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Checklist of the Quill mites (Acariformes: Syringophilidae) of the World

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Abstract

Mites of the family Syringophilidae (Acariformes: Cheyletoidea) are ectoparasites inhabiting the quills of various feather types in many groups of birds. Until now, 334 valid species and 60 genera of quill mites have been described and recorded from 482 bird species (95 families and 24 orders). Currently, the family is divided into 2 subfamilies: Syringophilinae Lavoipierre, 1953 with 260 species grouped in 49 genera, and Picobinae Johnston and Kethley, 1973 with 74 species grouped in 11 genera. Mites of the subfamily Syringophilinae inhabit quills of primaries, secondaries, tertials, rectrices and wing coverts and just occasionally the body feathers; representatives of the subfamily Picobinae live predominantly inside the body feathers. The rapid increase of the knowledge on biodiversity and systematics of quill mites started in end of the 1990s; numerous new descriptions appeared since that time and taxonomic rearrangements make an urgent need to summarize all previous data. We present a complete checklist of the family Syringophilidae of the world including the following data: a species name, author(s), references, a number of first page of description, figure numbers in descriptions, depository of type and non-type materials, host spectrum and geographical distribution. The checklist is additionally provided with the table including bird hosts and associated quill mite species.

Key words: Acariformes, Syringophilidae, ectoparasites, birds, checklist

Introduction

Mites of the family Syringophilidae (Acariformes: Cheyletoidea) are obligatory and permanent ectoparasites of birds, living, feeding and reproducing inside the quills of various types of feathers.

The family was established in 1953 by Lavoipierre for the genus *Syringophilus* Heller, 1880, which previously belonged to the family Myobiidae. Four years later, not knowing about that work, Dubinin (1957) also established the family Syringophilidae for the genera *Syringophilus* and *Picobia* Haller, 1878. Later on, Kethley (1970) carried out a revision of all previously known syringophilids species and described 14 new genera, 11 species and 5 species considered as *incertae sedis*. There were just a few works dedicated to these mites published before 1970 (Hancock 1895; Oudemans; 1906; Ewing 1911; Fritsch 1958; Lawrence 1959; Clark 1964 and some others). Johnston & Kethley (1973) divided Syringophilidae into two subfamilies: Syringophilinae Lavoipierre, 1953 and Picobiinae Johnston and Kethley, 1973. In the subsequent 25 years, less than a ten of papers on systematics of quill mites were published (e.g. Kethley 1973; Casto 1976, 1977, 1978, 1979, 1980; Chirov & Kravtsova 1995; Kivganov & Sharafat 1995). Since the end of 1990s, quill mites have become the subject of extensive investigation in biodiversity and taxonomic aspects, mainly by A.V. Bochkov (Bochkov 2000; Bochkov & Apanaskevich 2001; Bochkov & Galloway 2001, 2004; Bochkov & Mironov 1998, 1999; Bochkov & Perez 2002; Bochkov *et al.* 2008, 2009) and M. Skoracki (Skoracki 1999a, b, 2002a, b, 2004a, b, c, 2005a, b, c; Skoracki & Bochkov 2002, 2010; Skoracki & Dabert 1999a, b; Skoracki & Sikora 2002, 2003, 2005, 2008; Skoracki *et al.* 2010a, b, c, 2011a, b, c). In 2011 Skoracki carried out a comprehensive revision of the family Syringophilidae of the Palearctic Region, with included examination of 118 known species arranged in 32 genera, descriptions of six new genera and 30 species and three species considered as *incertae sedis*. Currently, quill mites are a main subject of research interests of M. Skoracki (Skoracki *et al.* 2011a, b, c, 2012a, b, c, 2013a, b, c, 2014a, b, c, d, e) and E. Glowska (Glowska 2013, 2014; Glowska & Laniecka 2012, 2013, 2014; Glowska & Schmidt 2014a, b; Glowska *et al.* 2007, 2012a, b, 2014). The rapid increase of the knowledge about biodiversity of quill mites makes a necessity of summarizing and cataloging of all data on systematics, distribution and host-association.

To date, syringophilids are represented by 334 species belonging to 60 genera recorded from 482 bird species from 95 families and 24 orders. Mites of the subfamily Syringophilinae includes 260 species grouped in 49 genera inhabiting quills of primaries, secondaries, tertials, rectrices and wing coverts and occasionally the body feathers, whereas representatives of the subfamily Picobiinae including 74 species grouped in 11 genera live predominantly inside the body feathers (except a monotypic genus *Calamincola* Casto, 1978 inhabiting primaries and coverts).

Here, we present a complete checklist of the family Syringophilidae of the world including the following data