
Middle Devonian brachiopods and biostratigraphy in eastern Yunnan, China

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Abstract

The Middle Devonian in eastern Yunnan consists of strata deposited under coastal to shallow-marine conditions. It contains many well-preserved plants and fishes, as well as benthic faunas. However, biostratigraphy and correlation among these sequences in the area remains poorly understood. The Middle Devonian in eastern Yunnan was re-investigated and updated in this study, with a special focus and discussions on the biostratigraphy of the Dongshan, Wutaishan, and Panxi sections.

The Middle Devonian Qujing Formation near the type area of Qujing City is exposed in the Wutaishan and Dongshan sections. The formation is characterized by limestones and marls containing brachiopods, corals, and stromatoporoids, with many intercalations of shales and sandstones that were possibly deposited in a frequent transitional environment from coastal zone to shallow shelf. The Qujing Formation near its type area is characterized by the *Meristella–Undispiriferoides* Brachiopod Assemblage, along with rugose corals *Temnophyllum*, *Spinophyllum*, *Endophyllum*, and the tabulate coral *Thamnopora*. The conodont *Bipennatus bipennatus* was recognized in bed NDS-CN01-2 in the Dongshan section. The species is especially abundant in the shallow-water facies of the lower to middle Givetian where coral- and stromatoporoid-bearing carbonates predominate.

Equivalent sequences in Panxi area are again represented by the Qujing Formation, which comprise bioclastic limestone–marlstone alternations with thick dolomite beds. Here, this formation has extremely diverse benthic faunas that contain the *Stringocephalus* Brachiopod Assemblage, rugose and tabulate corals and stromatoporoids from the lower and upper limestone members. This association is correlated with the middle part of the Qujing Formation in the type area. In the uppermost part of the Qujing Formation, carbonate deposits and benthic faunas are interrupted by massive input of clastic deposits. This could represent a global transgression associated with the Taghanic biocrisis that occurred in the middle–late Givetian. The biocrisis marked the end of extensive carbonate deposition and was characterized by the extinction of stringocephalids and the massive loss of biota of the Phanerozoic reef ecosystem.

Keywords: brachiopod, Givetian, biostratigraphy, Taghanic biocrisis, South China

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