

## A REVIEW OF THE GENERA *PREMICRODISPUS* CROSS, 1965 AND *DOLICHODISPUS* GEN. NOV. (ACARI: MICRODISPIDAE) OF CRIMEA

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**ABSTRACT:** A new genus, *Dolichodispus* gen. nov. (Acari: Microdispidae), and seven new species of the genus *Premicrodispus* Cross, 1965 are described from Crimea: *P. kaliszewskii* sp. n., *P. montanus* sp. n., *P. brevisetus* sp. n., *P. rackae* sp. n., *P. krczali* sp. n., *P. longicaudus* sp. n., *P. tenuisetus* sp. n. *Dolichodispus angustus* (Krczal, 1959), *Premicrodispus akermanae* (Sevastianov et Zahida, 1988) comb. nov. (from *Brennandania*) and *P. lineatus* (Mahunka, 1986) comb. nov. (from *Brennandania*) are redescribed. A key to Palaearctic species of the genus *Premicrodispus* is given.

**KEY WORDS:** Heterostigmata, Microdispidae, systematics, *Premicrodispus*, *Dolichodispus* g.n., Crimea

### INTRODUCTION

The family Microdispidae (Acari: Heterostigmata) is a poorly studied group of heterostigmatic mites. About 100 species of 16 microdispid genera have been described in the World. At present, taxonomy of this family is in a state of confusion because of the incomplete and inadequate descriptions of most of the described microdispids. Microdispid mites of Crimea are poorly studied, with only three species recorded (Sosnina and Sevastianov 1975). The goal of my study is to revise microdispid mites from Crimea and some other localities in Ukraine, redefine previously described genera, and give illustrated descriptions of all recorded species.

### MATERIALS AND METHODS

In the descriptions, the terminology follows Lindquist (1986). All measurements are given in micrometers ( $\mu\text{m}$ ) for holotype and for five paratypes (in parenthesis). Material was collected by me in Crimea and the Eastern Ukraine.

Abbreviation of institutes: NBG — Nikita Botanical Gardens, Yalta, Ukraine; SIZ — Department of Acarology, Shmalgausen Institute of Zoology, Kiev, Ukraine.

### Family Microdispidae Cross, 1965

Type genus: *Microdispus* Paoli, 1911

**Diagnosis. Females.** Femur I with 3 setae, setae *dFeI* nonmodified. Tibiotarsus I with 5 eupathidia (*p'* absent), usually without claws or with small claws. Pharynx with 3 pharyngeal pumps, usually well sclerotized and transversely striated. Propodosoma dorsally usually with 1 simple *sc*<sub>2</sub> setae and clavate trichobothria. Sometimes vestigial setae *v*<sub>2</sub> present. Two pairs of cupuli present (*ia* and *ih*). Epimeres I and II with 2 pairs of setae each, *1a*, *1b*, and *2a*, *2b*, respectively. Pseudanal segment

usually with 2 pairs of setae (*ps*<sub>2</sub> absent), rarely setae *ps*<sub>2</sub> present.

Sixteen genera are described, but all of them need to be redefined.

Mites of this family inhabit soil, forest litter, nests of insects. Females are often phoretic on different insects, especially ants.

### REMARKS

The taxonomic position of the family Microdispidae changed repeatedly. Initially, Cross (1965) established it as a tribe of the family Pyemotidae. Later on, Mahunka (1970) elevated it to the family rank and placed into the superfamily Pygmephorodea. Lindquist (1986) considered microdispids as a subfamily of the family Pygmephoridae (Pygmephorodea). Kaliszewski et al. (1995) placed Microdispidae as a family in Scutacarodea. At the same time, the closely related families Pygmephoridae and Siteroptidae were included by this author to the superfamily Pygmephorodea. Khaustov (2004) briefly discussed systematics of the superfamilies Pygmephorodea and Scutacarodea and elevated the subfamily Neopygmephorinae (Pygmephoridae) to the family rank. In my opinion, the families Microdispidae, Scutacaridae, and Neopygmephoridae share many synapomorphies and form a monophyletic group. These characters for females are: tibiotarsus I with five eupathidia (eupathidion *p'* is absent), propodosoma dorsally with two simple setae and a pair of trichobothria (rarely with only one pair of setae and a pair of trichobothria), two pairs of cupuli (*ia* and *ih*) present on the hysterosomal dorsum, epimeres I and II with two pairs of setae each (*1c* and *2c* absent), femur I with 3 setae. The family Pygmephoridae (=Siteroptidae) is another family of the superfamily Pygmephorodea retaining several ancestral character states: eupathid-

ion  $p'$  on tibiotarsus I present, three pairs of dorsal propodosomal setae (rarely 2), three pairs of cupuli (*im* present), epimeres I and II usually with three pairs of setae, and femur I with four setae.

Unfortunately, most genera of the family Microdispidae were described incompletely, usually without information about leg chaetotaxy. Leg chaetotaxy and solenidiotaxy are considerably variable within this family. For example, the genera *Premicrodispus* and *Dolichodispus* are characterized by the absence of seta *s* on the tibiotarsus.

**Genus *Dolichodispus* Khaustov gen. nov.**

Type species: *Pygmephorus angustus* Krczal, 1959

**Diagnosis. Female.** Body about 3 times longer than wide. Gnathosomal capsule without dorsal setae, its length and width subequal. Palps short, with 2 pairs of setae, *dFe* and *dGe*. One pair of subcapitular setae (*su*) present ventrally. Pharynx well sclerotized. Second pharyngeal pump very large and long. Stigmas small, oval. Dorsal setae of idiosoma very thin, sharply pointed and smooth. Anterior margin of tergite C with large semicircular lobe. Ventral idiosomal setae short, smooth and thin. Anterior margin of posterior sternal plate with large tongue-like lobe. Posterior margin of posterior sternal plate tripartite. Setae *4a* absent. Two pairs of pseudanal setae present (*ps<sub>2</sub>* absent). With areas of soft striated cuticle under aggenital and pseudanal plates. Legs I and II subequal in length. Tibiotarsus I without claw. Setation of legs I (number of solenidia in parenthesis): Tr1–Fe3–Ge4–TiTa15(4) (seta *s* absent), legs II: Tr1–Fe3–Ge3–Ti4(1)–Ta6(1), legs III: Tr1–Fe2–Ge2–Ti4(1)–Ta6, legs IV: Tr1–Fe2–Ge1–Ti4(1)–Ta6.

**Species included.** Monotypic.

**Differential diagnosis.** The new genus is very similar to *Premicrodispus* Cross, 1965 in having a large second pharyngeal pump, a tripartite posterior margin of the posterior sternal plate, and by subequal legs I and II. The new genus differs from *Premicrodispus* by the elongated idiosoma, 3 times longer than wide (about 2 times longer in *Premicrodispus*); by the absence of the dorsal gnathosomal setae; and by the presence of a large semicircular lobe on tergite C. In *Premicrodispus* 1 pair of the dorsal gnathosomal setae is always present and tergite C is without a large lobe.

***Dolichodispus angustus* (Krczal, 1959)**

*Pygmephorus angustus* Krczal 1959: 505, fig. 49 Figs. 1–6.

**Description. Female.** Idiosomal length 190–210, maximum width 65–78. Idiosomal dorsum

(Fig. 1). All tergites smooth. Length of dorsal setae:  $sc_2$  28,  $c_1$  40,  $c_2$  40,  $d$  41,  $e$  32,  $f$  42,  $h_1$  29,  $h_2$  19. Distances between dorsal setae:  $sc_2$ – $sc_2$  17,  $c_1$ – $c_1$  29,  $c_1$ – $c_2$  12,  $d$ – $d$  14,  $e$ – $f$  14,  $f$ – $f$  11,  $h_1$ – $h_1$  17,  $h_1$ – $h_2$  13. Idiosomal venter (Fig. 2). Apodemes 2 well developed, not joined with presternal apodeme. Only lateral parts of sejugal apodeme well sclerotized. All ventral plates smooth. Apodemes 3 absent. Apodemes 4 short, reaching level of setae *3b*. Apodemes 5 absent. Length of ventral setae: *1a* 10, *1b* 8, *2a* 10, *2b* 11, *3a* 10, *3b* 10, *3c* 10, *4b* 14, *4c* 11, *ps<sub>1</sub>* 17, *ps<sub>3</sub>* 18.

Legs (Figs. 3–6). Leg I (Fig. 3). Solenidia  $\omega_1$  7 >  $\omega_2$  5 >  $\phi_1$  4 >  $\phi_2$  3. Solenidion  $\omega_1$  finger-shaped. Solenidion  $\phi_1$  baculiform. Solenidia  $\omega_2$  and  $\phi_2$  uniformly thin. Leg II (Fig. 4). Solenidion  $\omega$  (5) finger-shaped. Solenidia on tibiae II–IV very small, difficult to discern. Tarsi II–IV with simple claws. All setae on legs thin and smooth.

**Male and larva unknown.**

**Material examined.** 3 females, UKRAINE: Crimea, vicinity of Yalta, Magabi Mountain, in forest litter, 15 October 2001, coll. A.A. Khaustov; 5 females, UKRAINE: Crimea, Nikita mountain pasture, in nest of undetermined small mammal, 20 November 2000, coll. A.A. Khaustov.

**Remarks.** This species was described from Germany (Krczal 1959). Mites of this species inhabit forest litter and nests of small mammals.

**Genus *Premicrodispus* Cross, 1965**

*Microdispus* (*Premicrodispus*) Cross 1965: 168, figs. 64–66

*Brennandania* Sasa 1961: 192

**Type species:** *Microdispus* (*Premicrodispus*) *chandleri* Cross, 1965, by original designation

**Description.** Female. Body elliptical. Gnathosomal capsule about 2 times longer than wide, usually with 1 dorsal setae  $ch_2$ . In some species small setae  $ch_1$  present. Palps with 2 pairs of setae, *dFe* and *dGe*. One pair of subcapitular setae (*su*) present ventrally. Pharynx well sclerotized. Second pharyngeal pump large and wide, transversely striated. Stigmas long, about 4 times longer than wide. Dorsal setae usually thin, smooth or indistinctly barbed. Cupuli *ia* and *ih* of characteristic rhombic shape. Anterior margin of posterior sternal plate without large tongue-like elongation, sometimes slightly convex. Posterior margin of posterior sternal plate tripartite. Setae *4a* usually absent, in some species present. Apodemes 4 short, reaching to level of setae *3b*. Apodemes 5 absent. Usually 2 pairs of pseudanal setae present, rarely 3 pairs. Legs

