

## A NEW SPECIES AND RECORDS OF MITES OF THE GENUS *PARAPYGMEPHORUS* (ACARI: HETEROSTIGMATA: NEOPYGMEPHORIDAE) FROM UKRAINE

A. A. Khaustov<sup>1</sup>, L. M. Zaloznaya<sup>2</sup>

<sup>1</sup>Nikita Botanical Gardens — National Scientific Center, Yalta, Crimea 98648, Ukraine;  
e-mail: alkhaustov@mail.ru

<sup>2</sup>I.I. Schmalgausen Institute of Zoology NASU, B. Khmelnytsky str. 15, Kiev, 01601 Ukraine;  
e-mail: Zalud@izan.kiev.ua

ABSTRACT: A new species, *Parapygmephorus magnisetosus* sp. n. (Acari: Neopygmephoridae), is described from the bees *Halictus sexcinctus* (Fabricius, 1775) and *Osmia rufa* (Linnaeus, 1758) (Hymenoptera: Halictidae and Megachilidae) from Ukraine. *Parapygmephorus khorasanicus* Hajiqanbar et Khaustov, 2011 is recorded for the first time for the Europe.

KEY WORDS: Neopygmephoridae, *Parapygmephorus*, new species, new records, bees, Ukraine

### INTRODUCTION

Mites of the genus *Parapygmephorus* Cross, 1965 (Acari: Heterostigmata: Neopygmephoridae) are associated with different halictid bees (Hymenoptera: Halictidae) in the Holarctic. The genus currently includes 5 described species (Hajiqanbar et al. 2011). During our study of mites associated with bees collected by the junior author, three species of the genus *Parapygmephorus* were found in Ukraine: *Parapygmephorus magnisetosus* Khaustov et Zaloznaya sp. n. phoretic on *Halictus sexcinctus* (Fabricius, 1775) and *Osmia rufa* (Linnaeus, 1758), *Parapygmephorus khorasanicus* Hajiqanbar et Khaustov, 2011 phoretic on *Halictus quadricinctus* (Fabricius, 1776), and *Parapygmephorus* sp. phoretic on *Halictus sexcinctus* (Fabricius, 1775). The purpose of this paper is to describe the new species and provide new records from Ukraine.

### MATERIALS AND METHODS

Mites were collected from bees and mounted on slides (Hoyer's medium). In the description, the terminology of idiosoma and legs follows Lindquist (1986). The nomenclature of subcapitular setae and cheliceral setae follows Grandjean (1944, 1947), respectively. The systematics of Pygmephoridea follows Khaustov (2004, 2008). All measurements are given in micrometers ( $\mu\text{m}$ ) for the holotype. In description of leg chaetotaxy the number of solenidia is given in parenthesis.

