

## A new Early Cretaceous flea from China

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Fleas are highly specialized holometabolic insects. So far, only 16 species of fossil fleas in five families have been reported due to the rare fossil records. At present, the earliest flea fossils are reported from the Middle Jurassic Jiulongshan Formation of Northeastern China. The descriptions of these earliest species pushed back the origin of Siphonaptera by at least 40 million years. It is generally accepted that saurophthirids are the “transitional” taxa from stem Jurassic fleas to living crown groups. Herein, we described a new “transitional” flea species, *Saurophthirus laevigatus* Zhang, Shih, Rasnitsyn, and Gao sp. nov., from the Lower Cretaceous Yixian Formation of Northeastern China, assigned to Saurophthiridae. The new species provides new evidence to support saurophthirids as a “transitional” group. Sexual dimorphism suggests significant differences in biology of opposite sexes in *Saurophthirus*. Analysis of described Mesozoic species demonstrates the body size reduction from the Middle Jurassic to the Early Cretaceous. Smaller body size was likely advantageous in reducing the probability of being detected and removed by the host and in minimizing flea’s demand for blood intake and energy input, indicating the adaptation of the ectoparasitic lifestyle of fleas in their early stage of evolution.

**Key words:** Insecta, Siphonaptera, Saurophthiridae, *Saurophthirus*, ectoparasitic insects, compression fossils, Mesozoic, Asia.

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