



## Phylogeny and affiliation of European Anthomyzidae (Diptera) based on mitochondrial 12S and 16S rRNA

JINDŘICH ROHÁČEK<sup>1</sup>, ANDREA TÓTHOVÁ<sup>2</sup> & JAROMÍR VAŇHARA<sup>2</sup>

<sup>1</sup>Department of Entomology, Silesian Museum, Tyršova 1, CZ-746 01 Opava, Czech Republic. E-mail: rohacek@szmo.cz

<sup>2</sup>Department of Botany and Zoology, Faculty of Science, Masaryk University, Kotlářská 2, CZ- 611 37 Brno, Czech Republic.

E-mail: tothova@sci.muni.cz, vanhara@sci.muni.cz

### Abstract

The phylogenetic Bayesian analysis of combined mitochondrial 12S and 16S rRNA gene markers in European representatives of Anthomyzidae supported the monophyly of the family, confirmed the validity of the genera and provided a resolution of the generic affiliation of some aberrant species. The interrelationships of most genera have not been resolved definitively due to insufficient posterior probability values. Despite this, the clade clustering the genus *Anthomyza* Fallén, 1810, *Fungomyza* Roháček, 1999 and the *Anthomyza socculata* group is considered to reflect the real phylogenetic relationships of these taxa as it is also supported by morphological data. The relationships within the genus *Anthomyza* are resolved and monophyly of its species-groups confirmed. Within the genus *Stiphrosoma* Czerny, 1928, *S. fissum* Roháček, 1996, a species of unknown relationships, was found to be most closely allied to *S. sabulosum* (Haliday, 1837). Based on the above analysis a removal of the aberrant species *Paranthomyza caricis* Roháček, 1999 and *Anthomyza socculata* (Zetterstedt, 1847) from genera to which they were formerly affiliated, is suggested.

**Key words:** Diptera, European Anthomyzidae, phylogeny, mitochondrial 12S+16S rRNA, Bayesian inference

### Introduction

The family Anthomyzidae is a small group of acalyprate Diptera related to Opomyzidae (McAlpine 1989; Roháček 1998). The majority of these slender flies (Fig. 1) are associated with wet grassland habitats having microsaprophagous larvae which usually feed between the sheathing leaves of the tillers or terminal shoots of partly damaged graminoid plants; only a few species are known to develop in dicotyledons and two species of the genus *Fungomyza* Roháček, 1999 in rotting fungi (Roháček 2006). The family has been best studied in the Palaearctic Region, in Europe in particular (Roháček 2006). A total of 95 species and 21 genera of Anthomyzidae have been described up to the present (Roháček 2007) but at least twice this number of unnamed species are known to await description in various insect collections (K. N. Barber, J. Roháček, unpublished).

Despite some cladistic analyses (all based on morphological characters) previously conducted in the Anthomyzidae, the phylogeny of the group has not been satisfactorily investigated. Roháček (1998) studied the phylogenetic relationships of the family and its two subfamilies Protanthomyzinae (fossil) and Anthomyzinae, defined their taxonomic limits and confirmed their monophyly. Most recently, Roháček & Barber (in press) have proposed the affiliation and phylogeny of the genera *Mumetopia* Melander, 1913, *Chamaebosca* Speiser, 1903, *Stiphrosoma* Czerny, 1928 and *Cercagnota* Roháček & Freidberg, 1993. All other cladistic analyses hitherto performed were focused on the relationships of species within certain revised genera; Roháček & Barraclough (2003) dealt with the Afrotropical genus *Margdalops* Roháček & Barraclough, 2003; Roháček (2004) with the Afrotropical species of *Amygdalops* Lamb, 1914, Roháček & Barber (2005) with the world species of *Stiphrosoma* Czerny, 1928 and Roháček (2008) with the Oriental,