**Family Neopygmephoridae Cross, 1965**

**Genus *Parapygmephorus* Cross, 1965**

***Parapygmephorus magnisetosus* Khaustov et  
Zaloznaya sp. n.**

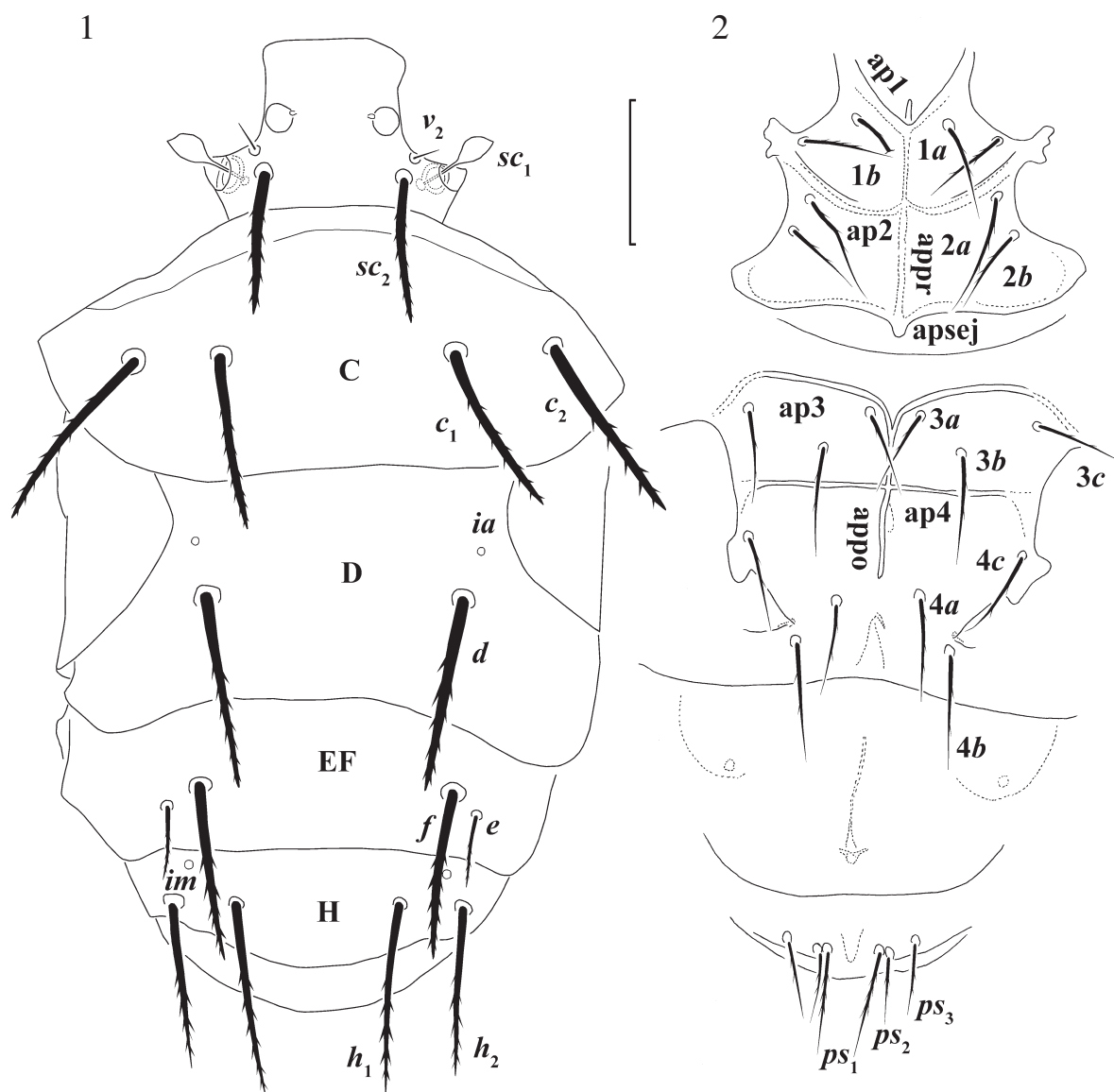
Figs. 1–7

**Diagnosis. Female.** Gnathosoma (Fig. 3). Gnathosomal capsule slightly longer than its

width, dorsally with 2 pairs of setae (*cha* and *chb*). Setae *chb* needle-like. Dorsal medial apodeme well developed. Ventrally with 1 pair of setae *m*. Palps free articulated with gnathosomal capsule, bearing setae *dFe* and *dGe* dorsolaterally, small solenidium and accessory setigenous structure ventrally, and terminate with small claw. Pharyngeal pump I oval, situated inside gnathosoma, pharyngeal pump II large, transversely striated, pharyngeal pump III similar in shape with pharyngeal pump I, but larger.

Idiosomal dorsum (Fig. 1). Length of idiosoma 366, width 222. Prodorsum with 2 pairs of setae ( $v_2$ ,  $sc_2$ ) and pair of capitate trichobothria ( $sc_1$ ), and pair of round stigmata. Tergites well sclerotized, with numerous small dimples, sometimes with indistinct scale-like ornamentation in central parts of hysterosomal tergites. Dorsal setae thick, distinctly barbed, obtuse, except for smooth and pointed  $v_2$ . A pair of round cupules, *ia* and *ih*, present on tergites D and H. Length of dorsal setae:  $v_2$  11,  $sc_2$  52,  $c_1$  64,  $c_2$  75,  $d$  73,  $e$  31,  $f$  67,  $h_1$  73,  $h_2$  61. Distances between dorsal setae:  $v_2$ – $v_2$  53,  $sc_2$ – $sc_2$  50,  $c_1$ – $c_1$  85,  $c_1$ – $c_2$  30,  $d$ – $d$  90,  $e$ – $f$  13,  $f$ – $f$  85,  $h_1$ – $h_1$  58,  $h_1$ – $h_2$  22. Trichobothrium with short thin stem, distally spherical.

