Review on Microfossil Records of the Kinta Valley Sequences

*Haylay Tsegab, Aaron W. Hunter, Bernard J. Pierson, & Chow Weng Sum,
Southeast Asia Carbonate Research Laboratory (SEACARL)
Universiti Teknologi PETRONAS*

Abstract

Kinta valley was a focus of interest in search of geological resources for the last ten decades. Most of those studies were oriented to reveal the genesis of tin mineralization. Few workers including the current authors have identified some micro faunal (bivalves, gastropods, rugose corals, foraminifera, crinoids) records for relative dating of the limestone sequences. Even though present day accessibility of the reported fossiliferous sites is limited; areas which are dated based on the fossil records in Chemor (Silurian to Devonian), near Batu Gajah (Devonian), Malim Nawar (Carboniferous), Tualang limestone (Carboniferous to Permian), Kampar (Permian), and Kampung Sungai Keruh (Permian), are part of the Kinta valley limestone. The age difference in the limestones is interpreted as a result of migration of the coral reefs in the palaeodepositional setting. This current study will review the fossil collections of the JMG in Ipoh in order to test these original age determinations. We will demonstrate how these historic collections and macrofossil will contribute to our new research project. Furthermore, we will outline how these data will contribute to our ongoing research into defining a reference stratigraphic section that will enable correlation between scattered outcrops in the western Belt of Peninsular Malaysia.

Kinta valley was a focus of interest in search of geological resources for the last ten decades. Most of those studies were oriented to reveal the genesis of tin mineralization in the quaternary alluvium deposits and to optimize the industrial use of limestones. In the early 90s, when the tin-mining era was active, there was a relatively high opportunity to find newly exposed limestone outcrops for detail descriptions. Few workers including the current authors have identified some micro faunal (bivalves, gastropods, rugose corals, foraminifera, crinoids) records for relative dating of the limestone sequences.

Almost all the faunal records are known to be discovered in many of the then active tin mines. Present day accessibility of the reported fossiliferous sites is halted either by Quaternary alluvium cover or flooded former tin mine pits. In addition the fossiliferous limestones are generally located at low altitude and populated areas far from the Triassic intrusive body. Those areas which are dated based on the fossil records in the localities of Chemor (Silurian to Devonian), near Batu Gajah (Devonian), Malim Nawar (Carboniferous), Tualang limestone (Carboniferous to Permian), Kampar (Permian), and Kampung Sungai Keruh (Permian) (Ingtham and Bradford, 1960; Suntharalingam, 1968; Lee et al., 2004; Henry, and Amnan, 1994; Lee, 2009), all of which are part of the Kinta valley limestone. The age difference in the limestones is interpreted as a result of migration of the coral reef in the palaeodepositional setting. This limestone sequence is younging to the southeast and west part of the Kinta valley. The other lithofacies successions in Kinta valley are generally lacking fossil (Wong, 1991) (e.g., Kati beds, Papulut quartzite) and are dated from a structural point of view.

This current study will review the fossil collections of the JMG collections Ipoh in order to test these original age determinations. We will also include new fossil data including crinoid stems from Kantan of the Kinta limestone. These are partially recrystallized, but retain some internal structures to identify them as crinoids. They are identifiable in hand specimen and thin section.

This part of the research will underpin the previously contributed efforts and refine the prevailing stratigraphic discrepancies in the Palaeozoic sequences of Kinta. We will demonstrate how these historic

collections and macrofossil will contribute to our new research project. Furthermore, we will outline how these data will contribute to our ongoing research into defining a reference stratigraphic section that will enable correlation between scattered outcrops in the western Belt of Peninsular Malaysia. And how macrofossil data needs to be supplemented by stable isotope, major and trace element analyses to work out the chemical signature of the carbonate and associated clastic sequences to define the diagenetic and/or metamorphic alteration in the Kinta valley formations.

References

1. Cocks, L.R.M., Fortey, R.A., Lee, C.P. (2005) A review of Lower and Middle Paleozoic biostratigraphy in west peninsular Malaysia and southern Thailand in its context within the Sibumasu Terrane. *Journal of Asian Earth Sciences*, 24, ELSEVIER, 703-717.
2. Elliot, G.F. (1968) Three new Tethyan Dasycladaceae (calcareous algae). *Paleontology*, 11, 491-479).
3. Gobbett, D. J. (1973) upper Paleozoic. In: Gobbett, D.J. & Hutchison, C.S. (eds). *The geology of Malay Peninsula*. Wiley-interscience, New York.
4. Henry, F. and Amnan, I. (1994) Biostratigraphy of the Kinta Valley, Perak. *Geological Soc. Malaysia, Bullentin* 30, Dec. 1995; pp.159-172.
5. Ingham, F.T., and Bradford, E.F. (1960) *The geology and Mineral Resources of the Kinta Valley, Perak*. Geological Survey Headquarters, Perak, Ipoh, 1-77.
6. Lee, C.P. (2009) 'Paleozoic Stratigraphy'. In: *Geology of Peninsular Malaysia*, Eds: C.S. Hutchison and D.N.K. Tan, University of Malaya and Geological society of Malaysia, Kuala Lumpur, pp. 55-86.
7. Lee, C.P., Mohd, H. L., Kamaludin, H., Bahari, M. N., and Rhashid, K. (2004) *Stratigraphic Lexicon of Malaysia*. Geological Society of Malaysia, 3-33.
8. Suntharalingam, T. (1968) The Upper Paleozoic stratigraphy of the west of Kampar, Perak. *Geological society of Malaysia*, 1, 1-15.
9. Wong, T.W. (1991) *Geology and Mineral resources of the Lumut-Teluk Intan area*. Geological Survey Headquarters, Perak Darul Ridzuan, 1-15.