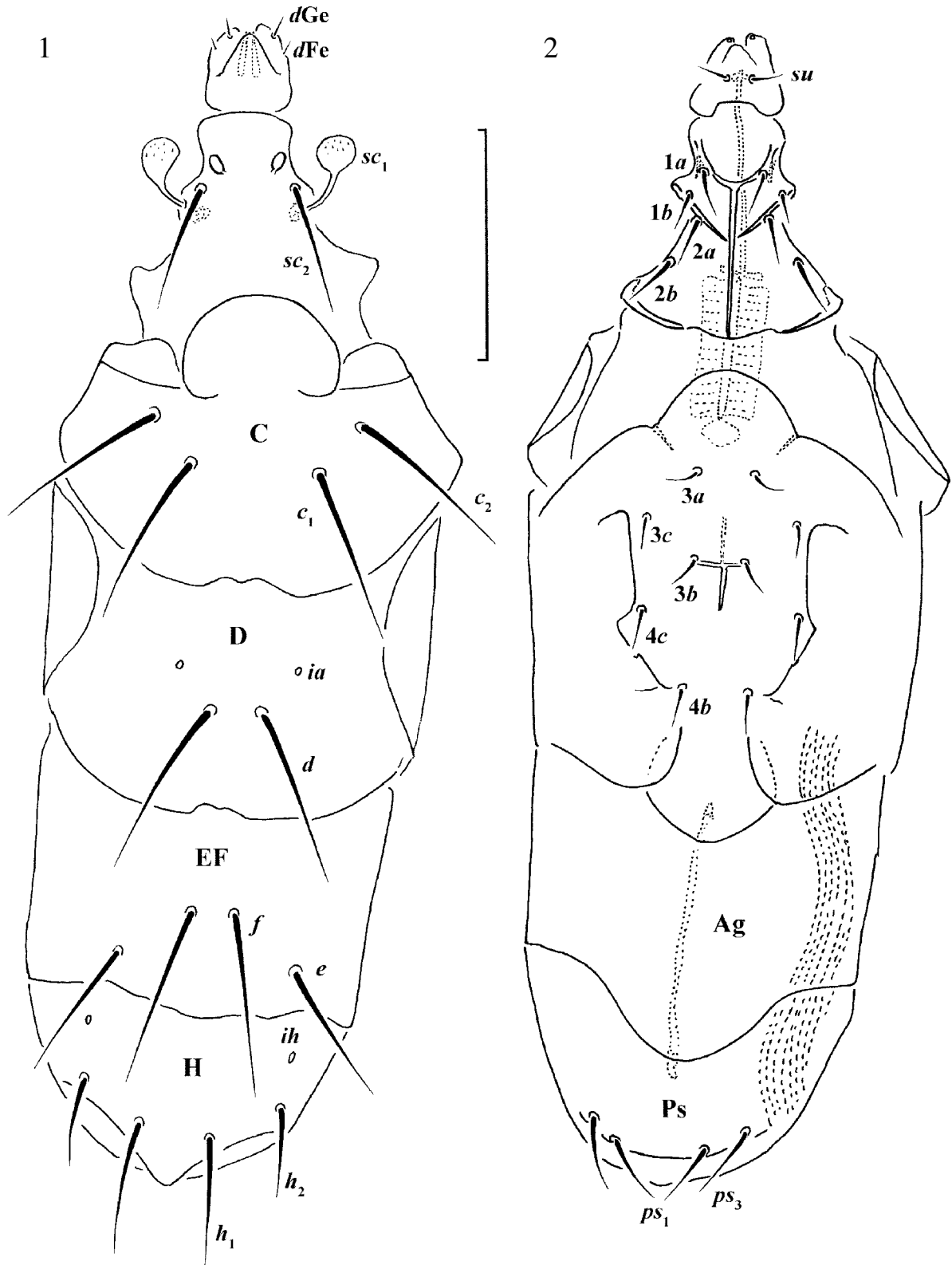
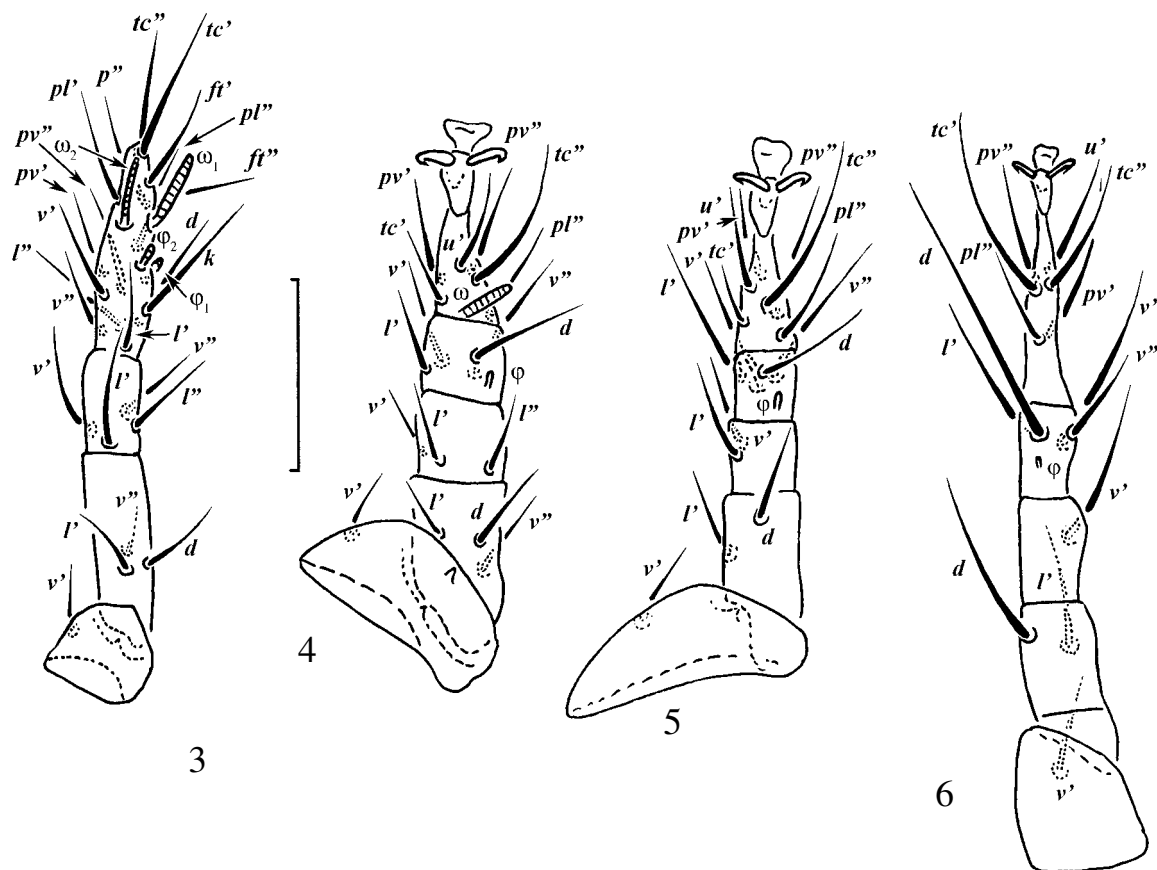


Fig. 1-2. *Dolichodispus angustus* (Krczal, 1959), female: 1 — dorsum, 2 — venter. Scale bar 50  $\mu$ m.

I and II subequal. Tibiotarsus I without claw. Tarsi II-IV with simple claws. Setation of legs I: Tr1-Fe3-Ge4-TiTa15(3-4) (seta *s* absent), legs II: Tr1-Fe3-Ge3-Ti4(1)-Ta6(1), legs III: Tr1-Fe2-Ge2-Ti4(1)-Ta6, legs IV: Tr1-Fe2-Ge1-Ti4(1)-Ta6.

**Species included:** *P. chandleri* (Cross, 1965), *P. lambi* (Krczal, 1964), *P. longisetosus* (Mahunka, 1970), *P. subvarsoviensis* (Mahunka et Zyromska-Rudska, 1975), *P. lineatus* (Mahunka, 1986), *P. simplex* (Mahunka, 1979), *P. radicitrichus* (Ma-



Figs. 3–6. *Dolichodispus angustus* (Krczal, 1959), female: 3–6 — legs I–IV, respectively. Scale bar 20  $\mu$ m.

hunka, 1972), *P. stenops* (Mahunka, 1969), *P. jacoti* (Mahunka et Philips, 1978), *P. adjacens* (Mahunka, 1969), *P. dzumaevi* (Sevastianot et Chydyrov, 1991), *P. akermanae* (Sevastianov et Zahida, 1988), *P. parasilvestris* (Rack, 1974), *P. parasilvestris floridae* (Rack, 1975).

**Remarks.** Sasa (1961) described genus *Brennandania* Sasa, 1961 with type species *Pygmephorus silvestris* Jacot, 1939. Later on, Cross (1965) described a new subgenus, *Microdispus* (*Premicrodispus*), with type species *M. (P.) chandleri* Cross, 1965. Mahunka (1970) considered *Microdispus* (*Premicrodispus*) as a junior synonym of *Brennandania*. Smiley (1978) designated and described the lectotype of *Pygmephorus silvestris* which, actually, belongs to the genus *Bakerdania* Sasa, 1961 of the family Pygmephoridae. Based on this fact, Kaliszewski and Rack (1986) transferred species from *Brennandania* to the subgenus *Microdispus* (*Premicrodispus*). The subgenus was elevated to the generic rank by Mahunka and Mahunka-Papp (1990).

Among species of the genus *Premicrodispus*, males and larvae were described only for *Premicrodispus lambi* (Krczal, 1964) (Kaliszewski and Rack 1986). In this paper, the larva described also

for *Premicrodispus kaliszewskii* sp. n. This larva substantially differs from larva of *P. lambi* by the presence of setae *s* on tarsus I and solenidion  $\phi_1$  on tibia I.

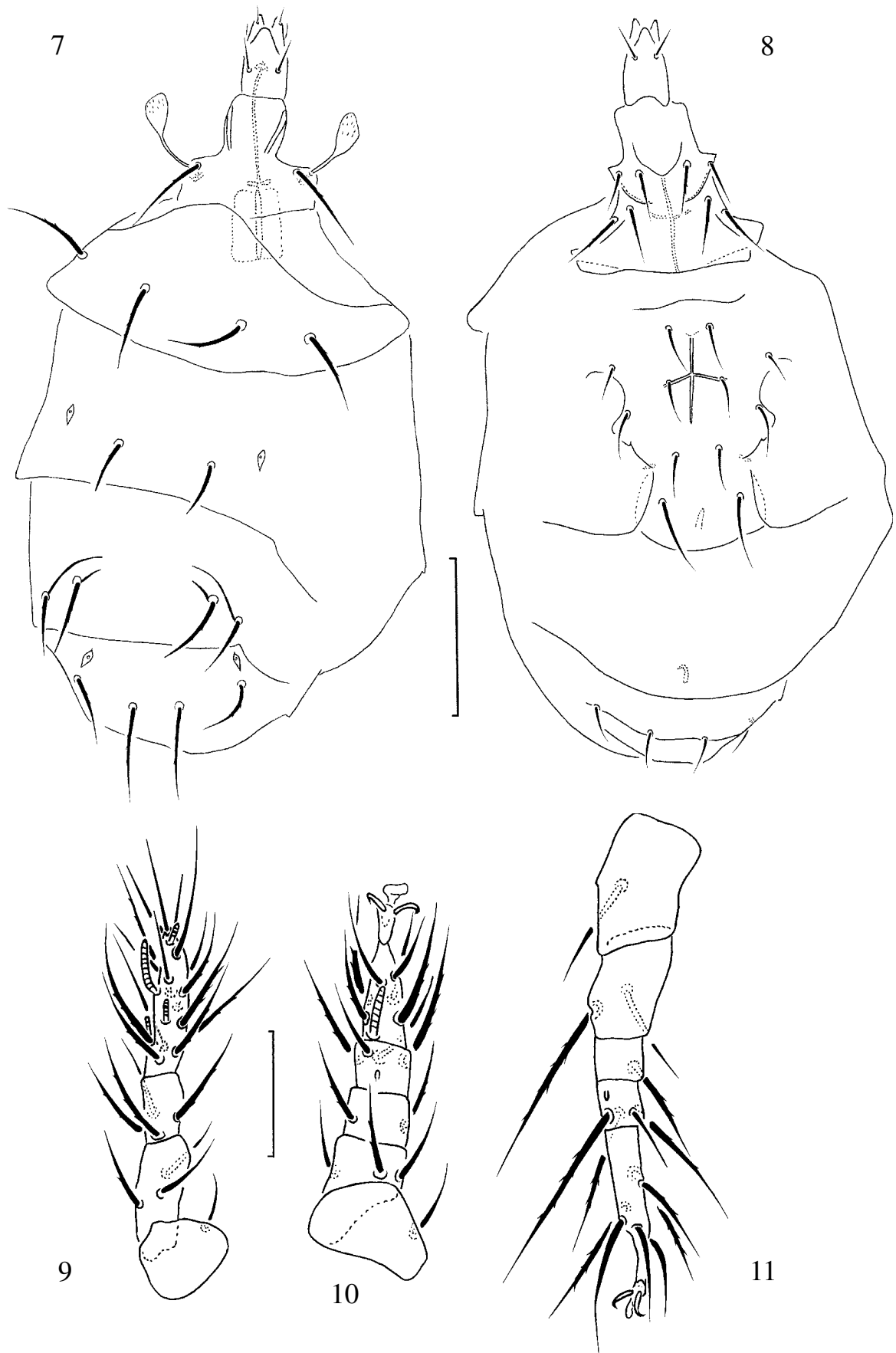
Mites of this genus inhabit mainly soils and litter and are distributed worldwide.

