

Paper Number: 745

Xixiang Biota of the Early Cambrian from the Northern Yangtze Platform

Tiequan Shao¹, Yunhuan Liu¹, Qi Wang², Hanhua Tang², Yanan Zhang², Zhiguo Dong², Bo Hu², Yuan Li², Wentan Li², Yingying Ma², Feiyu Dong², Tong Sun²

¹College of Earth Science and Resources, Chang'an University, Xi'an 710054, China ; Key Laboratory of Western Mineral Resources and Geological Engineering Ministry of Education, Xi'an 710054, China , stotto@163.com

¹College of Earth Science and Resources, Chang'an University, Xi'an 710054, China ; Key Laboratory of Western Mineral Resources & Geological Engineering Ministry of Education, Xi'an 710054, China , yunhuanl@chd.edu.cn

²College of Earth Science and Resources, Chang'an University, Xi'an 710054, China

XiXiang Biota is a specially preserved micro oryctocoenose discovered in low Cambrian in XiXiang county. The geological setting is the lower Cambrian Dengying Formation at Zhangjiagou section, southern Shaanxi Province. There is a parallel unconformity between this formation and the overlying Guojiaba Formation. This formation is a set of neritic carbonate sedimentary formation containing phosphorus and silicon. And it's in a conformable contact with the underlying Dengying Formation. The fossil assemblages of XiXiang Biota could be compared with the microfossils from the Lower Cambrian MeiShuCun Stage, and its age is MeiShuCun stage of the Early Cambrian.

The main fossil types of XiXiang Biota include Priapulida, Kinorhyncha, Hyoliths, Quadrapyrgites, Punctatus, Anabaritids, Acanthocassis, Monoplacophora, Siphonuchitids, Hexangulaconulariids, Carinachitids, Paracarinachitids, Chancelloriids, Protoconodont, Cambroclavids, Sponges, Cambriodinium, Spirellus columnaris, Spheroidal fossils, Embryos etc. a total of 20 categories and cover the most common fossil taxa in the Early Cambrian. The fossil assemblage is mainly with Hyoliths, Protoconodont, Monoplacophora and Spheroidal fossils, second with Quadrapyrgites and Punctatus. Among them, Quadrapyrgites, Acanthocassis, Conulariids and Carinachitids may be the kinds of the radiation symmetric Cnidaria, formed the diversity of bodyplan in XiXiang Biota.

The distinctive features of the Xixiang biota are equally striking: Priapulidea and Kinorhyncha are recovered from XiXiang Biota at the same time, they belong to scalidophora and Meishucun stage is the lowest output layer in the world. Scalidophora is located in the Cycloneuralia branch of the Ecdysozoa. What's more, the Ecdysozoa accounts for about 85% of all species in the world, it's the largest monophyletic group in the world. The Ecdysozoa has great diversity and wide niche, its origin and its early evolution has long been a major problem in the academic community. The Eopriapulites sphinx sp. nov. found in 2013 from XiXiang Biota may be one of the ancestors of Ecdysozoa. It will help to identify the common ancestor of Ecdysozoa and the main branch events;

A large number of Kinorhyncha fragments were also found in the biota. It is found that the number and arrangement of the bone plates on the surface of the fragments are different, some bone plates' size are of a lot of difference, presumably for different types of fragments. This suggests that Kinorhyncha may have reached a high degree of differentiation in Early Cambrian, those discoveries are expected to make the contribution to evolution of arthropoda.

Because of the rich in Priapulidea and Kinorhyncha, it is unique and distinct from other biota at the same time. The biota fossil type is rich and the fossil assemblage is unique, which greatly enriched the Cambrian explosion, with very important significance, is another important scientific window to reveal the mystery of the Cambrian explosion.

Acknowledgements

Supported by the National Natural Science Foundation of China (**No.41572009**) and College Students' innovative training program of Chang'an University (**No. 201510710060, 201510710056, 20151071017**).

