

An uppermost Cambrian trilobite fauna from the Yongwol Group, Taebaeksan Basin, Korea

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The Taebaeksan Basin was a continental margin-type depression, where the carbonate-dominated marine sediments were deposited in the early Paleozoic. The Yongwol Group is distributed in the western half of the Taebaeksan Basin and comprises the Sambangsan, Machari, Wagok, Mungok, and Yonghung formations in ascending order. The lower three formations are assigned to the Cambrian and the upper two to the Ordovician. Middle Cambrian trilobites occur commonly in the Sambangsan Formation and the lower part of the Machari Formation. In particular, prolific occurrence of trilobites in the middle part of the Machari Formation allows the recognition of eight Late Cambrian biozones: i.e., *Glyptagnostus stolidotus*, *Glyptagnostus reticulatus*, *Proceratopyge tenue*, *Hancrania brevilimbata*, *Eugonocare longifrons*, *Eochuangia bana*, *Agnostotes orientalis*, and *Pseudoyuepingia asaphoides* zones (Lee, 1995). These zones are well correlated with the early Late Cambrian faunal successions elsewhere. However, the upper part of the Machari Formation and Wagok Formation are poorly fossiliferous and hence no late Late Cambrian trilobite faunas have hitherto been known in the Yongwol Group of Korea. The earliest Ordovician trilobite zone in Korea is the *Yosimuraspis* Zone of the Mungok Formation, the base of which marks the Cambrian-Ordovician boundary evinced by the occurrence of *Jujuyaspis* in the zone.

The trilobite fauna reported in this study provides the first biostratigraphic reference point for the uppermost Cambrian interval in Korea. The fauna is composed of *Micragnostus* sp., *Pseudorbaptagnostus* (*Machairagnostus*) sp. cf. *P. (M.) kentaensis*, *Oncagnostus* sp., *Fatocephalus bunjangensis*, *Koldinioidia* sp., *Hysteroleenus* sp., and *Amzasskiella* sp. It consists predominantly of *Fatocephalus*, constituting more than 60% in abundance. While agnostoid trilobites compose as much as 25% of the fauna, other polymeroids are less commonly observed. The genus *Fatocephalus* has so far been known endemic to China and was reported from the uppermost Cambrian *Mictosaukia* Zone (*Changia* Subzone) of North China (Zhou and Zhang, 1984) and *Mictosaukia striata*-*Fatocephalus* Zone of South China (Peng, 1984). *Micragnostus* and *Koldinioidia* occur widely in the Upper Cambrian to Lower Ordovician sequence of various parts of the world, whereas *Hysteroleenus* and *Amzasskiella* are confined to the uppermost Cambrian sediments. *Pseudorbaptagnostus* (*Machairagnostus*) has been reported from the Upper Cambrian to Tremadoc sediments of Argentina, Bolivia, and Kazakhstan (Nielsen, 1997). The occurrence of *Oncagnostus* is rather unusual, as the genus was largely known from the Lower-middle Upper Cambrian. Of the seven taxa, five genera have been documented for the first time in Korea: they are *Pseudorbaptagnostus* (*Machairagnostus*), *Fatocephalus*, *Koldinioidia*, *Hysteroleenus*, and *Amzasskiella*. Although some genera (*Micragnostus*, *Oncagnostus*, *Koldinioidia*, and *Hysteroleenus*) are cosmopolitan in their distribution, the fauna as a whole shows an interesting biogeographic link with North China (dominance of *Fatocephalus*), South China (combining occurrence of *Fatocephalus*, *Hysteroleenus*, and *Amzasskiella*), Kazakhstan (*Pseudorbaptagnostus* (*Machairagnostus*), *Hysteroleenus*, and *Amzasskiella*), and even South America (*Pseudorbaptagnostus* (*Machairagnostus*)). The frequent occurrence of pandemic taxa in the present collection suggests that this fauna may have inhabited in a somewhat deeper-water environment.

References

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