Revision of the earliest Cambrian SSF stratigraphy: Litho- and SSF stratigraphy of the Xiaolantian section in the Chengjiang area, Yunnan, South China

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The earliest Cambrian biostratigraphy of small shelly fossils (SSF) has been best analyzed in Yunnan, South China. This study examined detailed litho- and SSF stratigraphy of the lowermost Cambrian of the Xiaolantian section in the Chengjiang area, of which facies suggests deposition in intermediate depth settings. The lowermost Cambrian is composed of ca. 300 m thick, the Zhongyicun Member (phosphorite), Dahai Mb (dolomite), and Shiyantou Fm (siltstone). The Zhongyicun Mb (ca. 30 m) is lithologically further subdivided into Units 1-5. Unit 1: alteration of massive phosphatic dolomite and thin phosphorite; Unit 2: characteristic thin black mudstone; Unit 3: phosphorite interbedded with dolomite; Unit 4: alteration of phosphorite and thin bedded dolomitic phosphorite; and Unit 5: thin-bedded phosphorite , in ascending order.

SSFs were obtained from 20 horizons in the Zhongyicun Mb (except Unit 4) and 1 from the Dahai Mb from the study section. Three distinct SSF assemblages (Assemblage A to C) were recognized; Assemblage A from the lowermost part of Unit 1, with *Acanthocassis orthacanthus, Protohertzina anabarica*, and *Protohertzina unguliformis*. Assemblage B from the upper part of Unit 1 to Unit 5, with *Ocururanus finial, Yunnanopleura biformis, Helcionella* sp.. Assemblage C from Unit 5, mainly with *Archaeospira* sp., and *Obtusoconus* sp., *Conopoconus* sp.. Two genera *Conotheca* and *Siphogonuchites* commonly occur from Units 1 to 5 and also from Dahai Mb. The Hongjiachong section, next to the Xiaolantian section in the same area, have also these three assemblages (Assemblage A to C in the Xiaolantian section).

The present results show that Zhongyicun Mb can be subdivided into three SSF assemblage zones (A to C). This interval was previously divided into two. Assemblage A of this study mostly corresponds to the 1st assemblage by Steiner et al. (2007), whereas B and C to the 2nd assemblage. This study confirmed that the first appearance of Assemblage B was detected in much lower horizon than previous believed. This suggests that SSF diversification has started almost at the beginning of the Cambrian, much earlier than previous believed.

Keywords: Cambrian, SSF, Yunnan