***Premicrodispus lineatus* (Mahunka, 1986)  
comb. nov.**

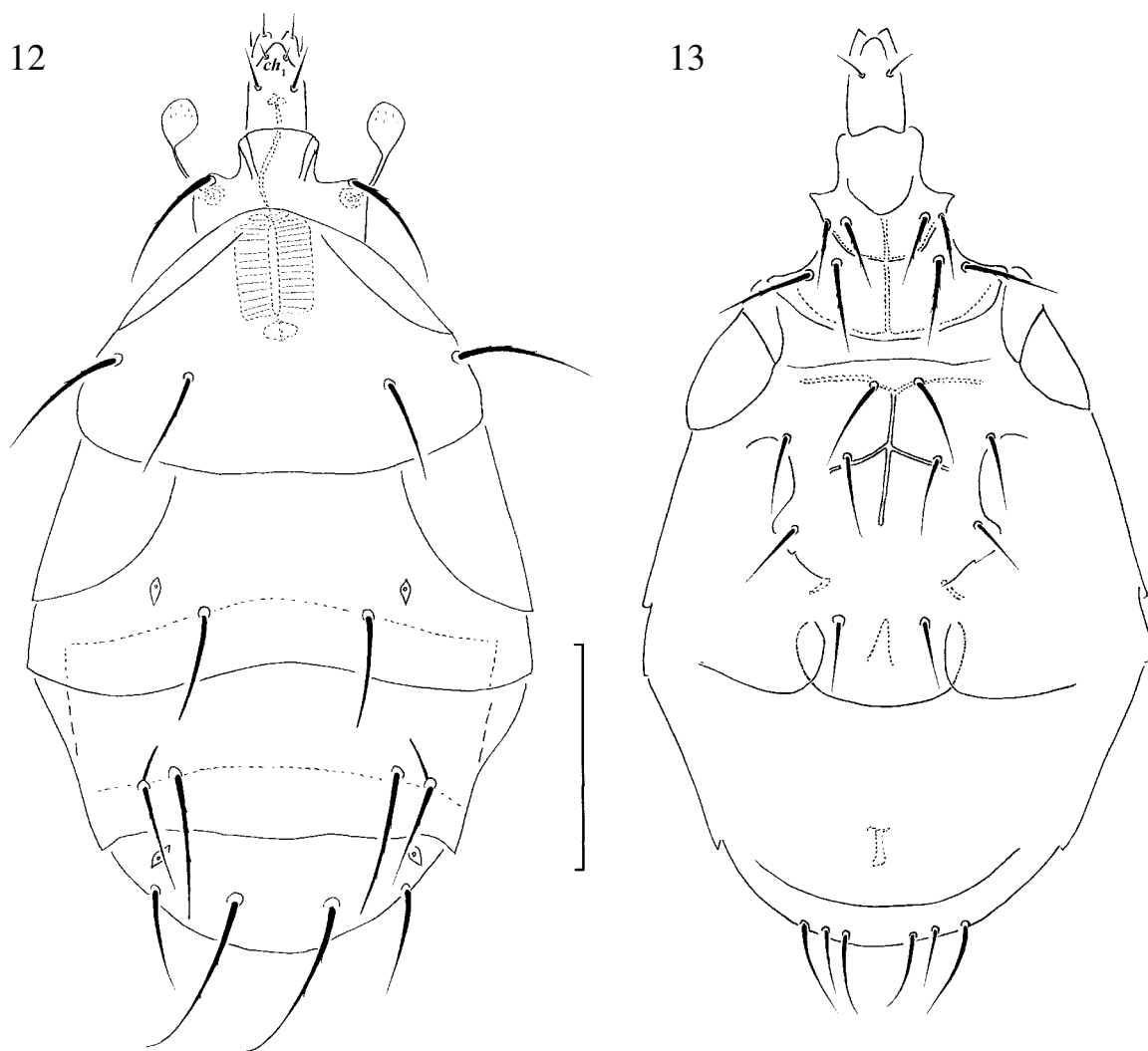
*Brennandania lineata* Mahunka 1986: 443, figs. 23–26.

Figs. 7–11.

**Description. Female.** Idiosomal length 194, maximum width 113. Gnathosoma dorsally with 1 pair of setae. Idiosomal dorsum (Fig. 7). All tergites smooth. All dorsal setae rather thick and indistinctly barbed. Setae *d* and *f* blunt-ended. Bases of setae *e* and *f* associated with well developed curved apodemes. Apodemes directed medially. Length of dorsal setae:  $sc_2$  29,  $c_1$  31,  $c_2$  33, *d* 18, *e* 23, *f* 21,  $h_1$  27,  $h_2$  25. Distances between dorsal setae:  $sc_2$ – $sc_2$  33,  $c_1$ – $c_1$  29,  $c_1$ – $c_2$  22, *d*–*d* 31, *e*–*f* 11, *f*–*f* 44,  $h_1$ – $h_1$  13,  $h_1$ – $h_2$  22. Idiosomal venter (Fig. 8). All ventral plates smooth. Setae on anterior sternal plate indistinctly barbed. Setae of posterior sternal and pseu-



Figs. 7–11. *Premicrodispus lineatus* (Mahunka, 1986), female: 7 — dorsum, 8 — venter (scale bar 50  $\mu\text{m}$ ), 9–11 — legs I, II, IV, respectively (scale bar 20  $\mu\text{m}$ ).



Figs. 12–13. *Premicrodispus akermanae* (Sevastianov et Zahida Al Douri, 1988), female: 12 — dorsum, 13 — venter. Scale bar 50  $\mu$ m.

danal plates smooth. Apodemes 3 absent. Setae 4a present. Setae  $ps_2$  absent. Length of ventral setae: 1a 18, 1b 12, 2a 19, 2b 19, 3a 16, 3b 16, 3c 12, 4a 15, 4b 23, 4c 16,  $ps_1$  15,  $ps_3$  13. Legs (Figs. 9–11). Solenidia  $\omega_1$  11 >  $\omega_2$  4 <  $\varphi_1$  8 >  $\varphi_2$  4. Solenidion  $\omega_1$  finger-shaped. Solenidion  $\varphi_1$  baculiform. Solenidia  $\omega_2$  and  $\varphi_2$  uniformly thin. Leg II as on Fig. 10. Solenidion  $\omega$  (9) finger-shaped.

**Male and larva** unknown.

**Material examined.** 2 females, UKRAINE: Kharkov Distr., Lozovaya Region, Novoivanovka, in soil, 3 January 2002, coll. A.A. Khaustov.

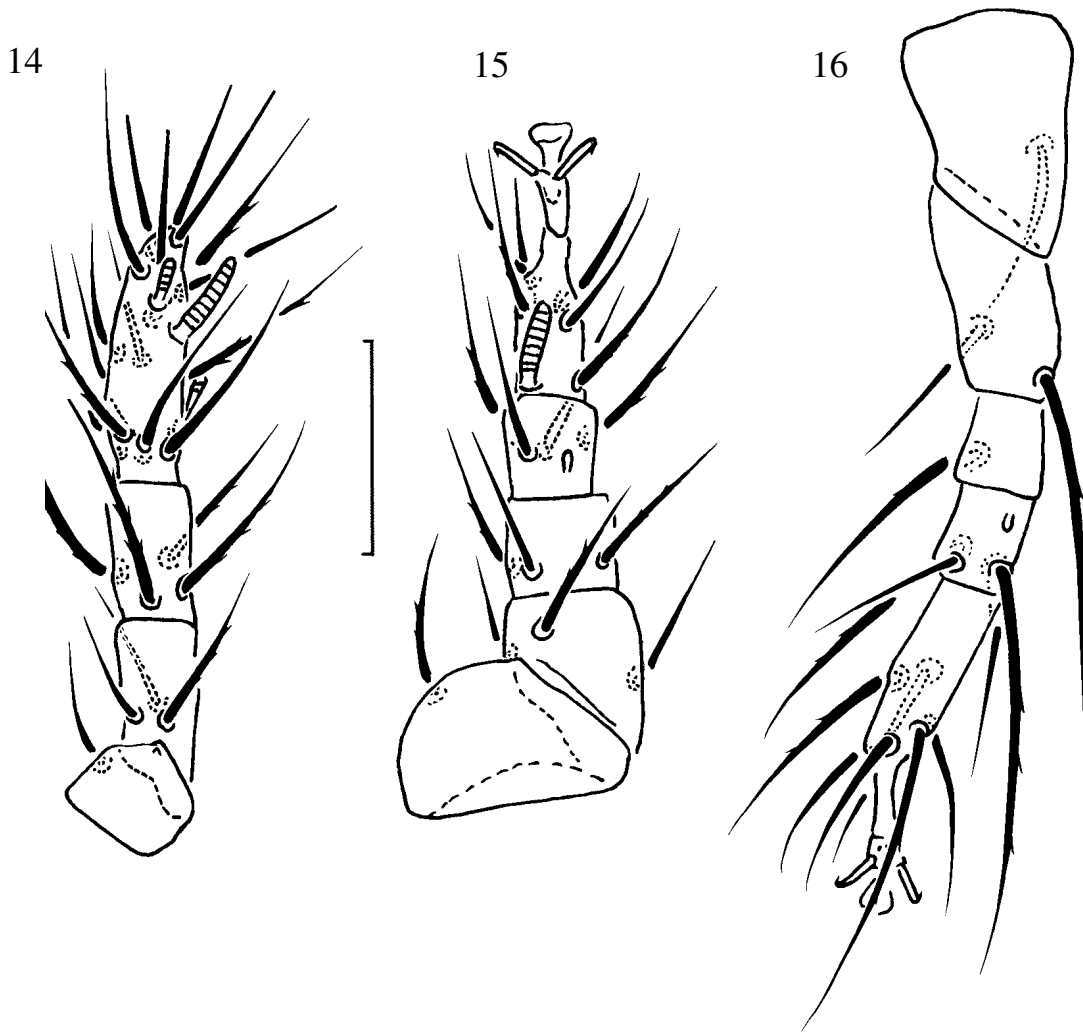
**Distribution.** Hungary (Mahunka 1988); Ukraine (first record).

***Premicrodispus akermanae* (Sevastianov et Zahida, 1988) comb. nov.**

*Brennandania akermanae* Sevastianov and Zahida 1988: 1081, figs. 1–3.

Figs. 12–16.

