

A NEW SPECIES OF MITES OF THE GENUS *PSEUDOPYGMEPHORUS* (ACARI: HETEROSTIGMATA: NEOPYGMEPHORIDAE) ASSOCIATED WITH *APHODIUS FIMETARIUS* (COLEOPTERA: SCARABAEIDAE) FROM CRIMEA

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ABSTRACT: A new species *Pseudopygmephorus aphodii* sp. n. (Acari: Neopygmephoridae) is described from Crimea, Ukraine. The new species is phoretic on the dung beetle *Aphodius fimetarius* (Linnaeus, 1758) (Coleoptera: Scarabaeidae). *Pygmephorus allmanni* Krczal, 1964, *P. argentiniensis* Mahunka, 1964, *Bakerdania chelata* Mahunka, 1969, *B. bulbitarsus* Mahunka, 1969, and *B. peritremata* Mahunka, 1969 are transferred to the genus *Pseudopygmephorus*.

KEY WORDS: Neopygmephoridae, *Pseudopygmephorus*, new species, Scarabaeidae, Crimea

INTRODUCTION

During my study of neopygmephorid mites of Crimea I found a new species of *Pseudopygmephorus* phoretic on dung beetles *Aphodius fimetarius* (Linnaeus, 1758). The purpose of this paper is to describe the new species. This paper follows the system of Pygmephoroida proposed by Khaustov (2008).

MATERIALS AND METHODS

Mites were collected from coxae I of dung beetles *Aphodius fimetarius* (Linnaeus, 1758) and mounted on slides (Hoyer's medium). In the description, the terminology follows Lindquist (1986). All measurements are given in micrometers (μm) for the holotype. In the description of leg chaetotaxy the number of solenidia are given in parenthesis.

SYSTEMATICS

Family Neopygmephoridae Cross, 1965 Genus *Pseudopygmephorus* Cross, 1965

Type species: *Pygmephorus tarsalis* Hirst, 1921 by subsequent designation.

Diagnosis. Female. Gnathosoma. Gnathosomal capsule slightly longer than its width, dorsally with two pair of setae (ch_1 and ch_2). Dorsal medial apodeme usually present. Ventrally with 1 pair of setae su and sometimes with pair of pits (vestiges of setae su_1). Palps free, articulated with gnathosomal capsule, bearing setae dFe and dGe dorsolaterally, small solenidion and accessory setigenous structure ventrally, and small terminal claw. Pharyngeal pump II oval, subequal with pump III.

