



The first African Anthracoptilidae (Insecta: Paoliida) near the Permian—Triassic boundary in Kenya

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Abstract

The first findings of Anthracoptilidae (Paoliida) from the Late Permian/ Early Triassic of Africa, i.e. the new genus *Afrocladus* comprising *A. pumilio* **sp. nov.** and *A. kenyaensis* **sp. nov.**, are described from the Mombasa Basin of Maji ya Chumvi Formation in Kenya (Duruma sandstones). Both diagnoses are based on wing venation pattern. Their occurrences close to the P–T boundary possibly indicate the last appearance date of the group being known since early Pennsylvanian. Moreover, their significantly smaller wing sizes compared to known taxa suggest adaptations to different habitats and environmental conditions or different life strategy.

Key words: Neoptera, Polyneoptera, Paoliida, gen. nov., sp. nov., Late Permian, Early Triassic, Africa, Gondwana

Introduction

The Anthracoptilidae is a small family of Late Paleozoic paoliid insects, related to the dictyopteran lineage that was subject of a recent revision by Guan *et al.* (in press). They are present in the Late Carboniferous and Permian deposits of Europe, Asia, North and Central America, and Australia, but unknown from Africa. Here we describe the first African representatives of this family from a Late Permian- Early Triassic outcrop of Kenya.

Material and methods

These fossil wings stored in the collection of the Natural History Museum in London, come from a borehole drilling core (depth 1289 feet) in Duruma Sandstones series, Maji ya Chumvi Formation, Mombasa Basin in Kenya (among a set of ten fossils from the same locality). They probably correspond to specimens considered by as “Blattoidea possibly belonging to the Mesoblattinidae” (Miller 1952; Schlüter 1997: 189; 2003: 353). After Schlüter (1997: 177–178), the lower unit of this formation comprises black shales with fossil plants, from which these insects probably come from. It is currently dated to the Late Permian (Wuchiapingian = Tatarian). The middle and upper units of the same formation are Early Triassic (see Hankel 1992). Thus a possibility remains that these insects could be Triassic even if it better corresponds to the Late Permian (see Ballard *et al.* 1986).

The fossils were photographed using a camera AmScope UCMOS09 on a binocular microscope Zeiss. Original photographs were processed using the image-editing software Adobe Photoshop 8.0. The wing venation nomenclature follows the conception of Kukalová-Peck (1991). Wing venation abbreviations: (ScP—subcosta posterior, RA / RP—radius anterior / posterior, M—indistinguishable polarity of median vein, CuA / CuP—cubitus anterior / posterior, A1 / A2—first / second anal vein).

pygmaea (Meunier, 1907) from the Late Carboniferous of France, with a wing 14 mm long) (Hörnschemeyer & Stapf 2001). This size reduction could be put in parallel to a similar phenomenon that seems to have affected the last representatives of the order Palaeodictyoptera during the Late Permian (Béthoux *et al.* 2007). It could be due to adaptations to environmental changes that have taken place around the P-T boundary (Aristov *et al.* 2013).

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