

## Taxonomy of the Afrotropical Phacopteronidae

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### Abstract

Based on a study of several museum collections and material recently collected in the field, 31 species of jumping plant-lice of the family Phacopteronidae (Hemiptera Psylloidea) have been recognized in the Afrotropical Region. Their adults and larvae are generally well-diagnosable by a number of morphological characters. Most of Afrotropical Phacopteronidae are closely associated with different families of the plant order Rutales/Sapindales. Many of them are gall-inducers.

**Key words:** *Pseudophacopteron*, taxonomy, Sapindales, galls, Afrotropical.

### Introduction

The Phacopteronidae (Hemiptera Psylloidea) (figure 1) constitutes a small, morphologically well-defined family of jumping plant-lice. The family is pan-tropical in distribution and is associated with plants of the order Rutales/Sapindales (Anacardiaceae, Burseraceae, Meliaceae and Sapindaceae) and with Apocynaceae (Gentianales) (Hollis, 2004). Five species have been described from the Afrotropical Region (including the Arabian Peninsula): South Africa 3 (Capener, 1973), Tanzania and Togo 1 (Aulmann, 1912), as well as Yemen and Kenya 1 (Burckhardt and van Harten, 2006). Our study of unidentified material from several museum collections and recent field work in Cameroon, Kenya and Uganda suggests that the family contains many more species in this biogeographical realm.

### Materials and methods

Extensive phacopteronid material was obtained during canopy fogging projects in Kenya and Uganda by T. Wagner (Universität Koblenz-Landau) in 1995-1999 and by various collecting methods in Cameroon by J. L. Tamesse (Université de Yaoundé I) and D. Burckhardt in 2002-2007. Material was examined from the following institutions: the Natural History Museum, London (BMNH); the Laboratoire de Zoologie, Université de Yaoundé I, Yaoundé; the Museum Alexander König, Bonn; the Muséum d'histoire naturelle, Genève; the Moravian Museum, Brno; the National Collection of Insects, Plant Protection Research Institute, Pretoria; the Naturhistorisches Museum, Basel; the University of Silesia, Katowice; the Zoological Institute, St. Petersburg; the Institut für Systematische Zoologie, Museum für Naturkunde, Humboldt-Universität, Berlin; and the Museum of Zoology, Lund University.

### Results and discussion

In total, we recognized 31 species of Phacopteronidae in the Afrotropical Region. We assign all of them to the



**Figure 1.** Undescribed *Pseudophacopteron* species from Kenya (BMNH).

genus *Pseudophacopteron* Enderlein which contains a few described and many undescribed species also from the Australian (Hollis, 2004), Oriental (Hodkinson, 1986) and Neotropical (Brown and Hodkinson, 1988) biogeographical Regions. In the course of our project, all the species are diagnosed and illustrated, and keys for the identification of adults and fifth instar larvae are provided. *Pseudophacopteron* species are generally well-diagnosable by a number of morphological characters, such as general body size, head shape and sculpturing, antennal length and sensoria, fore wing shape, venation and pattern, as well as details of the male and female terminalia in adults, and general body size and shape, antennal shape, wing bud shape, circum anal ring size and shape, shape of tarsal arolium, as well as number and type of setae in the fifth instar larva. First results are presented in a paper on the phacopteronid fauna of Cameroon (Malenovský *et al.*, 2007).

The examined material from Africa supports the close association of the Phacopteronidae with the Rutales/Sapindales (Burseraceae 8 spp., Meliaceae 7, Sapindaceae 5, Rutaceae 4, Anacardiaceae 2, and Anacardiaceae/Simaroubaceae 1). Adults of one species were collected on *Tabernaemontana stapfiana* Britten (Apocynaceae) in Kenya.

Phacopteronidae is a group with a high proportion of gall-inducing species. The effects of their feeding can

range from a simple distortion of the leaves to the formation of structurally complex galls. E.g., from the nine species recorded from Cameroon, four are known to induce nut or pit galls on the leaves (Malenovský *et al.*, 2007).

The internal phylogenetic relationships of *Pseudophacopteron* and Phacopteronidae have not been analysed to date. Our study should also provide the necessary taxonomic basis for a future phylogenetic analysis of the family.

### Acknowledgements

This contribution was partially funded by a grant from the Ministry of Culture of the Czech Republic (Project No. MK00009486201 to the Moravian Museum) and a grant from the Swiss National Science Foundation (Project No. 3170A0-109221/1 to Daniel Burckhardt).

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