

Biostratigraphic and paleoecological evaluation of Lower Jurassic sediments from Myjava Highlands

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The study area is located in the Pieniny Klippen Belt, in the Myjava Highlands, and east of the Podbranč locality. The samples for the study calcareous nannofossils were taken from the Lower Jurassic Allgäu Formation. This formation includes dark gray to black, slightly mottled, fine-grained marly limestones and marls. Red and green radiolarities with cherts of the Callovian–Kimmeridgian age overlie this formation. We performed the first biostratigraphic research based on calcareous nanofossils at this locality.

Assemblages of calcareous nanofossils (Fig. 1) are specimen- and species-poor in the studied samples.

Biostratigraphic research of the samples determined calcareous nanofossils assemblage composed almost exclusively of specimens belonging to the genus *Lotharingius* — *Lotharingius hauffii*, *Lotharingius frodoi*, *Lotharingius umbriensis*. Other species include *Biscutum profundum*, *Carinolithus superbus*, *Crepidolithus crassus*, *Schizosphaerella punctulata*, and *Thoracosphaera* sp. (Young et al. 2017)

Based on the identified nano-assemblage, we can determine that layers belong to the Toarcian nannoplankton zone NJ6, according to Bown - Cooper 1998.

The biostratigraphically youngest species is represented by *Carinolithus superbus*, which has its first occurrence in the NJ 6 Zone. Other species are typical of the Toarcian stage.

Species *Lotharingius* began to develop during the Pliensbachian–Toarcian time. During the Toarcian, *Lotharingius* has been diminished in size (Fraguas & Young 2011). The most abundant *Lotharingius* species were *Lotharingius hauffii* and *Lotharingius frodoi*. *Lotharingius frodoi* is, according to Fraguas & Young 2011, a morphotype of *Lotharingius hauffii*, but in our study we distinguish both species individually (Fraguas & Young 2011).

The occurrences of the genera *Lotharingius* are paleoecological significant. *Lotharingius* survived the Early Toarcian anoxic event that was coupled with the biomineralization crisis induced by the high atmospheric pCO₂ and ocean acidification. These conditions led to the crisis and extinguishment of nannofossils. (Fraguas & Young 2011).

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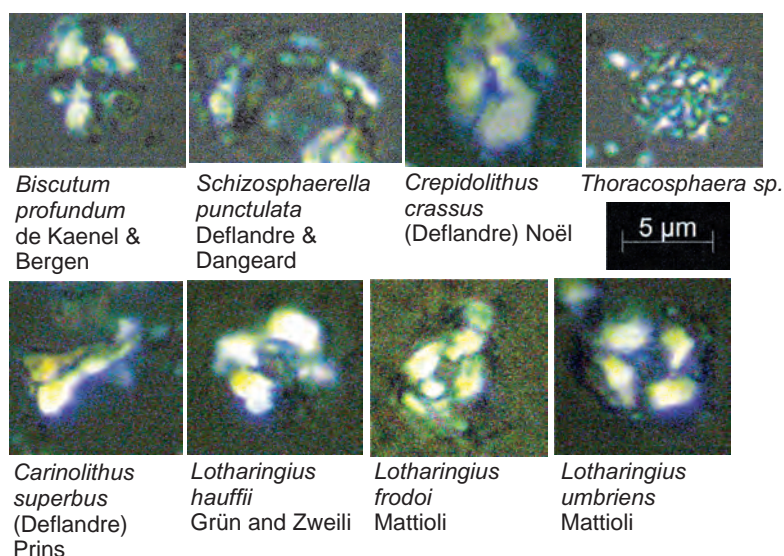


Fig. 1. Phototable of the Lower Jurassic calcareous nannofossil from the study area.

References

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