**Description. Female.** Idiosomal length 200–205, maximum width 100–110. Gnathosoma dorsally with 2 pair of setae, setae  $ch_1$  indistinct. Idiosomal dorsum (Fig. 12). All tergites smooth. Dorsal setae indistinctly barbed, except for smooth setae  $c_1$ ,  $d$ , and  $h_2$ . Bases of setae  $e$  associated with weakly developed apodemes directed anteromedially. Length of dorsal setae:  $sc_2$  30–36,  $c_1$  25–29,  $c_2$  33–36,  $d$  28–29,  $e$  25–27,  $f$  36–43,  $h_1$  45–47,  $h_2$  27–28. Distances between dorsal setae:  $sc_2$ – $sc_2$  33–35,  $c_1$ – $c_1$  44–48,  $c_1$ – $c_2$  15–19,  $d$ – $d$  38–39,  $e$ – $f$  9–10,  $f$ – $f$  50–52,  $h_1$ – $h_1$  23–24,  $h_1$ – $h_2$  17–18. Idiosomal venter (Fig. 13). All ventral plates smooth. Setae on anterior sternal plate indistinctly barbed. Setae of posterior sternal and pseudanal plates smooth. Apodemes 3 weakly sclerotized. Setae 4a absent. Setae  $ps_2$  present. Length of ventral setae: 1a 17–



Figs. 14–16. *Premicrodispus akermanae* (Sevastianov et Zahida Al Douri, 1988), 14–16 — legs I, II, IV, respectively. Scale bar 20  $\mu$ m.

18, 1*b* 16–18, 2*a* 20–23, 2*b* 24–27, 3*a* 17–20, 3*b* 18–21, 3*c* 12–13, 4*b* 22–24, 4*c* 17–19, *ps*<sub>1</sub> 18–20, *ps*<sub>2</sub> 11–12, *ps*<sub>3</sub> 22–24. Legs (Figs. 14–16). Solenidion  $\phi_2$  absent. Solenidia  $\omega_1$  8 >  $\omega_2$  4 <  $\phi_1$  7. Solenidion  $\omega_1$  finger-shaped. Solenidion  $\phi_1$  baculi-form. Leg II as on Fig. 15. Solenidion  $\omega$  (8–9) finger-shaped.

**Male and larva** unknown.

**Material examined.** 13 females, UKRAINE: Crimea, Ay-Petri mountain pasture, near Shaytan-Merdven bridgeway, in soil, 26 May 2001, coll. A.A. Khaustov.

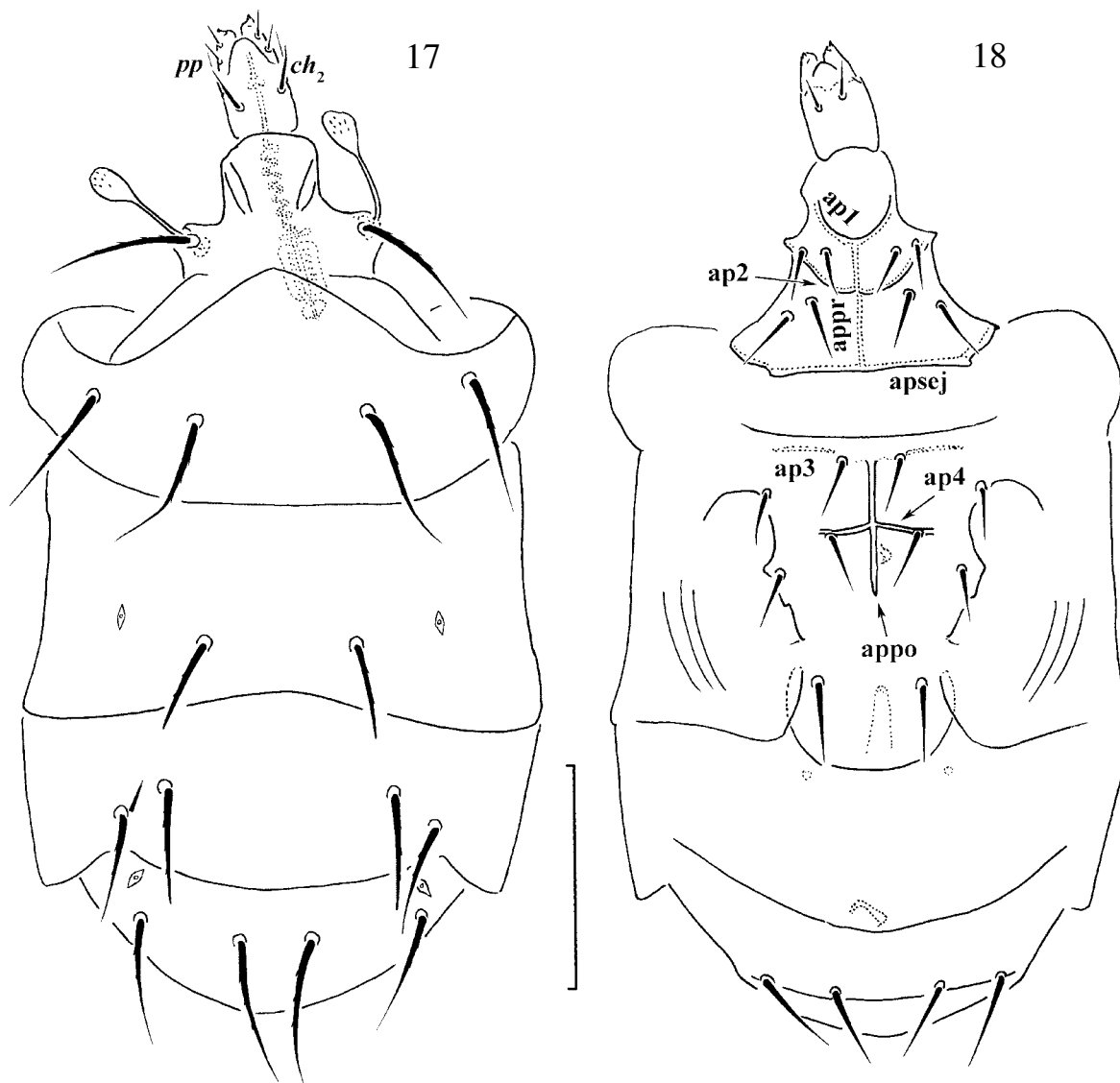
**Distribution.** Ukraine: Odessa District, (Sevastianov and Zahida Al Douri 1988), for Crimea (first record).

***Premicrodispus kaliszewskii*  
Khaustov sp. nov.**

Figs. 17–27.

**Description. Female.** Idiosomal length 211 (203–213), maximum width 112 (111–115).

Gnathosoma dorsally with 1 pair of setae. Long and thin postpalpal (*pp*) setae present. Idiosomal dorsum (Fig. 17). All tergites smooth. All dorsal setae indistinctly barbed. Bases of setae *e* usually associated with well developed apodemes directed anteromedially. Sometimes one or both apodemes absent. Setae *d* and *f* distinctly blunt-ended. Length of dorsal setae: *sc*<sub>2</sub> 32 (32–33), *c*<sub>1</sub> 38 (36–38), *c*<sub>2</sub> 36 (32–41), *d* 23 (22–23), *e* 29 (27–30), *f* 29 (28–29), *h*<sub>1</sub> 36 (36–40), *h*<sub>2</sub> 33 (33–34). Distances between dorsal setae: *sc*<sub>2</sub>–*sc*<sub>2</sub> 39 (38–39), *c*<sub>1</sub>–*c*<sub>1</sub> 39 (38–41), *c*<sub>1</sub>–*c*<sub>2</sub> 23 (23–24), *d*–*d* 39 (35–39), *e*–*f* 11 (11–12), *f*–*f* 51 (53–56), *h*<sub>1</sub>–*h*<sub>1</sub> 16 (16–18), *h*<sub>1</sub>–*h*<sub>2</sub> 24 (24–28). Idiosomal venter (Fig. 18). All ventral plates smooth. All ventral setae smooth. Apodemes 3 weakly sclerotized. Apodemes 4 short, reaching slightly beyond setae 3*b*. Apodemes 5 absent. Setae 4*a* absent. Setae *ps*<sub>2</sub> absent. Anterior margin of posterior sternal plate straight. Length of ventral setae: 1*a* 14 (13–16), 1*b* 17 (16–17), 2*a* 17 (15–21), 2*b* 22 (19–22), 3*a* 17 (15–17), 3*b* 17 (15–17), 3*c* 15



Figs. 17–18. *Premicrodispus kaliszewskii* sp. n., female: 17 — dorsum, 18 — venter. Scale bar 50  $\mu$ m.

(13–15), 4b 19 (17–24), 4c 19 (17–19),  $ps_1$  22 (18–21),  $ps_3$  26 (21–26). Legs (Figs. 19–22). Solenidia  $\omega_1$  13 (12–13) >  $\omega_2$  5 (5) <  $\phi_1$  9 (8–9) >  $\phi_2$  5 (5). Solenidion  $\omega_1$  finger-shaped. Solenidion  $\phi_1$  baculiform. Solenidia  $\omega_2$  and  $\phi_2$  uniformly thin. Leg II as on Fig. 20. Solenidion  $\omega$  12 (12–13) finger-shaped.

**Male unknown.**

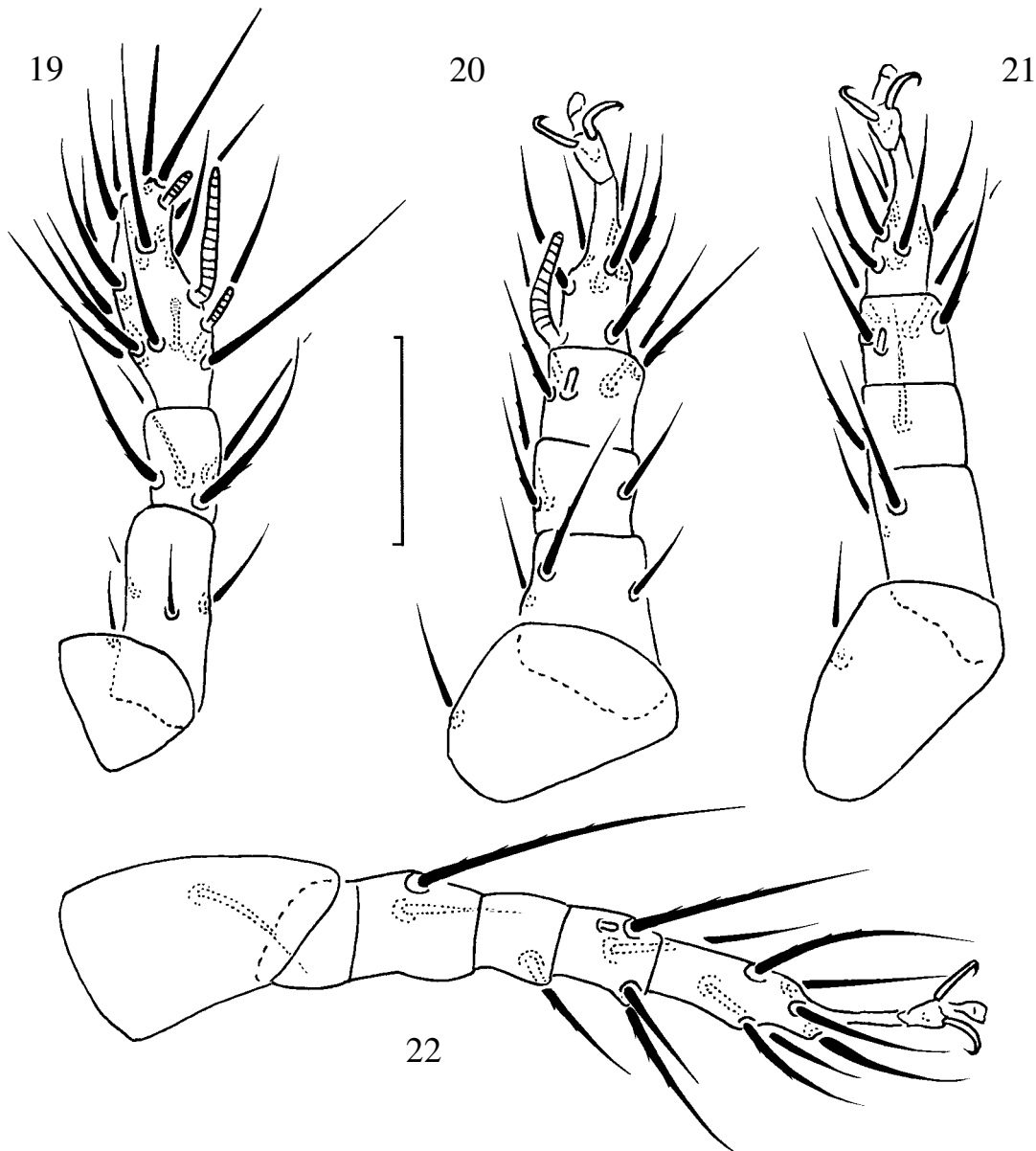
**Larva.** Gnathosoma dorsally with 1 pair of setae. Palps with distinct rod-like solenidion and accessory setigenous structure ventrally. Idiosomal dorsum (Fig. 23). All dorsal setae barbed, except smooth, short  $v_2$ . Setae  $sc_1$ ,  $c_1$ , and  $d$  blunt-ended. All dorsal plates smooth. Length of dorsal setae:  $v_2$  10,  $sc_1$  22,  $sc_2$  45,  $c_1$  22,  $c_2$  42,  $d$  31,  $e$  15,  $f$  57,  $h_1$  57,  $h_2$  40. Distances between dorsal setae:  $v_2$ – $v_2$  22,  $sc_1$ – $sc_1$  24,  $sc_2$ – $sc_2$  39,  $c_1$ – $c_1$  37,  $d$ – $d$  48,  $e$ – $f$  10,  $f$ – $f$  46,  $h_1$ – $h_1$  29.

