

## Occurrence of the milliped *Sinocallipus simplipodicus* Zhang, 1993 in Laos, with reviews of the Southeast Asian and global callipodidan faunas, and remarks on the phylogenetic position of the order (Callipodida: Sinocallipodidea: Sinocallipodidae)

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### Abstract

The callipodidan milliped, *Sinocallipus simplipodicus* Zhang, 1993, previously known only from a cave in Yunnan Province, China, is redescribed based on specimens from an epigean habitat in southern Laos, some 600 mi (960 km) south of the type locality. SEM photos of the gonopods, ovipositor, gnathochilarium, midbody exoskeleton, an ozopore, and legs are presented to supplement previously published line drawings; the cannula may be the “functional” element of the gonopod that inseminates females in this species. The Callipodida occupy nine disjunct areas globally, all exclusively in the Northern Hemisphere and most in the North Temperate Zone; there are three regions each in North America, Europe (including coastal regions along the southern Black and eastern Mediterranean seas that are technically part of Asia), and Asia proper. The southeast Asian fauna comprises three families -- Sinocallipodidae, one genus and species (suborder Sinocallipodidea), and Schizopetalidae, one genus and species, and Paracortinidae, one genus, three subgenera, and seven species (both suborder Schizopetalidea). An unnamed clade may exist in the Diplopoda in which the gonopods arise solely from the 8th legs (an “8th gonopod clade”); it comprises seven orders: Callipodida, Polydesmida, Chordeumatida, Stemmiulida, Siphoniulida, Spirostreptida, and Epinannolenida. Two newly recognized characters that hold phylogenetic significance are (1) development of the gonopod from the 8th coxa alone (Chordeumatida) or from the coxa plus some telopodal articles (the other six orders), and (2) the presence (Callipodida, Polydesmida, and Stemmiulida) or absence (Chordeumatida, Spirostreptida, and Epinannolenida) of a cannula. These considerations lead to the hypothesis (Chordeumatida + (Callipodida + (Polydesmida + Stemmiulida))).

**Key words:** Callipodida, Sinocallipodidea, Sinocallipodidae, phylogeny