Carboniferous of Malaysia: a synthesis

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A comprehensive study on the Carboniferous of Malaysia was recently done in an attempt to produce a Carboniferous biozonation for both local and regional biostratigraphical correlation in Malaysia. This project is considered as a part of the geological correlation programme in Southeast Asian region, which was initiated by the CCOP (Coordinating Committee for Coastal and Offshore Geoscience Programmes in East and Southeast Asia) headquartered in Bangkok, Thailand. The work has involved an extensive compilation of the existing geological and palaeontological data gathered from the published reports together with some new data recently collected from the field work. As a result, the authors realised that those data are still insufficient for the production of a good biozonation for Malaysian biostratigraphy. Some data are found to be conflicting to each other that might arise due the problem in fossil identification in the past. In some cases, the situation is worsened by the occurrence of discontinuous rock exposures in study areas together with very poorly preserved fossils that has forced the workers to make a geological correlation solely based on lithological correlation. These problems usually lead to the misinterpretation of the local geology and the result may inconsistent with the regional geology in surrounding areas. It is also noted that almost one hundred published study on the Carboniferous of Malaysia has been done in the past that contributed to a better understanding on the geology, biostratigraphy and palaeogeography of the Carboniferous rocks in Malaysia.

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The Carboniferous of Malaysia may be summerised and geographically divided into four distinct zones, which differ in their sediments and their fossils. The divisions from the east to the west are as follows:

1. Eastern region, the area extending from south Thailand to Sarawak covering Terengganu State and greater parts of Kelantan and Pahang States; characterised by shallow marine and continental sediments.
2. A narrow elongated area corresponding to the Bentong-Raub suture zone displaying deep marine sedimentation.
3. The Kinta Valley, with limestone deposited in a relatively shallow marine environment.
4. The northwestern part of Peninsular Malaysia, the area where Late Carboniferous-Early Permian sediments are interpreted as glacial-marine deposits by many authors.

The presence of Carboniferous rocks is more widespread in Peninsular Malaysia than in East Malaysia. Its presence was first documented in Kuantan area, Pahang in the year 1920 by J.B. Scrivenor when he introduced a note "on Carboniferous corals from Kuantan" prepared by S. Smith. More studies on the Carboniferous rocks in Kuantan and from other parts of Peninsular Malaysia has progressed rapidly after the year 1920 until recent years. More information on the Carboniferous of West Malaysia has been developed especially by the discoveries of diagnostic Carboniferous fossils.

In East Malaysia (Sarawak and Sabah), Carboniferous rocks have been found only in Terbat area in Sarawak. The rocks is well known as 'Terbat Formation', a name introduced by N.S. Haile in 1954.

For the purpose of presentation in this paper, the Carboniferous is divided into three parts they are:

i. Lower Carboniferous (Tournaisian, Visean, Serpukhovian)
ii. Middle Carboniferous (Bashkirian, Moscovian)
iii. Upper Carboniferous (Kasimovian, Gshelian)

The Lower Carboniferous corresponds to the Mississippian of United States whereas the Middle and the Upper Carboniferous are together equivalent to the Pennsylvanian.