Idiosomal venter (Fig. 24). All ventral plates smooth. All ventral setae smooth. Length of ventral setae: 1a 9, 1b 10, 2a 12, 2b 11, 3a 11, 3b 12,  $ps_1$  6,  $ps_3$  12. Legs (Figs. 25–27). Solenidia  $\omega_1$  7 finger-shaped,  $\phi_1$  6 baculiform. Solenidion on tarsus II 5 finger-shaped. Setation of legs I: Tr0–Fe3–Ge4–Ti6(1)–Ta11(1) (seta  $s$  present), legs II: Tr0–Fe3–Ge3–Ti4(1)–Ta7(1), legs III: Tr0–Fe2–Ge2–Ti4(1)–Ta7.

**Type material.** Female holotype, slide No. AK220200, UKRAINE: Crimea, Yalta, in litter, 22 February 2000, coll. A.A. Khaustov; 10 female and 1 larva paratypes, same locality, 14 December 2000, coll. A.A. Khaustov.

**Type depositories.** The holotype is deposited in SIZ, paratypes in NBG.





Figs. 19–22. *Premicrodispus kaliszewskii* sp. n., female: 19–22 — legs I–IV, respectively. Scale bar 20  $\mu$ m.

**Etymology.** The new species named after the Polish acarologist, Marek Kaliszewski, for his contribution in study of heterostigmatic mites.

**Differential diagnosis.** The new species is similar to *P. krczali* sp. n. but differs by the straight anterior margin of the posterior sternal plate (convex in *P. krczali*) and by the presence of well developed apodemes associated with bases of setae *e* (absent in *P. krczali*).

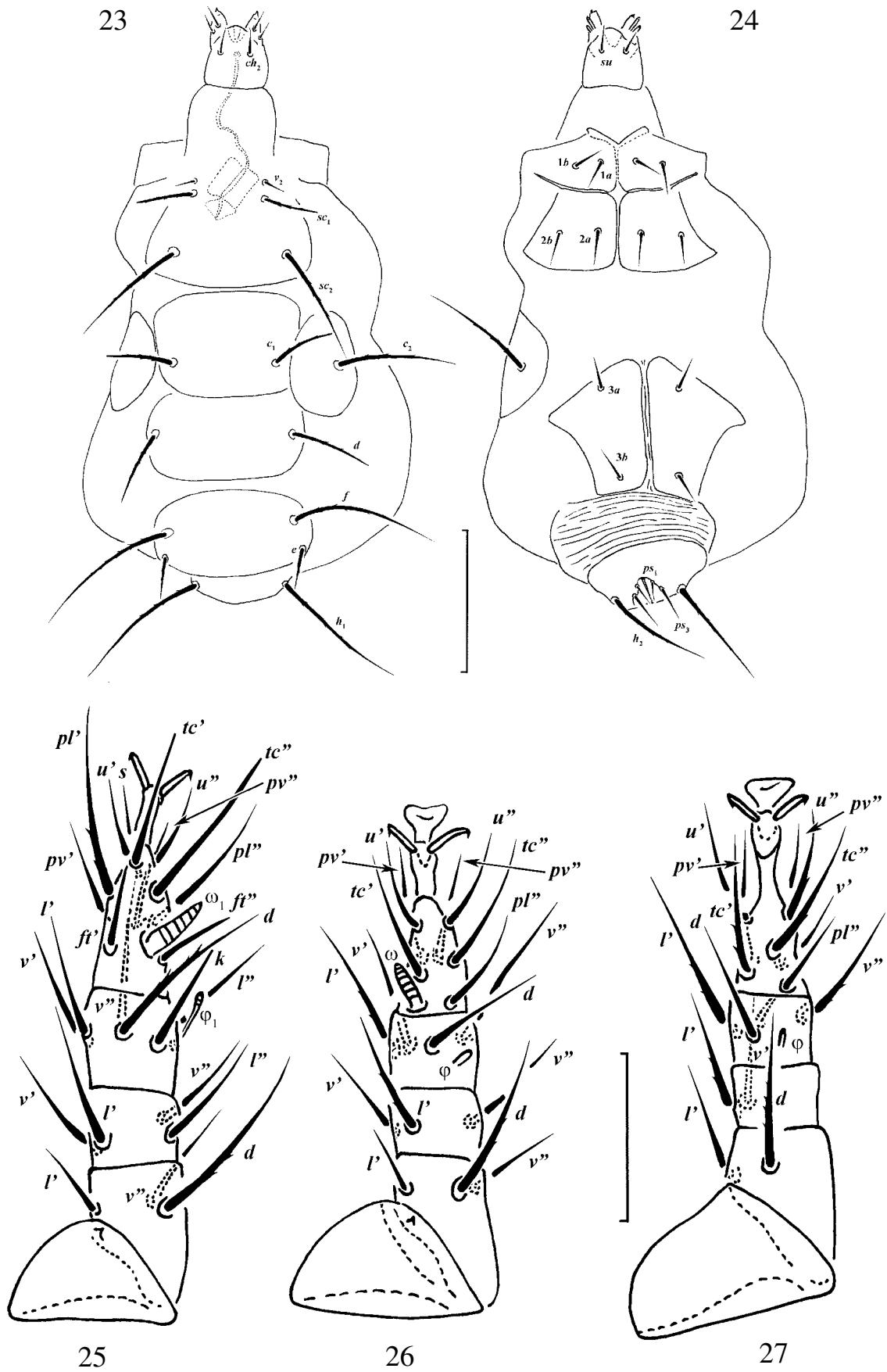
***Premicrodispus montanus* Khaustov sp. nov.**

Figs. 28–32.

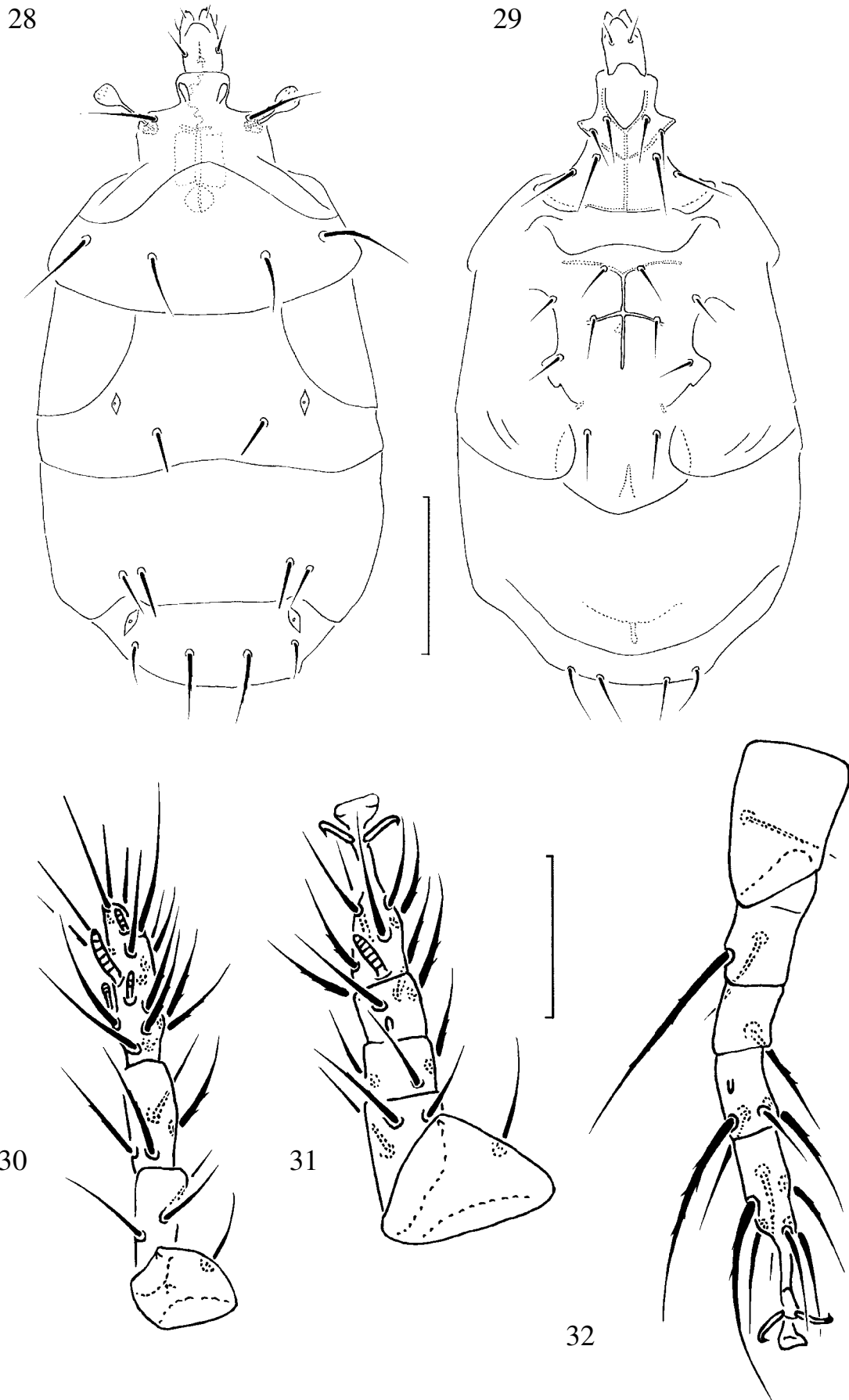
**Description. Female.** Idiosomal length 189 (185–200), maximum width 94 (89–103).

