



“Tiny dancer in my hand...” 100-million-year-old case of mite flamboyance*

MATEUSZ ZMUDZINSKI

Department of Animal Morphology, Faculty of Biology, Adam Mickiewicz University, Poznań, Uniwersytetu Poznańskiego 6, 61-614 Poznań, Poland; ✉ zmudzinski@amu.edu.pl, ✉ mat.zmudzinski@gmail.com; 🌐 <https://orcid.org/0000-0001-6251-0370>

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FIGURE 1. A fossil specimen of *Parachyzeria* sp. (inclusion in the Burmese amber sample) with noticeable two pairs of prodorsal tufts of setae adhering to the body.

Parasitengona is a highly diverse and widely distributed group within the order Trombidiformes with a peculiar lifestyle. Some of them inhabit exclusively aquatic environments, while others live on land. Their larvae with significantly different morphology are parasites of invertebrates and vertebrates, while subsequent three nymphal stages and the adults alternate as inactive stases and active predators. The fossil record of Parasitengona is relatively rich compared to other mite taxa, but much remains to be discovered, particularly among inclusions in various types of fossilised resins.

Parachyzeria (Trombidioidea: Chyzeriidae), still a systematic enigma, was proposed for mites with two pairs of distinct prodorsal tufts of setae of unknown function and a detailed morphological survey. Descriptions of only three known species were based on single post-larval specimens and one of them might have been misclassified into this genus. Since the living representatives of *Parachyzeria* seem not to be extinct and could be found in India, Indonesia, and even Senegal, probably no one has had the opportunity to photograph or observe the behaviour of these mites for almost 100 years since

the first description in the literature. It could be said that history has come full circle because, during studies of Cretaceous Burmese amber inclusions (approximately 100 million years old polymerised and fossilised tree resin), a few new fossil specimens were discovered, providing evidence that *Parachyzeria* spp. (thus, a prediction that living representatives as well) could “puff” nontypical dorsal setae, which generally adhere to the body (Figure 1), inducing a flamboyant impression on the human eye. Although there are numerous intriguing modifications of the morphological structures in the Parasitengona, most cases have not been experimentally investigated. Difficulties in rearing mites under laboratory conditions due to their long life cycle or occurrence in single specimens form a considerable challenge. Additionally, valid experiments on fossil material are impossible to accomplish. Even though the proper function of the modified dorsal setae of *Parachyzeria* spp. remains unknown at this moment, a review of the conducted behavioural studies and the evaluation of the comparative morphology enable the formulation of some hypotheses. They consider, for example, the defence mechanism, the sex character, the sensory function, or the mechanical aid to locomotion.

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