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Caddisfly-dominated microbial-carbonate bioherms from the Early Cretaceous Yixian Formation, Western Liaoning China

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Caddisfly-dominated microbial-carbonated bioherms have been recently discovered in the Early Cretaceous lacustrine deposits-Yixian Formation at the western Liaoning Province China. Yixian Formation is famous for abundant well-preserved Jehol biota fossils, and the position of caddisfly-dominated microbial-carbonated bioherms are just under these remarkable fossils in Yixian Basin. Caddisfly-dominated microbial-carbonated bioherms are carbonated bioherms

that caddisfly larva built by incorporation with cyanobacterial mat, which are seldom in modern freshwater, fluvial environments.

Tube-shaped microbial-caddisfly cases discovered in Panjiagou section are similar in length (12-14mm) and diameter (3-4mm). Primordially they are vertical close packed, and they are subparallel to each other. In some cases, ostracod shells or rock debris and ooids dominate the particles, while the proportion of three kinds of particles is similar in other cases.

Figure 1: Caddisfly-dominated microbial-carbonated bioherms discovered in Panjiagou section

Besides of the caddisfly larval cases formed bioherms, there are more single cases without bioherms structures, which are widely discovered in Yixian Basin. These single cases are more than 1cm in length and 2-3mm in diameter with no microbial carbonated layers. They are composed of various materials and are distributed in five sections in Yixian basin with high or low density. These single cases are described in detail too.

Special biome mainly composed of caddisfly larvae and microbes was flourish. Caddisfly larva built carbonated bioherms by incorporation with cyanobacterial mat, and their flourish both relay on the bioherms. According to the size, particles and protogenic direction of the cases, the caddisfly larval cases are not built by only one species. The widely distributed of caddisfly tube may provide more information for the first flourish period of the insects.

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