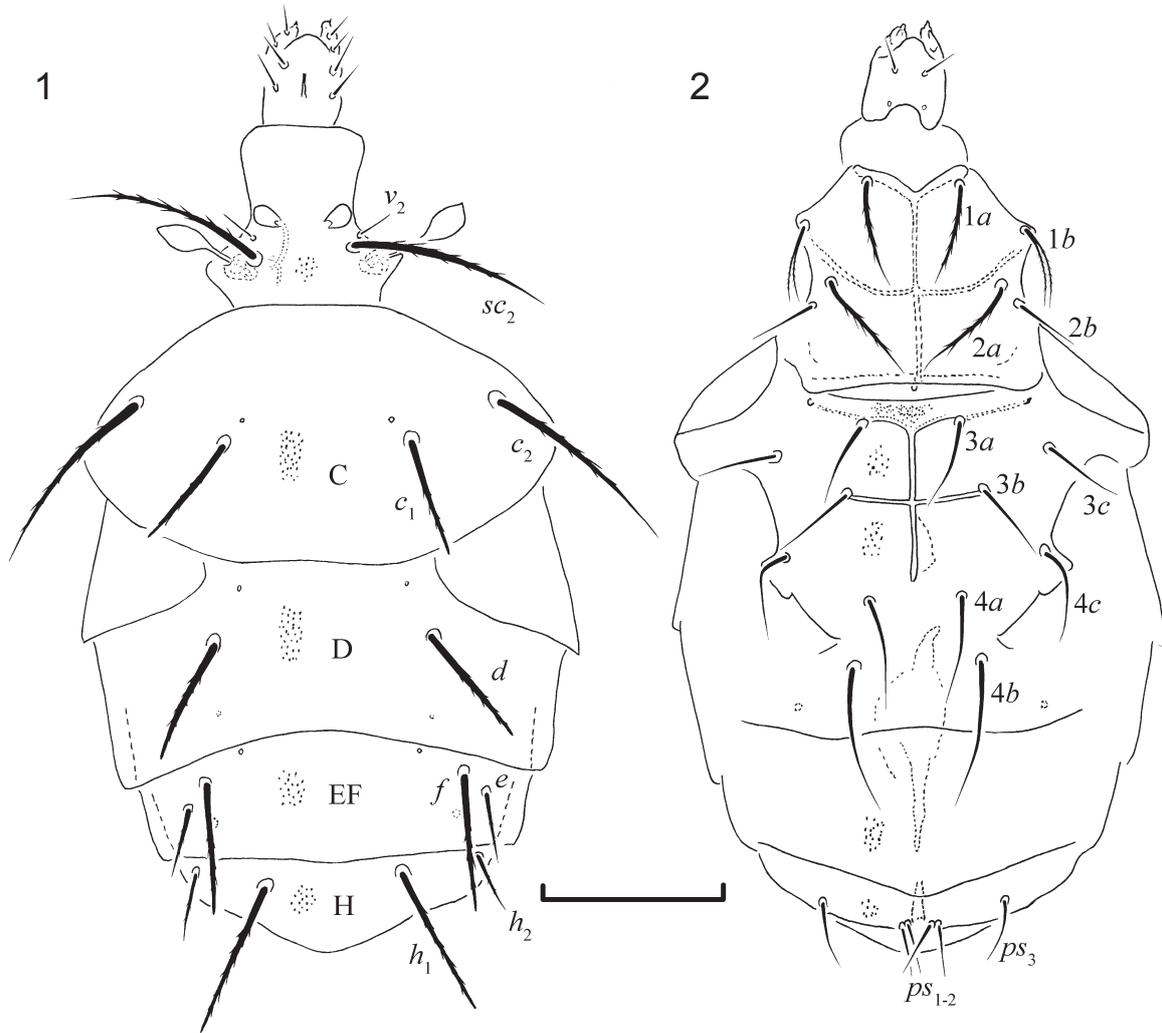
Idiosomal dorsum. Prodorsum with 2 pairs of setae (v_2 , sc_2) and pair of capitate trichobothria (sc_1), and pair of stigmata. Posterior margin of prodorsal plate usually not separated from tergite C by area of soft cuticle. Posterior margin of tergites C usually not deeply concave. Two pairs of

cupules (ia , ih) present on tergites D and H, respectively. A pair of small pores usually present on tergites C and D, and two pairs on tergite EF. Dorsal setae not modified, usually weakly barbed.

Idiosomal venter. Epimeres I and II with two pairs of setae each. Setae $1b$ probably always bifurcate. Apodemes 2 joined with presternal apodeme. Apodemes 3 usually well developed. Apodemes IV short, reaching to base of setae $3b$. Apodemes 5 absent. Seate $4a$ present. All setae of posterior sternal plate usually smooth, or indistinctly barbed, relatively short, pointed. Posterior margin of posterior sternal plate entire. Three pairs of pseudanal setae (ps_1 – ps_3), which are usually simple, not modified. Setae ps_1 and ps_2 usually subequal, situated close to each other.

Legs. Leg I. Tibiotarsus of leg I usually with deep dorsal depression, without pinnaculum, tarsal claw from relatively small, simple to very large, situated on very short to relatively long pretarsus. Modified setae u' and u'' joined to form structure opposing claw. Setae k seta-like. Solenidion ω_1 characteristically joined by all its length with tibiotarsus. Setae $dFe1$ hook-like. Setal formula: Tr1–Fe3–Ge4–TiTa16(4). Legs II–IV without modified setae. Leg II. Setal formula: Tr1–Fe3–Ge3–Ti4(1)–Ta6(1). Claws usually simple, empodium large. Leg III. Setal formula: Tr1–Fe2–Ge2–Ti4(1)–Ta6. Claws and empodium as on leg II. Leg IV. Setal formula: Tr1–Fe2–Ge1–Ti4(1)–Ta6. Claws well developed, simple, empodium large. Tarsus IV not extremely long, with short pretarsus.

