

Lejopyge armata and associated trilobites from the Machari Formation (Middle to Late Cambrian) of Korea and their stratigraphic significance: a preliminary study

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The Machari Formation of Korea has been well known to yield abundant and diverse trilobites of Middle to Late Cambrian age with some brachiopods and gastropods, the 'Machari fauna' (Kobayashi, 1962). At present, nine trilobite zones have been established in the formation. The *Tonkinella* Zone is the only zone representing the Middle Cambrian and occupies an approximately 15-m-thick succession of dark gray argillaceous limestone and thick-bedded bioclastic grainstone to packstone beds at the basal part of the formation. These beds are succeeded by an unfossiliferous sequence (ca. 45-m-thick) of dark gray slate, dolomitic limestone, and lime breccia, that collectively forms the lower part of the formation. The overlying middle part is characterized by dark gray to black laminated shale and shale-parted limestone facies, and yields diverse trilobites of Late Cambrian age. These trilobites provide a very precise biostratigraphic zonation for the Upper Cambrian of the Machari Formation: i.e., the *Glyptagnostus stolidotus*, *Glyptagnostus reticulatus*, *Proceratopyge tenuis*, *Hancrania brevilimbata*, *Eugonocare longifrons*, *Eochuangia hana*, *Agnostotes orientalis*, and *Pseudoyuepingia asaphoides* zones in ascending order (Lee, 1995). The upper part is an alternating sequence of light gray dolomitic limestone and laminated black shale beds showing a characteristic "zebra" pattern, but is poorly fossiliferous.

The *Tonkinella* Zone is characterized by the dominance of *Tonkinella*, *Olenoides*, *Kootenia*, *Pemnopsis* among others and is convincingly assignable to the middle Middle Cambrian in age. The next higher biozone in the Machari Formation, the *Glyptagnostus stolidotus* Zone, represents an early Late Cambrian age. Therefore, no late Middle Cambrian trilobite faunas have so far been known in the formation. This study attempted to find, if any, acid-resistant fossils by dissolving the samples collected from the putatively unfossiliferous dolomitic limestone and lime breccia beds of the lower part. One of the samples yields an interesting trilobite assemblage comprising *Lejopyge armata*, *Cyclolorenzella* (?) sp., *Peronopsis* sp., agnostoid gen. and sp. indeterminate, and polymeroid gen. and sp. indeterminate. Aside from *Peronopsis*, all of the remaining taxa have been documented for the first time in Korea. The occurrence of *Lejopyge armata* is particularly significant, as it is an index species reported widely within the uppermost Cambrian *Lejopyge laenigata* or correlative zones (Robison, 1984). On the other hand, the genus *Cyclolorenzella* is exclusively known in China and has a stratigraphic range (*Damesella*/*Yabeiata* to *Drepanura* zones) across the Middle-Upper Cambrian boundary (Yang, 1978; Zhang and Jell, 1987). In short, this acid-resistant trilobite assemblage indicates an uppermost Middle Cambrian in age and supplements the biostratigraphic scheme of the Machari Formation, filling partially the gap between the *Tonkinella* and the *Glyptagnostus stolidotus* zones.

References

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