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Conodont studies in the Prague Synform - an overview

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Conodont studies in the Prague Synform have been developed mostly in carbonate successions of the late Silurian and Lower and Middle Devonian.

Silurian

The late Silurian conodont work in the Prague Synform dates back from pioneer studies by Walliser (1964) who included the conodont data from this area into his first zonal framework. He erected a stratigraphically important taxon "*Spathognathodus snajdri*" (from Mušlovka Quarry), that has a great correlation potential as shown e.g., by Viira & Aldridge (1998). The taxonomy of taxon "*snajdri*" has been later further developed using morphotype concept. Another stratigraphically valuable taxon "*Oz.*" *bohémica* has been described from the locality Jinonice. Several conodont finds including former index taxa were reported by Bultynck & Pelhate (1971). Mehrtens & Barnett (1976) tried to describe the evolution of the "*Ozarkodina remscheidensis* assemblage" based on two morphological features (uneven denticulation and enlarged anterior denticles). They based their studies only on a small number of samples from the Ludlow-Lochkovian interval in the Požáry section; their morphological concept of this taxon (or better a large group of taxa regarding present taxonomy) is now obsolete. Walmsley et al. (1974) took number of spot samples from many localities within the Kopanina and Přídolí Fms around the Prague Synform. They reported several index taxa using morphological taxonomy. An enormous work as regards the late Silurian conodonts has been done by H.P. Schönlaub (in Chlupáč et al., 1980 and in Kříž et al., 1986). With the help of J. Kříž he furnished crucial sections in the Přídolí of the Prague Synform with conodont data and demonstrated taxon ranges (in Kříž et al., 1986). In this paper he made a large summary of conodont faunas obtained from samples from numerous sections and localities that were sampled and studied by him or by previous authors. Based on summarized data he recognized the Walliser's zones – *ploeckensis*, *siluricus*, *latialata*, *snajdri*, *crispa* and *eosteinhornensis*. As early as these times, Schönlaub rightly remarked that the *eosteinhornensis* Zone should be revised; he referred particularly to its definition – i.e. "an assemblage Zone covering several different taxa without any phylogenetic control". His work represents important contribution to the knowledge of the Přídolí conodonts in the Prague Synform.

Apart from several figured specimens in Walliser (1964) and in Chlupáč et al. (1980) – Ludlow specimens from Koledník Quarry and Ludlow-Přídolí specimens from Mušlovka section, the major part of the most important specimens were never figured or systematically described. In spite of an enormous previous work done on conodont faunas, the missing figures and descriptions are nowadays a big disadvantage, especially when the taxonomical concepts of many species has been moved forward. Furthermore, many stratigraphically important and critical subspecies and morphotypes were established and other species were synonymized. Due to changed taxonomical concepts, bare names reported as "*snajdri*", "*eosteinhornensis*" or "*remscheidensis*" are telling us a little now about fine morphological changes in individual lineages and (if even anything) about stratigraphy.

The Wenlock-Ludlow boundary in many sections around the Prague Synform has been described by Kříž et al. (1993). They have figured several critical conodont specimens from the boundary interval. Revision of the conodont zonation of the Wenlock-Ludlow boundary in the Prague Synform and the new zonal concept was offered by Slavík (2014).

The recent revisions of important conodont taxa (e.g., Murphy et al., 2004; Carls et al., 2007) have shown that several current concepts of intraspecific variability were probably too liberal. Despite of the number of papers on correlation, the taxonomy of most predominating late Silurian – early Devonian

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conodonts (“*eosteinhornensis*” and “*remscheidensis*”) remained close to stagnation. Unfortunately, the lumping has blunted the precision of taxonomy, phylogeny, and correlation considerably. Excessive lumping resulted in the introduction of the “*remscheidensis*” biozone for the late Ludlow – early Přídolí. Lately, a subspecies of a typical early Lochkovian taxon “*Ozarkodina remscheidensis*” was then reported from the Ludlow, i.e., much below the origin of the nominal species.

Jeppsson (1988) introduced a new zonation for the latest Přídolí based on conodonts from the Klonek section (the GSSP for the Silurian-Devonian boundary), where he refined the zonal scale for the Přídolí. Serious problems in the application of his *detorta* Zone, that was used almost globally (Europe, Australia, China) for the identification of the latest Přídolí, were revealed by Gouwy & Corradini (2006) and largely discussed by Carls et al. (2007): the nominal taxon *Delotaxis* (= *Oulodus*) *detorta* starts already before the entry of the taxon *eosteinhornensis* s.s. (the one with ornamented lobes). Discrepancies in conodont correlation also resulted from a loose application of formalisms of the biostratigraphic zonation.

Carls et al. (2005) described taxon with incipient alternating denticulation in the spathognathodontid clade from Ludlow in the Požáry section; this development offers a biostratigraphical potential and the study showed a promising direction for future studies in Spathognathodontidae. The Požáry section is considered a fundamental locality for such a study. Rich conodont fauna of the Požáry Quarries gave rise to several recent papers dealing with a refined conodont zonation for the Ludfordian (Slavík et al., 2014) and with the major mid-Ludfordian Event (Lau/Kozłowski Event) (Lehnert et al., 2007; Slavík et al., 2010; Slavík & Carls, 2012). The Lau/Kozłowski Event has been studied also in other sections around the Prague Synform (e.g., Manda et al., 2012; Chadimová et al., 2015).

Devonian

In the Devonian of the Prague Synform, several studies were concentrated mostly on system or stage boundaries (Pr/Lo, Lo/Pg, Pg/Em and Em/Ei) and the related major bioevents (cf. Chlupáč et al., 1972; Klapper, 1977, Klapper et al., 1978; Schönlaub in Chlupáč et al., 1985; Weddige, 1987; Jeppsson, 1988; 1989; Zusková, 1991; Kalvoda, 1995; Slavík, 2001; 2004a; Slavík & Hladil, 2004; Slavík et al., 2007; Berkyová, 2009; Klapper & Vodrážková, 2013). But also the entire successions of the Lochkovian (Slavík 2011; Slavík et al., 2012) and Pragian (Slavík, 1998; 2004b) were studied resulting to a development of new or alternative conodont zonations for the stratotype area of the Lochkovian and Pragian Stages. Due to the present definition (the GSSP) of the Pragian/Emsian boundary, the majority of the “traditional” Pragian (= The Praha Formation) now belongs to the Emsian (cf. Slavík et al., 2007; Carls et al., 2008).

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