Gnathosoma dorsally with 1 pair of setae. Idiosomal dorsum (Fig. 28). All tergites smooth. At

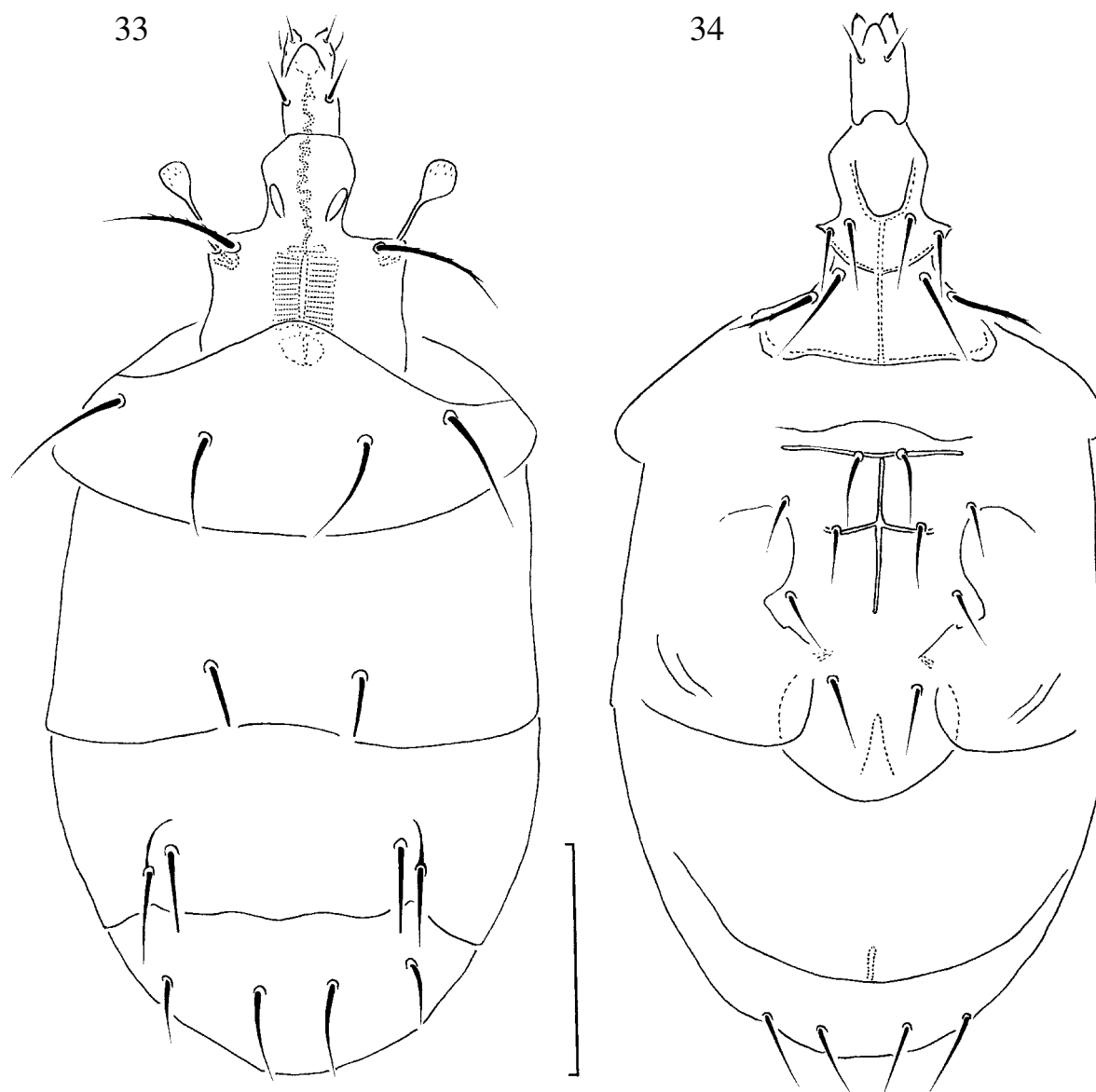
least setae  $sc_2$ ,  $c_2$ , and  $h_1$  indistinctly barbed. Bases of setae *e* situated slightly posterior to setae *f*, usually without apodemes, in some specimens weakly developed short apodemes present. Setae *d* and *f* blunt-ended. Length of dorsal setae:  $sc_2$  28 (27–28),  $c_1$  20 (20–22),  $c_2$  30 (29–32), *d* 15 (14–15), *e* 13 (13–14), *f* 18 (16–18),  $h_1$  24 (23–24),  $h_2$  13 (12–14). Distances between dorsal setae:  $sc_2$ – $sc_2$  28 (28–29),  $c_1$ – $c_1$  33 (29–39),  $c_1$ – $c_2$  19 (19–21), *d*–*d* 26 (26–33), *e*–*f* 6 (5–6), *f*–*f* 47 (45–48),  $h_1$ – $h_1$  17 (17–19),  $h_1$ – $h_2$  16 (16–18). Idiosomal venter (Fig. 29). All ventral plates smooth. All ventral setae smooth. Apodemes 3 weakly sclerotized. Apodemes 4 short, reaching slightly beyond setae 3*b*. Apodemes 5 absent. Setae 4*a* absent. Setae  $ps_2$  absent. Anterior margin of posterior sternal plate weakly convex.



Figs. 23–27. *Premicrodispus kaliszewskii* sp. n., larva: 23 — dorsum, 24 — venter (scale bar 50  $\mu$ m), 25–27 — legs I–III, respectively (scale bar 20  $\mu$ m).



Figs. 28–32. *Premicrodispus montanus* sp. n., female: 28 — dorsum, 29 — venter (scale bar 50 μm), 30–32 — legs I, II, IV, respectively (scale bar 20 μm).



Figs. 33–34. *Premicrodispus brevisetus* sp. n., female: 33 — dorsum, 34 — venter. Scale bar 50  $\mu$ m.

Length of ventral setae:  $1a$  13 (13–14),  $1b$  11 (10–11),  $2a$  17 (16–18),  $2b$  21 (19–24),  $3a$  14 (13–15),  $3b$  12 (12–14),  $3c$  10 (10–11),  $4b$  15 (15–16),  $4c$  14 (14–15),  $ps_1$  18 (17–18),  $ps_3$  18 (17–19). Legs (Figs. 30–32). Solenidia  $\omega_1$  8 >  $\omega_2$  4 <  $\phi_1$  6 >  $\phi_2$  4. Solenidion  $\omega_1$  finger-shaped. Solenidion  $\phi_1$  baculiform. Solenidia  $\omega_2$  and  $\phi_2$  uniformly thin. Leg II as on Fig. 31. Solenidion  $\omega$  7 (7–9) finger-shaped.

**Male and larva unknown.**

**Type material.** Female holotype, slide No. AK260501 and 32 female paratypes, UKRAINE: Crimea, Ay-Petri mountain pasture, near Shaytan-Merdven bridge wall, in soil, 26 May 2001, coll. A.A. Khaustov.

**Type depositories.** The holotype is deposited in SIZ, paratypes in NBG.

**Etymology.** The name of the new species refers to its habitat.

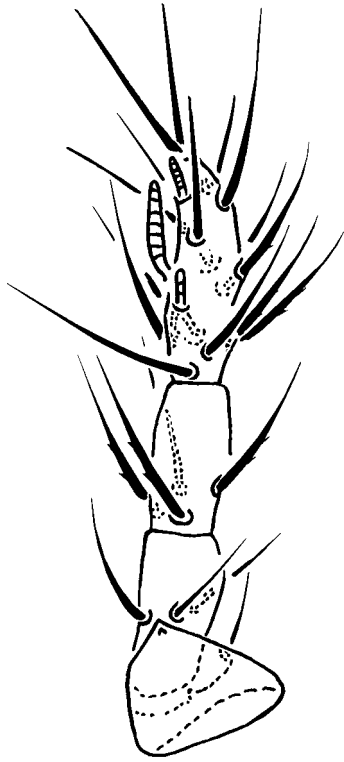
**Differential diagnosis.** By the complete absence of the apodemes associated with the bases of setae  $e$ , the new species is similar to *P. krczali* sp. n. but differs by the distinctly shorter dorsal body setae, setae  $e$  shorter than  $f$  ( $e$  subequal or slightly longer than  $f$  in *P. krczali*), and by the subequal distance between setae  $h_1-h_1$  and  $h_1-h_2$  ( $h_1-h_2$  longer than  $h_1-h_1$  in *P. krczali*).

***Premicrodispus brevisetus* Khaustov sp. nov.**

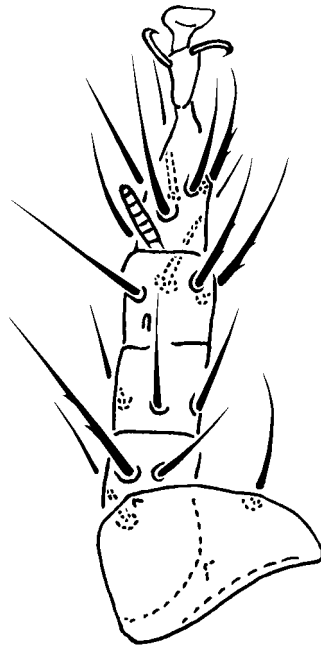
Figs. 33–37.

**Description. Female.** Idiosomal length 189 (170–200), maximum width 100 (89–104). Gnathosoma dorsally with 1 pair of setae. Idiosomal

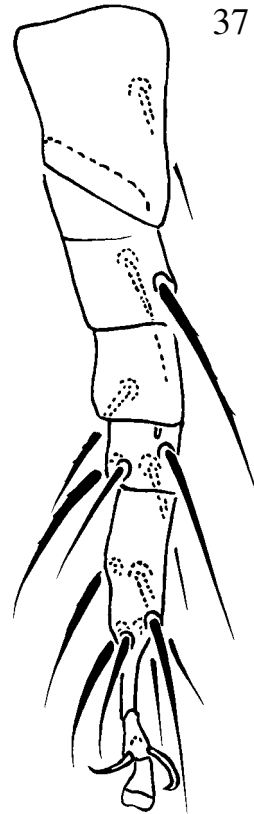
35



36



37



Figs. 35–37. *Premicrodispus brevisetus* sp. n., female: 35–37 — legs I, II, IV, respectively. Scale bar 20  $\mu$ m.

dorsum (Fig. 33). All tergites smooth. At least setae  $sc_2$  indistinctly barbed. Bases of setae  $e$  usually associated with thin arched apodemes, in some specimens these apodemes weakly developed. Bases of setae  $e$  situated distinctly posterior to setae  $f$ . Setae  $d$  and  $f$  blunt-ended. Length of dorsal setae:  $sc_2$  31 (30–33),  $c_1$  23 (23–25),  $c_2$  29 (29–30),  $d$  14 (14–15),  $e$  22 (18–22),  $f$  17 (16–19),  $h_1$  20 (20–22),  $h_2$  14 (13–14). Distances between dorsal setae:  $sc_2$ – $sc_2$  28 (27–30),  $c_1$ – $c_1$  34 (31–34),  $c_1$ – $c_2$  19 (17–20),  $d$ – $d$  36 (33–36),  $e$ – $f$  6 (6–7),  $f$ – $f$  50 (48–51),  $h_1$ – $h_1$  12 (12–15),  $h_1$ – $h_2$  18 (18–19). Idiosomal venter (Fig. 34). All ventral plates smooth. All ventral setae smooth, except indistinctly barbed  $2b$ . Apodemes 3 well sclerotized. Apodemes 4 short, reaching slightly beyond setae  $3b$ . Apodemes 5 absent. Setae  $4a$  and  $ps_2$  absent. Anterior margin of posterior sternal plate weakly convex. Length of ventral setae:  $1a$  13 (13–14),  $1b$  14 (13–15),  $2a$  19 (19–22),  $2b$  22 (22–23),  $3a$  16 (16–17),  $3b$  14 (14–15),  $3c$  10 (10–12),  $4b$  16 (16–17),  $4c$  14 (14–15),  $ps_1$  15 (15–17),  $ps_3$  19 (18–10). Legs (Figs. 35–37). Solenidia  $\omega_1$  9 >  $\omega_2$  4 <  $\phi_1$  6 >  $\phi_2$  4. Solenidion  $\omega_1$  finger-shaped. Solenidion  $\phi_1$  baculiform. Solenidia  $\omega_2$  and  $\phi_2$  uniformly thin. Leg II as on Fig. 36. Solenidion  $\omega$  (6) finger-shaped.

