A Review of Upper Palaeozoic Biostratigraphy of the Northwestern Terrain of Peninsular Malaysia

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Abstract

The overall stratigraphy of the Upper Palaeozoic of western Peninsular Malaysia remains unclear. Despite numerous studies, very low grade metamorphism has influenced lithologies throughout the northern region from the islands of Langkawi to the Kinta Valley. As a result subdividing lithologies into meaningful units purely on stratigraphic lines remains problematic. This is further complicated by the lack of index macrofossils. Jones (1981) noted that it is difficult to trace formations laterally over large areas relying solely on lithology, and the fossils that he identified had limited stratigraphical value. Despite this, several authors have attempted to address these issues, resulting in conflicting stratigraphic frameworks for the region. In this study we focus on the Northwestern Terrain of Peninsular Malaysia, looking at Perlis and northern Kedah (including the islands of Langkawi) and reviewing these contradictory hypotheses with the aim of providing a new approach to resolving the stratigraphy of the terrain. To date, few studies have combined the middle and Upper Palaeozoic stratigraphy of the Northwestern Terrain. Cocks et. al (2005) proposed a revised stratigraphical framework, but still argued over the age of formations as a result of the conflicting biozonation between conodonts and macrofossils. Lee (2009) revised the stratigraphy proposed by Meor & Lee (2005), yet there are still gaps that need to be addressed.

We believe that a new biostratigraphic framework is required which uses systematic microfossil sampling, specifically of conodonts. Conodont biozonation has been used before within the Northwestern Terrain providing data for the Setul Limestone - Gedinnian (Igo & Koike 1973) and the Kodiang Formation Dienerian-Smithian (de Coë & Smit 1975). However few new studies have been attempted since Metcalfe (1981) and Igo (1984). Our proposed conodont biozones will be used to confine the relative dates of the lithologies of the Northwestern Terrain, and hopefully resolve the previous conflicting hypotheses of biozone determination and lithologic correlation. These biozones will support the existing macrofossil and microfossil stratigraphic correlation discussed in the research above, with a view to filling in the apparent stratigraphic gaps in the sequence, especially the Devonian. Future applications of our findings will include use in correlating the Northwestern Terrain with the Kinta Valley and Thailand.

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