

Fossil karst in the Jurassic of the Kościuszko Mound in Kraków (southern Poland): reply

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The main allegation presented by our opponents (Krajewski and Matyszkiewicz, 2015) is the lack of reference to publications dealing with the Upper Jurassic sediments, especially authored and co-authored by them (Matyszkiewicz, 1996; Krajewski, 2001; Krajewski et al., 2011; Matyszkiewicz et al., 2012; Kochman and Matyszkiewicz, 2013). Our paper did not deal, however, with the development of the Upper Jurassic limestones. The aim of our investigations was to examine the occurrence of the fossil karst at considerable depths within these limestones, and thus the lack of reference to the above-listed literature is not an error. We are simply referring to publications dealing with the problem being the aim of our paper. Certainly, we could describe these limestones in more detail but this lack does not impact the resolution of the problem studied by us, leading to the conclusions of several generations of submarine sedimentation in the karst cavities of the St. Bronisława Hill – unless our opponents think that changes in the limestone structure had a major control on the development of the karst and subsequent filling. We do not find any mention on the occurrence of younger sediments in the Jurassic limestones in any paper quoted by Krajewski and Matyszkiewicz (2015). On the other hand, the earlier papers concerning karst and occurrences of the neptunian dykes in the Kraków area have been referred to (Gradziński, 1962, 1972; Felisiak, 1992; Dżułyński, 1995; Felisiak, 1995; Wieczorek et al., 1995a, b; Kołodziej et al., 2010; Krobicki et al., 2008). Previous studies did not report the marine sedimentation in the caves in Jurassic limestones, as indicated by rudimentary layering both of Miocene limestones and clays with Cretaceous microfauna. We documented a complex and unevenly aged development of the karst system. The reported facts show that the filling of the karst cavities took place during the submarine sedimentation and was not the result of redeposition of the Cretaceous sediments (not to mention Miocene limestones). It does not imply that it cannot occur together with other types filling the karst forms.

Considering the remark on the occurrence of cherts (Krajewski and Matyszkiewicz, 2015: fig. 3) we think that it is not possible to observe their uneven distribution in the borehole, and it can be seen that the cherts which occurred in the cores do not relate probably to the bedding surface because none of them were placed within the interlayer surface. The thickness of the Oxfordian deposits in the Kraków region is not up to 200 m, as we wrote, but more: 230 m according to Matyszkiewicz (1993) and 250 m according to Krajewski et al. (2011). We agree that the title may suggest to some readers that the Kościuszko Mound is built of Jurassic limestones, which was not our intention. We appreciate the exhaustive lecture on ammonite stratigraphy of the Kraków region but the absence of any ammonites in the studied profiles did not allow us for their reference to the appropriate scheme. It seemed to us that, due to the occurrence of the fault system cutting the discussed region, limestones of different ages can occur at the same depth (as already stressed by Krajewski, 2001). We continued our investigation after the paper had been accepted, and thus our knowledge is more complete now: *Rumanolina seiboldi* (Lutze) and *Protomarssonella jurassica* (Mityanina) have been identified in supplementary samples. These are the marker species for Upper Jurassic deposits of the Carpathian Foredeep and Foreland. The former species occurs from the Middle Oxfordian, and the latter is characteristic for the Late Oxfordian. The species have been photographed. In conclusion, the investigated fossil karst forms occur in the upper Oxfordian limestones, and the comments of Krajewski and Matyszkiewicz (2015) do not refer to the main issue of our paper.

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