**Male and larva unknown.**

**Type material.** Female holotype, slide No. AK220701 and 20 female paratypes, UKRAINE: Crimea, vicinity of Yalta, in rotten log of *Fagus orientalis*, 22 July 2001, coll. A.A. Khaustov.

**Type depositories.** The holotype is deposited in SIZ, paratypes in NBG.

**Etymology.** The name of the new species refers to the short dorsal setae.

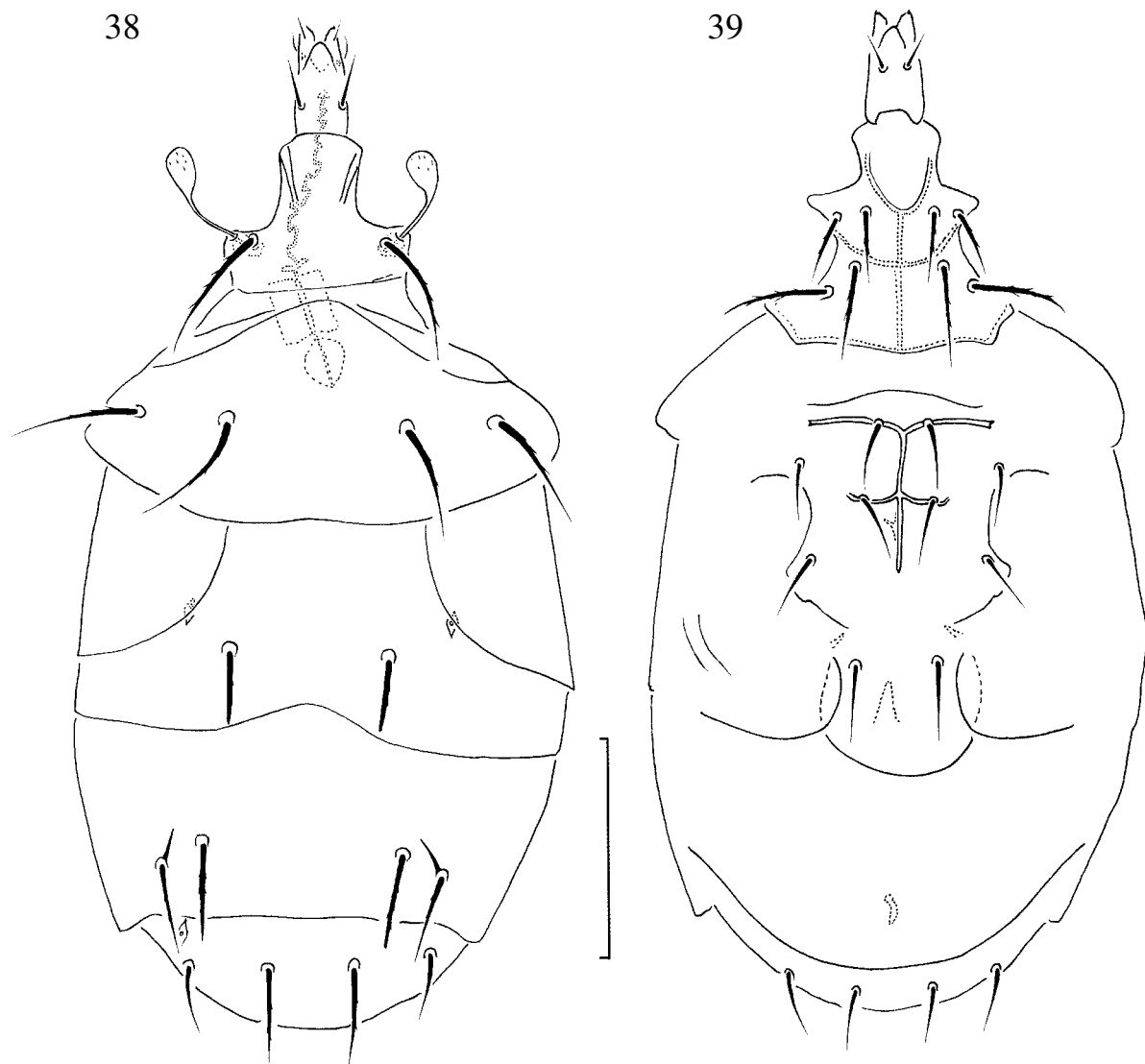
**Differential diagnosis.** The new species very similar to *P. rackae* sp. n. but differs by setae  $sc_2$  distinctly longer than  $c_1$  (setae  $sc_2$  and  $c_1$  are of similar length in *P. rackae*), setae  $c_2$  distinctly anterior to  $c_1$  (setae  $c_2$  almost on the same transverse line with  $c_1$  in *P. rackae*)

***Premicrodispus rackae* Khaustov sp. nov.**

Figs. 38–42.

**Description. Female.** Idiosomal length 209 (192–216), maximum width 108 (104–110).

Gnathosoma dorsally with 1 pair of setae. Idiosomal dorsum (Fig. 38). All tergites smooth. All dorsal setae indistinctly barbed. Bases of setae  $e$  associated with weakly developed apodemes. Bases of setae  $e$  situated distinctly posterior to setae  $f$ . Setae  $d$  and  $f$  distinctly blunt-ended. Length of dorsal setae:  $sc_2$  34 (32–38),  $c_1$  34 (31–34),  $c_2$  34 (31–34),  $d$  19 (17–20),  $e$  22 (20–23),  $f$  21 (21–23),



Figs. 38–39. *Premicrodispus rackae* sp. n., female: 38 — dorsum, 39 — venter. Scale bar 50  $\mu$ m.

$h_1$  23 (22–27),  $h_2$  17 (17–20). Distances between dorsal setae:  $sc_2$ – $sc_2$  30 (30–32),  $c_1$ – $c_1$  39 (39–40),  $c_1$ – $c_2$  20 (20–21),  $d$ – $d$  34 (34–38),  $e$ – $f$  11 (10–11),  $f$ – $f$  47 (43–47),  $h_1$ – $h_1$  17 (16–18),  $h_1$ – $h_2$  21 (19–21). Idiosomal venter (Fig. 39). All ventral plates smooth. Setae of anterior sternal plate indistinctly barbed, other ventral setae smooth. Apodemes 3 well sclerotized. Apodemes 4 short, reaching slightly beyond setae  $3b$ . Setae  $4a$  absent. Setae  $ps_2$  absent. Anterior margin of posterior sternal plate weakly convex. Length of ventral setae:  $1a$  15 (13–16),  $1b$  14 (14–15),  $2a$  20 (19–21),  $2b$  24 (24–29),  $3a$  15 (15–18),  $3b$  15 (15–17),  $3c$  13 (13–14),  $4b$  17 (17–18),  $4c$  14 (14–15),  $ps_1$  16 (16–19),  $ps_3$  18 (18–22). Legs (Figs. 40–42). Solenidia  $\omega_1$  10 >  $\omega_2$  5 (4–5) <  $\phi_1$  6 (6–7) >  $\phi_2$  4. Solenidion  $\omega_1$  finger-shaped. Solenidion  $\phi_1$  baculiform. Solenidia  $\omega_2$  and  $\phi_2$  uniformly thin. Leg II as on Fig. 41. Solenidion  $\omega$  (7) finger-shaped.

**Male and larva unknown.**

**Type material.** Female holotype, slide No. AK201100 and 13 female paratypes, UKRAINE: Crimea, Nikita mountain pasture, in nest of undetermined small mammal, 20 November 2000, coll. A.A. Khaustov.

**Type depositories.** The holotype is deposited in SIZ, paratypes in NBG.

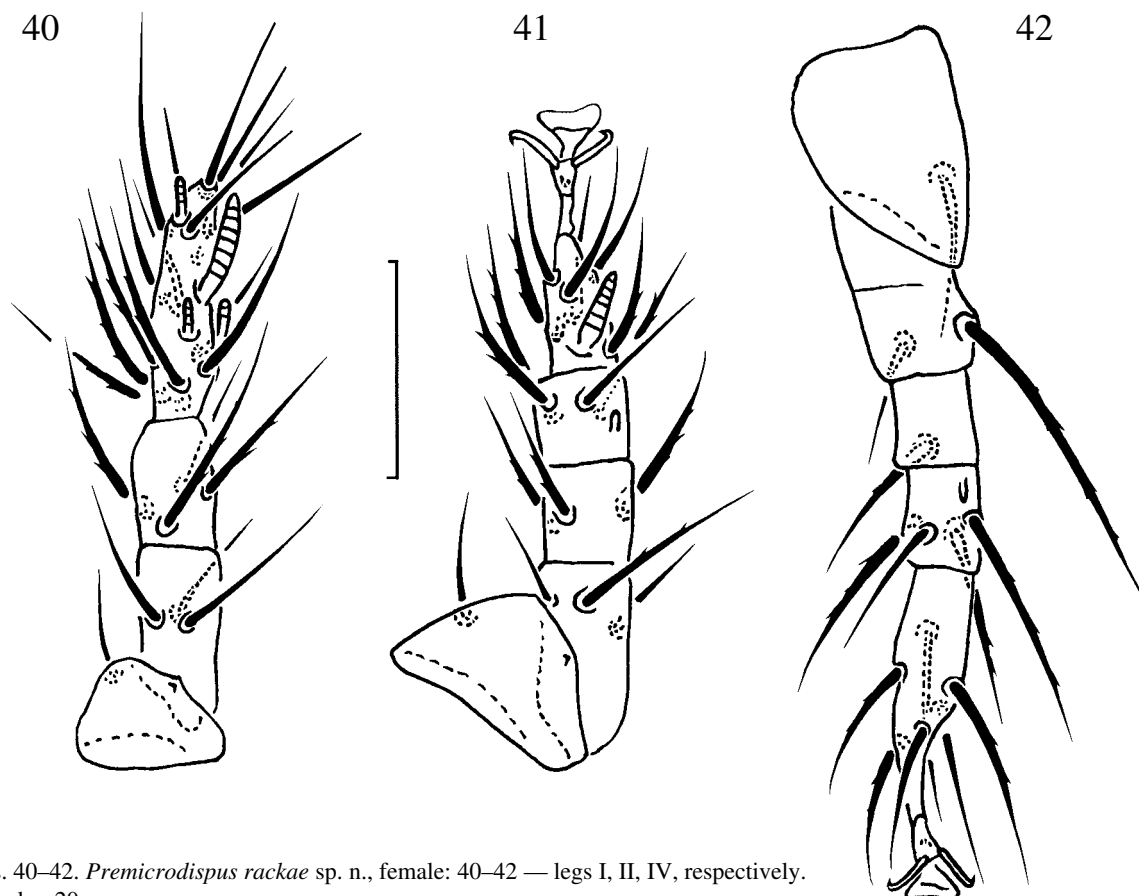
**Etymology.** The new species is named for the renowned acarologist, Gisela Rack for her great contribution in the study of heterostigmatic mites.