Idiosomal venter (Fig. 2). All ventral plates with numerous small dimples. All ventral setae not modified and sparsely barbed. Apodemes 1 and 2 well developed and joined with presternal apodeme; presternal and sejugal apodemes well developed; apodemes 3 well developed, arch-like, diffuse laterally. Apodemes 4 well sclerotized and reaching base of setae  $4c$ , apodemes 5 not developed. Posterior margin of posterior sternal plate weakly concave in middle part. Length of ventral setae:  $1a$  36,  $1b$  36,  $2a$  46,  $2b$  33,  $3a$  33,  $3b$  43,  $3c$  35,  $4a$  42,  $4b$  49,  $4c$  41,  $ps_1$  42,  $ps_2$  33,  $ps_3$  33.



Figs. 1–2. *Parapymphorus magnisetosus* sp. n., female: 1 — dorsum, 2 — venter. Scale bar 50  $\mu$ m.

Legs (Figs. 4–7). Leg I (Fig. 4). Setal formula: tr1–fe3–ge4–tita16(4). Tibiotarsus with large terminal claw situated on distinct pretarsus. All solenidia relatively short, baculiform:  $\omega_1 7 > \omega_2 5 < \phi_1 8 > \phi_2 6$ . Setae *dFe* broadened, hook-like. Setae *pl'*, *pl''* whip-like. Setae *l'TiI*, *l''TiI*, *v'TiI*, *k*, *l'GeI*, *l''GeI*, and *l'FeI* obtuse. Leg II (Fig. 5). Setal formula: tr1–re3–ge3–ti4(1)–ta6(1). Tarsus with sickle-like padded claws and large empodium. Solenidion  $\omega$  8 baculiform, solenidion  $\phi$  weakly visible. Setae *v'FeII*, *l'FeII*, *v'FeII*, and *l'TiII* obtuse. Leg III (Fig. 6). Setal formula: tr1–re2–ge2–ti4(1)–ta6. Claws of same shape as on tarsus II. Solenidion  $\phi$  weakly visible. Setae *v'FeIII*, *l'FeIII*, *v'FeIII*, and *l'TiIII* obtuse. Leg IV (Fig. 7). Tarsus with two well developed simple claws. Solenidion  $\phi$  weakly visible. Setae *dFeIV*, *v'GeIV*, *v'TiIV*, *v''TiIV*, and *pl''TaIV* obtuse.

**Male and larva unknown.**

**Type material.** Female holotype, slide # 766a, UKRAINE, Kiev, on female of *Halictus sexcinctus* (Fabricius, 1775), 30 May 2010, coll. L.M. Zaloznaya; paratypes: 4 females, same data; 47 females, UKRAINE, Kiev, on female of *Osmia rufa* (Linnaeus, 1758), 29 May 2010, coll. L.M. Zaloznaya.

**Type depositories.** Holotype deposited at the collection of the Department of Acarology, I.I. Schmalgausen Institute of Zoology, Kiev, Ukraine; paratypes in the collection of Nikita Botanical Gardens — National Scientific Center, Yalta, Ukraine.

**Etymology.** The name *magnisetosus* refers to very thick and large dorsal setae of new species.

**Differential diagnosis.** By the setae *ps*<sub>1</sub> longer than *ps*<sub>2</sub> the new species is most similar to *P.*