Species included. *Pseudopygmephorus abdominalis* (Berlese, 1904) (Italy), *P. stercoricola* (Berlese, 1911) (Italy), *P. tarsalis* (Hirst, 1921) (Great Britain), *P. madanlarae* (Ramaraju et Madanlar, 1997) comb. n. (from *Pygmephorus*, Turkey), *P. urlaensis* (Ramaraju et Madanlar, 1997) comb. n. (from *Pygmephorus*, Turkey), *P.*



Figs. 1–2. *Pseudopygmephorus aphodii* sp. n., female, 1 — dorsum, 2 — venter. Scale bar 50 μ m.

smileyi Hill et Deahl, 1978, *P. chinensis* Gao, Zou et Ma, 1989, *P. agarici* Zou, Gao et Ma, 1990, *P. shanghaiensis* Zou, Gao et Ma, 1990, *P. allmanni* (Krczal, 1964) comb. n. (from *Pygmephorus*, Australia), *P. peritrematus* (Mahunka, 1979) comb. n. (from *Bakerdania*, South Africa), *P. pappi* Mahunka, 1976 (Afghanistan), *P. magnus* Mahunka, 1981 (Anthills), *P. chelatus* (Mahunka, 1969) comb. n. (from *Bakerdania*, Brasil), *P. bulbitarsus* (Mahunka, 1969) comb. n. (from *Bakerdania*, Brasil), *P. argentiniensis* (Mahunka, 1964) comb. n. (from *Pygmephorus*, Argentina), *P. aphodii* sp. n.

Remarks. Cross (1965) placed 16 species in the genus *Pseudopygmephorus*. Some of them were recently transferred by Khaustov (2009) to the genus *Kerdabania* Khaustov, 2009. Some species described in the genus *Pseudopygmephorus*, such as *P. atypoides* Rack, 1983, *P. latipilosus* Rack, 1967 on my opinion should be excluded from this genus and transferred to the genus *Bakerdania* Sasa, 1961.

***Pseudopygmephorus aphodii* Khaustov sp. n.**

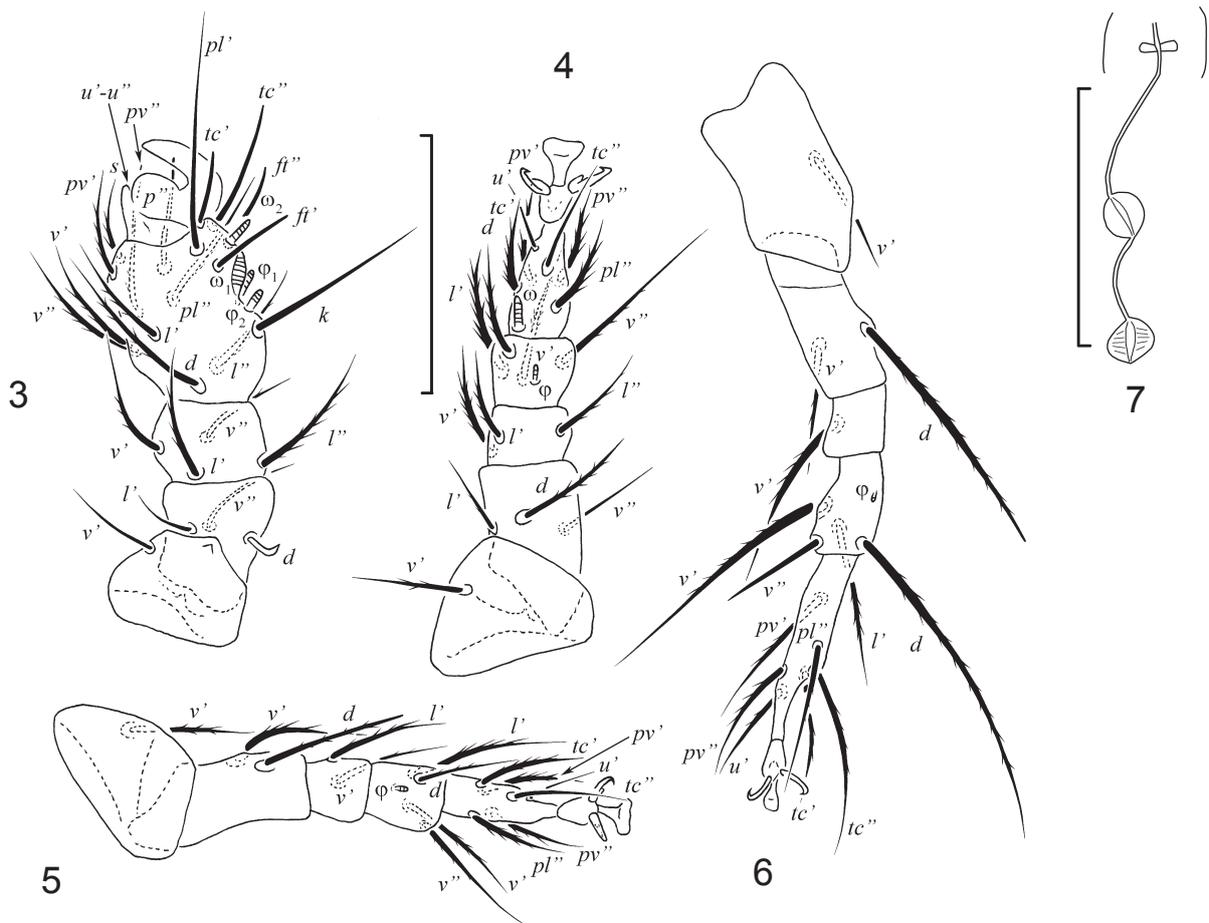
Figs. 1–7.

