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Preliminary taphonomical analysis of Lower Muschelkalk bone accumulations in Silesia (Poland)

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Abstract

A preliminary qualitative taphonomical analysis of *Entolium* and *Dadocrinus* bone assemblage is presented. The Limestone with *Entolium* and *Dadocrinus* is the part of the Lower Gogolin Formation (Middle Triassic). It constitutes a lithological member, rich in mainly isolated vertebrate bones. That occurrence is connected with bioclastic calcarenites deposited in the high-energy environment.

Different lithological types highlighted the differences in the state of bone preservation in particular carbonate rock types (calcsiltite and calcarenite). The preliminary field observations in quarries in Upper Silesia, especially in Miasteczko Śląskie – Żyglin near Tarnowskie Góry allowed to point the occurrence of a Konzentrat-Lagerstätte rich in vertebrate remains in the Limestone with *Pecten* and *Dadocrinus* unit, however those are mainly isolated bones.

The most complete skeletal remains originated from fine-grained marly calcsiltites from Gogolin locality in Opole region. Hydrodynamic conditions, substrate features and conceivable some biotic factors (like occurrence of algal mats) can determine better state of preservation reptile remains in those sediments.

Keywords: bone bed, Lagerstätte, Middle Triassic, marine reptiles, Sauropterygia

Geological settings and palaeontological data

Locality

Żyglin is a hamlet of Miasteczko Śląskie town. For many years this locality is a best-known place of occurrence of the Triassic marine reptiles in the Silesia region, first described by BARDZIŃSKI *et al.* (2008). Locality is situated in northern part of Silesian Upland, at the northern edge of Upper Silesian depression, which border on Silesia-Cracow Monocline (KOWAL 1998).

Silesia Middle Triassic marine reptiles investigation history

It is universally known that the Lower Gogolin Formation in Silesia region is famous for its rich vertebrate finds (e.g. HAGDORN 2007) in the past as well as at present. The first occurrences of reptile bones from Silesia Muschelkalk are known from the beginning of 19th century. In 1822, geologist, baron Karl August Ludwig Freiherr von Oeynhausen assembled a huge collection of big fossil bones, then reputed as ‘*dolphin and seal*’ remains.

The compilations of contemporary knowledge were writings of MEYER (1847-1855), and GÜRICH (1884), and at the end of 19th century the treatise by SCHRAMMENN (1899). On the space of next years, in interwar period were rising an interesting reviews of Middle Triassic marine vertebrates (e.g. SCHMIDT 1928, ASSMANN 1944). In post-war times followed the stagnation in research of vertebrates from Poland. Also recent publications (*inter alia* CHRZĄSTEK & NIEDŹWIEDZKI 1998, BARDZIŃSKI *et al.* 2008, CHRZĄSTEK 2008) give the only general description of these marine vertebrates occurrences.

Nowadays, in local quarries in Żyglin are often found generally isolated remains of marine