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Systematics, morphology, and appendages of an Early Ordovician pilekiine trilobite *Anacheirurus* from Fezouata Shale and the early diversification of Cheiruridae

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Pilekiines are the earliest diverging members of the successful trilobite family Cheiruridae. The pilekiine genus *Anacheirurus* is characterized by sub-quadratic to sub-oval glabella, pitted genae, and a distinct trunk with elongated pleural spines in its posterior part. *Anacheirurus adserai* is a common component of the Fezouata Shale (Lower Ordovician, Morocco), where it was intially included into several species of the genus *Lehua*. This assignment and taxonomic over-splitting created confusion, overestimated cheirurid diversity at this locality, and simultaneously underestimated morphological variability within *A. adserai*. In this contribution we examine new material of *A. adserai* from the Fezouata Shale, clarifying its morphology and systematics. A detailed re-description of the species shows that *Anacheirurus* is distinct from *Lehua*, the latter being a more derived member of Cheiruridae. The comparison of *Anacheirurus* with other pilekiines shows that morphological variability within this subfamily is mostly constrained to the trunk region. Exceptionally preserved specimens of *A. adserai* from the Fezouata Shale show details of appendages, revealing the endopodite and exopodite morphologies in early members of Cheiruridae. The endopodite of *A. adserai* is unique among trilobites in possessing comparatively longer distal podomeres 5 and 6, but otherwise, it has the same general morphology as other described trilobite endopodites. The exopodite morphology of *A. adserai* shows characters typical of some Cambrian species but differs in several aspects from those known in post-Cambrian taxa. It is concluded that trilobite exopodite morphology was probably more variable than the endopodite morphology, which remains rather conservative across different taxa. Morphological diversity of trilobite exopodites in post-Cambrian taxa might be related to ecological escalations during the Ordovician biodiversification and the transition between Cambrian and Ordovician trilobite faunas.

Key words: Trilobita, Cheiruridae, Pilekiinae, biodiversification, ecology, endopodite, exopodite, Ordovician, Morocco.

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