Description. Female. Idiosomal length: 234, width 135.

Gnathosoma (Figs. 1–2). Dorsal medial apodeme well developed. Pair of ventral setae *su* and pits are present. Pharyngeal pumps as on fig. 7.

Idiosomal dorsum (Fig. 1). Tergites well sclerotized, with numerous small dimples. Stigmata large, round. Dorsal setae barbed, except for smooth v_2 . Setae c_1 , d , f , and h_1 obtuse, other dorsal setae pointed. A pair of small pores present on tergites C and D, and two pairs on tergite EF. Length of dorsal setae: v_{28} , sc_2 53, c_1 33, c_2 64, d 35, e 26, f 40, h_1 37, h_2 23. Distances between dorsal setae: v_2 – v_2 30, sc_2 – sc_2 28, c_1 – c_1 55, c_1 – c_2 23, d – d 61, e – f 7, f – f 73, h_1 – h_1 40, h_1 – h_2 21. Trichobothrium with short thin stem, distally spherical.

Idiosomal venter (Fig. 2). Setae $1b$ bifurcate. Setae $1a$ and $2a$ distinctly barbed, other ventral se-



Figs. 3–7. *Pseudopygmephorus aphodii* sp. n., female, 3–6 — legs I–IV, respectively; 7 — pharyngeal pumps. Scale bar 50 μ m.

tae smooth. All ventral plates with numerous small dimples. Apodemes 1 and 2 well developed and joined with presternal apodeme; presternal and se-jugal apodemes well developed; apodemes 3 well developed, diffuse, their ends with distinct small sclerotized structures. Apodemes 4 well sclerotized and reaching base of setae 3b, apodemes 5 not developed. Posterior margin of posterior sternal plate almost straight, or weakly concave in middle part. Length of ventral setae: 1a 32, 1b 25, 2a 33, 2b 22, 3a 23, 3b 26, 3c 24, 4a 32, 4b 42, 4c 32, ps_1 15, ps_2 15, ps_3 22.

Legs (Figs. 3–6). Leg I (Fig. 3). Tibiotarsus very thick, massive, with large terminal claw situated on very short pretarsus. Solenidion ω_1 completely joined with tibiotarsus. Solenidia ω_1 6 = ω_2 6 < ϕ_1 10 > ϕ_2 6; ω_2 and ϕ_2 uniformly thin, ϕ_1 clavate. Setae *dFe* broadened, hook-like. Leg II (Fig. 4). Tarsus with sickle-like padded claws and large empodium. Solenidion ω 10 finger-shaped, solenidion ϕ weakly visible. Setae *dFeII* pointed. Leg III (Fig. 5). Claws of same shape as on tarsus II. Solenidion ϕ weakly visible. Setae *dFeIII* obtuse. Leg IV (Fig. 6). Tarsus with two well developed

simple claws. Solenidion ϕ weakly visible. Setae *dFeIV* and *v''TiIV* smooth obtuse.

Male and larva unknown.

Type material. Female holotype, slide # AK200300, UKRAINE, Crimea, Yalta, settl. Nikita, on *Aphodius fimetarius* in cow dung, 20 March 2000, coll. A.A. Khaustov; paratypes: 1 female, same data; 7 females, UKRAINE, Crimea, vicinity of Yalta, on *Aphodius fimetarius* in cow dung, 4 November 2001, coll. A.A. Khaustov.

Type depositories. The holotype is deposited at the collection of the Department of Nature Conservation, Nikita Botanical Gardens — National Scientific Center, Yalta, Ukraine.

Etymology. The name *aphodii* refers to the generic name of the coleopteran host of the new species.

Differential diagnosis. The new species is most similar to *P. agarici* Zou, Gao et Ma, 1990 by the shape of the posterior margin of the posterior sternal plate and the round stigmata, but differs by the thicker tibiotarsus I (twice as thick as compared to *P. agarici*), setae 2b which are smooth and distinctly shorter than 2a (in *P. agari-*

ci 2b barbed and subequal with *2a*), and the absence of the secondary transverse apodeme (present in *P. agarici*).

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