* and *A. superbus* conodont zones are recognized in the Sandbian Stage in Baltica. The lower boundary of the stage is located within the *Pygodus anserinus* Zone, and the main part of the stage corresponds to the *Amorphognathus tvaerensis* Zone. In Scandinavia, the upper boundary of the stage correlates with a level within the *A. superbus* Zone or lies in a conodont-poor interval in the eastern Baltic region. The lower boundary of the *A. inaequalis* Subzone is tentatively correlated with the base of the Sandbian in Scandinavia but is located in the uppermost Darrivillan in the eastern Baltic region. In both areas, the *A. tvaerensis* Zone is subdivided into the *Baltoniodus variabilis*, *B. gerdae* and *B. alobatus* conodont subzones.

The *A. inaequalis* Subzone – in some cases indicated as a zone – has been included in the regional stratigraphic charts for more than a decade. However, so far, *A. inaequalis* (Rhodes) has been reliably identified and also illustrated only from Avalonia, i.e. outside the palaeocontinent Baltica. A recent restudy of collections from the Fjäckå main section and the Smedsby Gård drillcore (both from Sweden), as well as from several Estonian sections, did not prove the occurrence of *A. inaequalis* in these areas.

The *A. tvaerensis* Zone comprises almost the whole Sandbian, both in Scandinavia and the eastern Baltic areas. During this long age, the morphology of the P and M elements of *A. tvaerensis* (Bergström) gradually changed, and elements of distinct morphology appeared and were assigned to a new species, *Amorphognathus viirae* Paiste, Männik et Meidla, 2022, in the upper part of the range of the species. In succession, *A. viirae* appears in the upper part of the *B. gerdae* Subzone. Currently, *A. viirae* has been identified in numerous Estonian sections, as well as in the Fjäckå main section and the Smedsby Gård drillcore in Sweden. Based on published figures, it occurs evidently in the Mójcza Formation of the Holy Cross Mountains (Poland) and the Black Knob Ridge section in Oklahoma (USA), in the GSSP for the base of the Katian Stage.

A. inaequalis has also been reported and an eponymous zone identified in two other sections located on the palaeocontinent Baltica, in the Bliudziai-150 drillcore (Lithuania) and the Kovel-1 drillcore (Ukraine). During the restudy of collections from these sections, no elements of *A. inaequalis* were found in either of them. The earliest recorded elements of the genus *Amorphognathus* have been assigned to *A. tvaerensis*, and the specimens from the upper range of this species reidentified as *A. viirae*.

Analysis of the new material and revision of previous collections has revealed problems related to the Sandbian conodont biozonation of the palaeocontinent Baltica and demonstrated the need for its updating. The new proposed zonation excludes the *A. inaequalis* Subzone, as the occurrence of its nominal taxon on the palaeocontinent Baltica could not be proved. Additionally, a new unit, the *A. viirae* Zone, has been included in the zonation. It corresponds to the upper part of the former *B. gerdae* Subzone, which is now treated as a zone. Also, all subzones based on the succession of *Baltoniodus* species have been elevated to the rank of zones.