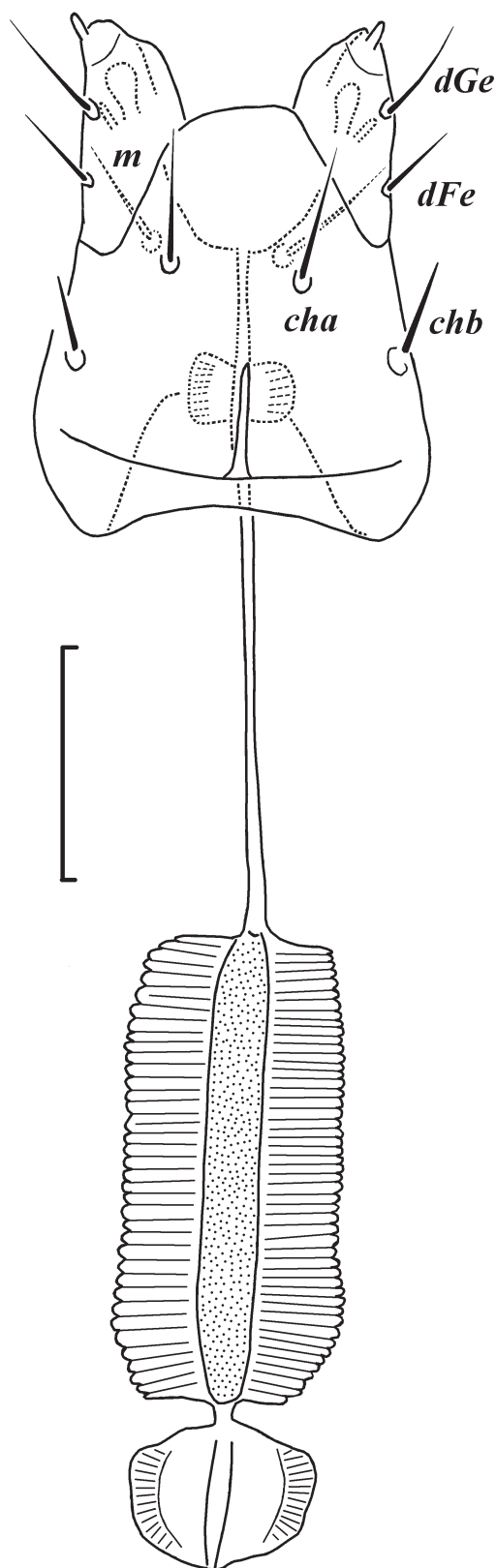


Fig. 3. *Parapygmephorus magnisetosus* sp. n., female: gnathosoma and pharyngeal pumps. Scale bar 20  $\mu$ m.

*crossi* Mahunka, 1974 but differs by the subequal setae  $ps_2$  and  $ps_3$  (in *P. crossi*,  $ps_2$  distinctly longer than  $ps_3$ ), by setae  $h_1$  situated on the same trans-

verse level as  $h_2$  (in *P. crossi*,  $h_2$  situated distinctly anterior to  $h_1$ ).

***Parapygmephorus khorasanicus*  
Hajiqaanbar et Khaustov, 2011**

This species was described from Iran (Hajiqaanbar et al., 2011) where it phoretic on bees *Halictus quadricinctus* (Fabricius, 1776) (Hymenoptera: Halictidae). New record for the European fauna, including Ukraine.

**Material examined:** 6 females, UKRAINE, Dnepropetrovsk distr., Petrokovs reg., settl. Sorochino, on female of *Halictus quadricinctus*, 16 July 2010, coll. L.M. Zaloznaya.

