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## Two new species of *Pachyseius* Berlese (Acari: Pachylaelapidae) from Turkey, with a key to the world species

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### Abstract

Two new species of the genus *Pachyseius* are described from leaf litter in Turkey. *Pachyseius destitutus* sp. nov. is described based on the female, and *P. quadrigeminus* sp. nov. is described based on the female and male. These species have some uncommon character states for the genus, such as the absence of dorsal shield seta *z1*, four pairs of setae on the ventri-anal shield, and a male with a holovertral shield. We provide a key to the world species incorporating new information about the genus.

**Key words:** Acari, Pachylaelapidae, *Pachyseius*, new species, Turkey

### Introduction

Recent studies of the mite family Pachylaelapidae have revealed a diverse fauna in Turkey, where its representatives can easily be found in moss and litter (Özbek, 2014, 2015; Özbek & Halliday, 2014, 2015). We previously described several new species from north-eastern Turkey, namely two species of *Pachyseius* Berlese, 1910 (Özbek & Halliday, 2014), five species of *Olopachys* Berlese, 1910 (Özbek, 2014; Özbek & Halliday, 2015), and a species of *Pachylaelaps* Berlese, 1888 (Özbek, 2015).

The genus *Pachyseius* is distributed throughout the Palaearctic Region, and now includes 23 species described from Europe, Russia and Asia (Berlese, 1910; Willmann, 1935; Hyatt, 1956; Nikolsky, 1982; Solomon, 1982; Afifi & Nasr, 1984; Yin *et al.*, 1986; Ishikawa, 1989; Moraza, 1993; Ma & Yin, 2000; Mašán, 2007, 2008; Mašán & Mihál, 2007; Chen *et al.*, 2009; Mašán & Fend'a, 2014; Özbek & Halliday, 2014; Marchenko, 2015). Outside the Palaearctic Region, *Pachyseius humeralis* Berlese, 1910 has been recorded from one locality in eastern Australia (Halliday, 2001), and unidentified species have also been recorded from northern Australia (Lindquist *et al.*, 2009) and Canada (Broadbent & Tomlin, 1979). The number of known species in the genus is gradually increasing, but different authors have used different characters in recent keys (Mašán, 2007, 2008; Mašán & Fend'a, 2014; Özbek & Halliday, 2014), and the discovery of new species is still revealing new character states.

We here describe a new species from north-eastern Turkey, with males that have a holovertral shield and a long pointed spermatodactyl, which have not been reported from the genus before. We also describe a new species in which dorsal shield seta *z1* is absent, which is rare in the genus.

### Material and methods

Mites were collected by sieving leaf litter and moss and extracted using modified Berlese funnels. Specimens were mounted in Hoyer's medium following the methods of Krantz & Walter (2009). Specimens were examined, illustrated and measured using a Leica DM 4000 B phase-contrast microscope and Leica DFC 425 C digital colour camera. All measurements are given in micrometres (µm). The terminology for the dorsal chaetotaxy follows Lindquist & Evans (1965). The classification of the family Pachylaelapidae used here is based on the systematic