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## **Myrmecophilous pygmephoroid mites (Acari: Pygmephoroidea) associated with *Lasius flavus* (Hymenoptera: Formicidae) in Russia**

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### **Abstract**

Twenty four species of pygmephoroid mites (Acari: Pygmephoroidea: Neopygmephoridae, Scutacaridae, Microdispidae) are recorded from the ant *Lasius flavus* (Fabricius) or from its nests from Western Siberia and Crimea. Four of them of the genus *Scutacarus* Gros, 1845 (Acari: Scutacaridae), *S. insolitus* sp. nov., *S. heterotrichus* sp. nov., *S. moseri* sp. nov. and *S. sibiriensis* sp. nov. are described as new for science. Four species of scutacarid mites are recorded for the first time in Russia. The comparison of pygmephoroid mite communities associated with *Lasius flavus* from Crimean and West Siberian populations and notes on phoresy of pygmephoroid mites on ants are provided.

**Key words:** Heterostigmata, Neopygmephoridae, Scutacaridae, Microdispidae, *Scutacarus*, systematics, new species, ants, phoresy

### **Introduction**

The superfamily Pygmephoroidea Cross, 1965 includes more than 1200 species in four families: Pygmephoridae Cross, 1965, Neopygmephoridae Cross, 1965, Microdispidae Cross, 1965 and Scutacaridae Oudemans, 1916 (Zhang *et al.* 2011). All pygmephoroid mites are probably fungivorous (Khaustov 2008), but some species of the family Microdispidae might be parasitoids of insects (Kaliszewski *et al.* 1995). Many pygmephoroid mites are associated with various insects and utilize them for phoresy (Kaliszewski *et al.* 1995). Members of Pygmephoridae, the early derivative family of Pygmephoroidea, are usually phoretic on Coleoptera and Diptera (Rahiminejad *et al.* 2015), while Neopygmephoridae, Microdispidae and Scutacaridae, which form a monophyletic group of derived pygmephoroid mites, are mainly phoretic on Hymenoptera, especially on various ants (Ebermann & Moser 2008; Khaustov 2008, 2014a, b; Ebermann *et al.* 2013). The pygmephoroid mites associated with particular species of ants are poorly studied. There is only one comprehensive study of pygmephoroid mites associated with the red imported fire ant, *Solenopsis invicta* Buren (Ebermann & Moser 2008; Khaustov & Moser 2008). *Lasius flavus* (Fabricius) is a common Transpalaeartic ant species of the southern type of distribution (Czechovski *et al.* 2002). The following pygmephoroid species were recorded previously as associates with this ant: seven species of Neopygmephoridae, *Petalomium aleinikovae* (Sevastianov, 1967), *P. carelitschensis* (Sevastianov, 1967), *P. chaetosus* (Krczal, 1959), *P. fimbriatum* Ebermann and Rack, 1982, *P. tothi* Mahunka and Zaki, 1984, *Bakerdania haarloevi* (Krczal, 1959), *B. willmanni* (Krczal, 1959); 11 species of Scutacaridae, *Imparipes brevitarsus* Ebermann, 1981, *I. lasii* Khaustov, 2008, *I. obsoletus* Rack, 1966, *I. sklyari* Khaustov, 2008, *Scutacarus lasiophilus* Khaustov, 2015, *S. latifrons* Mahunka, 1964 (incorrectly identified as *S. expectatus* Karafiat, 1959 in Khaustov 2008), *S. longisetus* (Berlese, 1904), *S. ponticulus* Mahunka, 1981, *S. spinosus* Štorkán, 1936, *S. suavis* Khaustov, 2008, *S. tutus* Khaustov, 2008; and one of Microdispidae, *Caesarodispus minutus* (Sevastianov, 1981) (Paoli 1911; Krczal 1959; Ebermann 1981; Ebermann & Rack 1982; Khaustov 2005, 2008; 2014b, 2015). Paoli (1911) was the first, who illustrated phoresy of scutacarid mite *Scutacarus longisetus* on *Lasius flavus*. Ebermann (1979) documented phoresy of *Scutacarus* sp. on the head of *Lasius flavus* worker using the SEM microscopy.

The aim of this paper is to describe four new species and further provide new records of pygmephoroid mites associated with *Lasius flavus* from Western Siberia and Crimea.