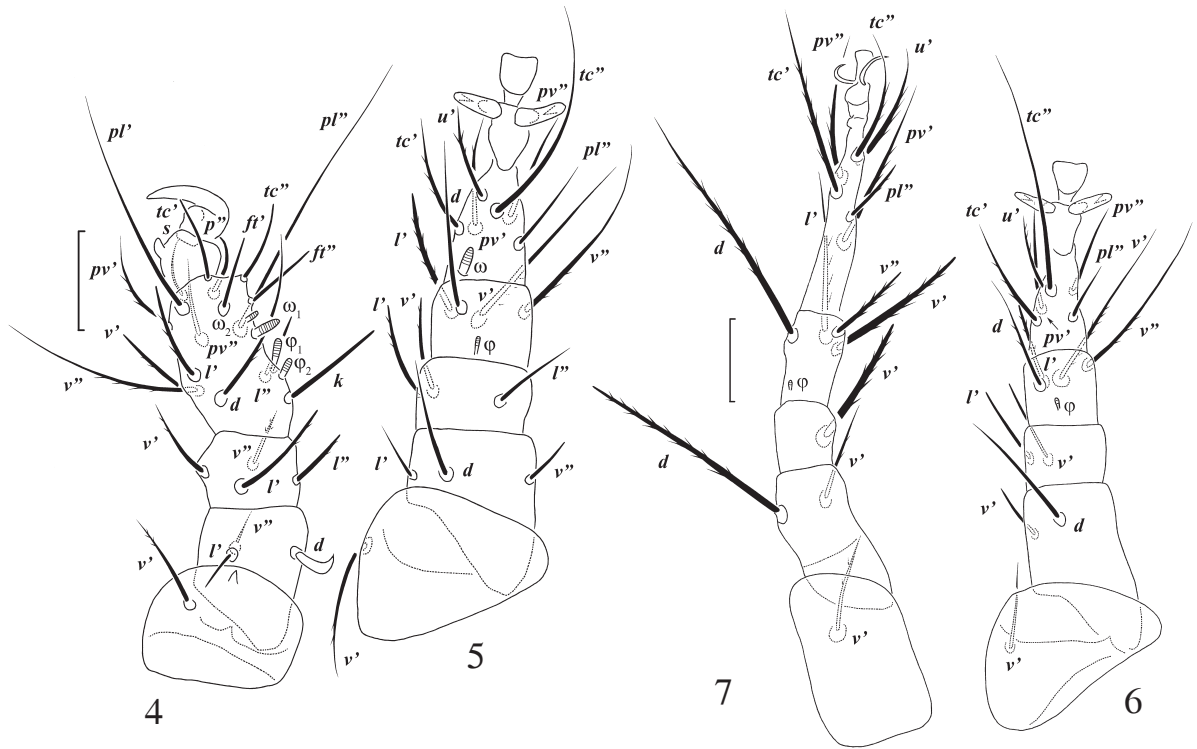
***Parapygmephorus* sp.**

One damaged specimen was available for study and probably represents a new species. It most similar to *P. crossi* Mahunka, 1974 having the same lengths of pseudanal setae, but differs by distinctly shorter setae *e*. Additional material will let us to clarify if this is indeed a new species.

**Material examined:** 1 female, UKRAINE, Crimea, vicinity of Feodosia, settl. Beregovoe, on male of *Halictus sexcinctus* (Fabricius, 1775), 6 September 2010, coll. L.M. Zaloznaya.

**REFERENCES**

- Grandjean, F. 1944. Observations sure les Acariens de la famille des Stigmaeidae. *Archives des Sciences physiques et naturelles*, 26: 103–131.
- Grandjean, F. 1947. L'origine pileuse des mors et la chaetotaxie de la mandibule chez les Acariens actinochitineux. *Comptes rendus des séances de l'Academie des Sciences*, 224: 1251–1254.
- Hajiqaanbar, H.R., Khaustov, A.A., and Kamali, K. 2011. A new species of *Parapygmephorus* Cross, 1965 (Acari; Heterostigmata; Neopygmephoridae) phoretic on *Halictus quadricinctus* (Fabricius, 1776) (Hym.; Halictidae) from Iran. *Zoological science*, 28: 56–60.
- Khaustov, A.A. 2004. [Mites of the family Neopygmephoridae Cross, 1965 stat. n. and their position in Heterostigmata]. In: Balashov Y.S. (Ed.). VIII Vserossiyskoe akarologicheskoe soveshchanie, St.-Petersburg. Zoologicheskyy Institut RAN, St.-Petersburg, p. 137. [in Russian]
- Khaustov, A.A. 2008. Mites of the family Scutacaridae of Eastern Palaearctic. *Akademperiodika*, Kiev, 291 pp.
- Lindquist, E.E. 1986. The world genera of Tarsonemidae (Acari: Heterostigmata): a morphological, phylogenetic, and systematic revision, with a reclassification of family-group taxa in Heterostigmata. *Memoirs of Entomological Society of Canada*, 136: 1–517.



Figs. 4–7. *Parapygmephorus magnisetosus* sp. n., female: 4–7 — legs I–IV, respectively. Scale bar 20  $\mu\text{m}$ .