



***Myanmaro primus* gen. et sp. nov., the first orthoclad (Diptera: Chironomidae) from Cretaceous Burmese amber**

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Abstract

A fossil genus *Myanmaro* **gen. nov.**, with a species *M. primus* **sp. nov.** (Diptera, Chironomidae) is described from mid-Cretaceous Burmese amber (~100 Ma). The adult male of the new species shows the wing venation pattern lacking a cross-vein MCu, the fore leg ratio lower than 1, and the gonostylus folded inwards - features typical of the subfamily Orthoclaadiinae. A bifid gonostylus, with an articulate, likely movable inner branch, is the character indicating a close relationship between *Myanmaro* and *Diplocladius* Kieffer, 1908, the latter genus previously postulated as an early lineage in Orthoclaadiinae. Several characters, i.e. the structure of tergite IX and the anal point, are defined as generic autapomorphies for *Myanmaro*. A combination of the shape of hypopygial volsellae (or their absence) and the lack of tibial combs also separate this genus from related extant Orthoclaadiinae and from the only known Cretaceous extinct orthoclad genus *Lebanorthocladus* Veltz, Azar *et* Nel, 2007.

Key words: Diptera, Chironomidae, Orthoclaadiinae, systematics, Mesozoic, Burmite, Myanmar

Introduction

Based on the number of described taxa counted by Pape *et al.* (2011) and those published later, the family Chironomidae is the most species-rich group of aquatic insects and one of the largest dipteran families, with nearly 7,500 specific and 550 generic names. Within 12 chironomid subfamilies, the Orthoclaadiinae, commonly called “orthoclads”, is the most diverse group. This subfamily includes nearly half the number of described extant chironomid species, clustered in 174 genera and 36 subgenera (Ashe & O’Connor 2012). In contrast to the well-studied extant fauna, Orthoclaadiinae are merely known from a couple of names coming from the Cretaceous. Unfortunately, the specific names by Boesel (1937) introduced on the basis of inclusions from Upper Cretaceous Canadian amber and originally attributed to the subfamily are suggested to be treated as Orthoclaadiinae with uncertain generic placement (Veltz *et al.* 2007, Zelentsov *et al.* 2012). The orthoclad evidenced as the oldest known and dated back to *ca.* 130 Ma, *Lebanorthocladus furcatus* Veltz, Azar *et* Nel, 2007, is thus the only representative of this subfamily recorded from the Cretaceous and described precisely enough to be regarded as definable on the background of potential further new taxa (Veltz *et al.* 2007). On the other hand, relatively high numbers of orthoclad specimens were reported from the Cretaceous, but determined only to the subfamily level (e.g. Kalugina 1974, 1976; Azar & Nel 2010).

Burmese amber, often referred to as “Burmite”, is dated back to the beginning of the Upper Cretaceous (early Cenomanian) or perhaps even earlier, showing traces of redeposition, and thus being proposed to be called “mid-Cretaceous” (Shi *et al.* 2012, Smith & Ross 2018, Zhang *et al.* 2018). This amber, mined in the Hukawng Valley in Kachin State, Myanmar, until recently was regarded as rare. But new mines have produced scores of new amber specimens, and over the past several years the number of taxa described from Burmese amber has significantly