**Differential diagnosis.** See differential diagnosis for *P. brevisetus*.

***Premicrodispus krczali* Khaustov sp. nov.**

Figs. 43–47.

**Description. Female.** Idiosomal length 233 (200–255), maximum width 122 (110–138).



Figs. 40–42. *Premicrodispus rackae* sp. n., female: 40–42 — legs I, II, IV, respectively. Scale bar 20  $\mu$ m.

Gnathosoma dorsally with 1 pair of setae. Idiosomal dorsum (Fig. 43). All tergites smooth. All dorsal setae indistinctly barbed or almost smooth. Bases of setae *e* always without apodemes. Setae *d* and *f* blunt-ended. Length of dorsal setae:  $sc_2$  32 (32–33),  $c_1$  30 (30–34),  $c_2$  34 (34–41),  $d$  17 (17–22),  $e$  22 (22–28),  $f$  20 (21–23),  $h_1$  31 (31–37),  $h_2$  21 (21–28). Distances between dorsal setae:  $sc_2$ – $sc_2$  38 (36–40),  $c_1$ – $c_1$  40 (37–43),  $c_1$ – $c_2$  22 (19–24),  $d$ – $d$  29 (28–33),  $e$ – $f$  11 (10–11),  $f$ – $f$  48 (44–53),  $h_1$ – $h_1$  17 (14–20),  $h_1$ – $h_2$  22 (21–23). Idiosomal venter (Fig. 44). All ventral plates and setae smooth. Apodemes 3 weakly sclerotized. Apodemes 4 short, reaching slightly beyond setae *3b*. Apodemes 5 absent. Setae *4a* absent. Setae  $ps_2$  absent. Anterior margin of posterior sternal plate weakly convex. Length of ventral setae:  $1a$  14 (13–17),  $1b$  12 (12–15),  $2a$  18 (17–20),  $2b$  19 (18–21),  $3a$  14 (14–18),  $3b$  12 (12–14),  $3c$  12 (12–14),  $4b$  17 (17–24),  $4c$  17 (17–20),  $ps_1$  19 (18–22),  $ps_3$  22 (21–24). Legs (Figs. 45–47). Solenidia  $\omega_1$  8 (7–8) >  $\omega_2$  4 (4–5) <  $\phi_1$  6 (6–7) >  $\phi_2$  4 (3–4). Solenidion  $\omega_1$  finger-shaped. Solenidion  $\phi_1$  baculiform. Solenidia  $\omega_2$  and  $\phi_2$  uniformly thin. Leg II as on Fig. 46. Solenidion  $\omega$  (6) finger-shaped.

**Male and larva unknown.**

**Type material.** Female holotype, slide No. AK200102 and 16 female paratypes, UKRAINE: Crimea: vicinity of Yalta, litter in pine forest, 20 January 2002, coll. A.A. Khaustov.

**Type depositories.** The holotype is deposited in SIZ, paratypes in NBG.

**Etymology.** This species is named after Dr. H. Krczal for his contribution in study of pygmephoroid mites.

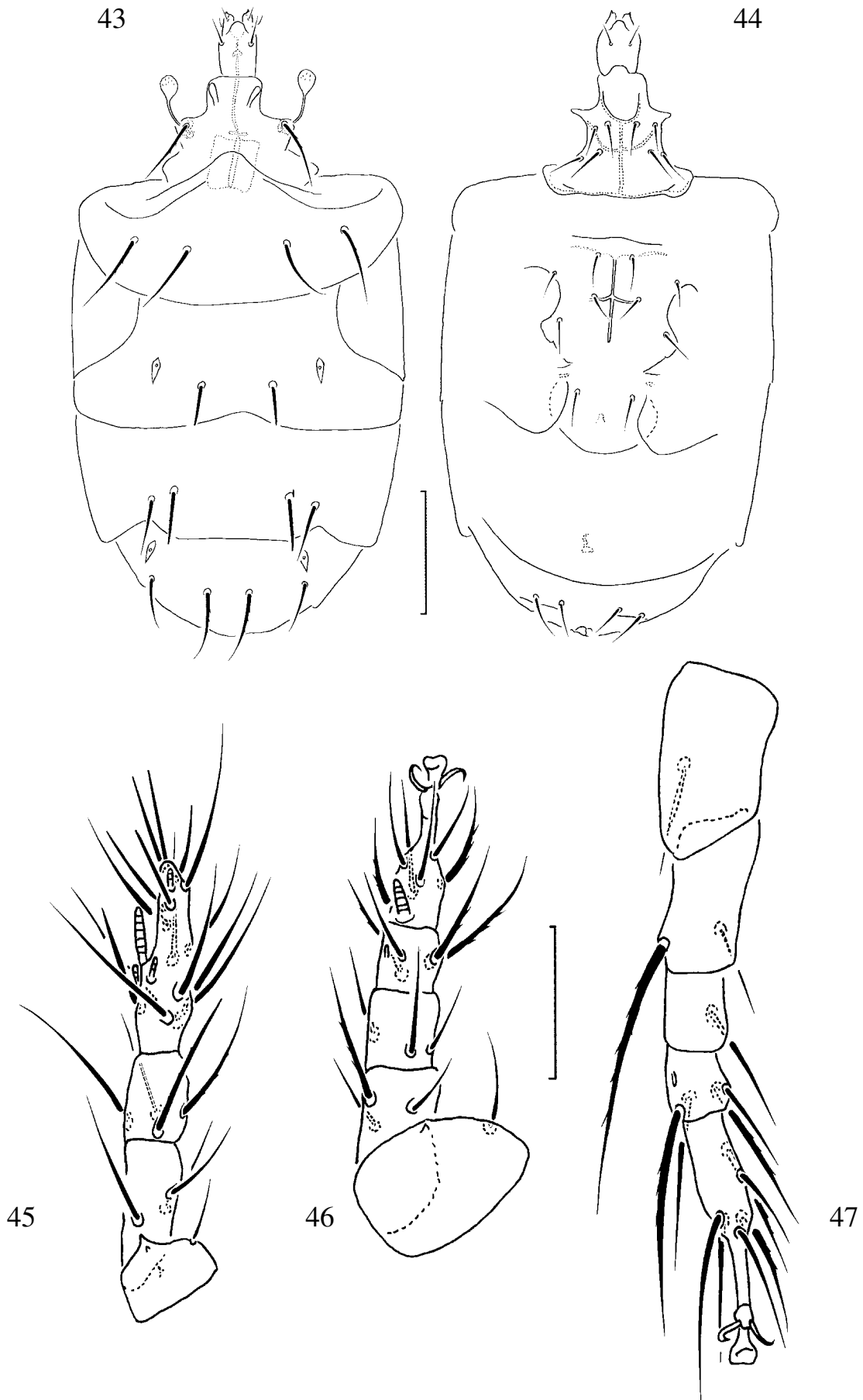
**Differential diagnosis.** Among described species, *P. krczali* is most similar to *P. lambi* (Krczal, 1964) but differs by the absence of setae  $ch_1$  (present in *P. lambi*), and by the absence of the transverse sclerotized sculpture on tergite EF (present in *P. lambi*).

***Premicrodispus longicaudus* Khaustov sp. nov.**

Figs. 48–52.

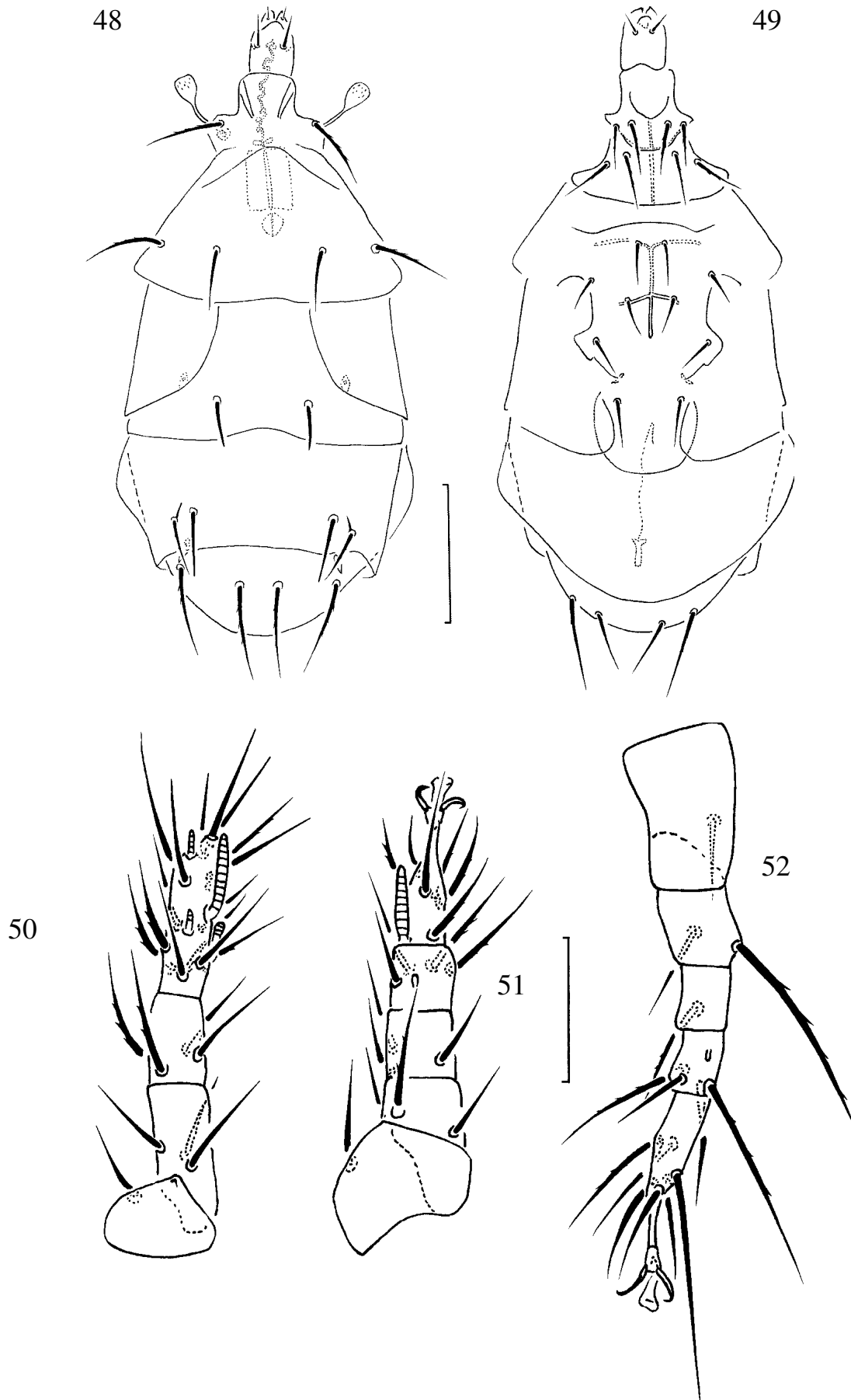
**Description. Female.** Idiosomal length 218 (200–235), maximum width 109 (92–114).

Gnathosoma dorsally with 1 pair of setae. Idiosomal dorsum (Fig. 48). All tergites smooth. All dorsal setae indistinctly barbed, nearly smooth. Bases of setae *e* associated with weakly developed, short apodemes. Setae *d* and *f* blunt-ended. Length

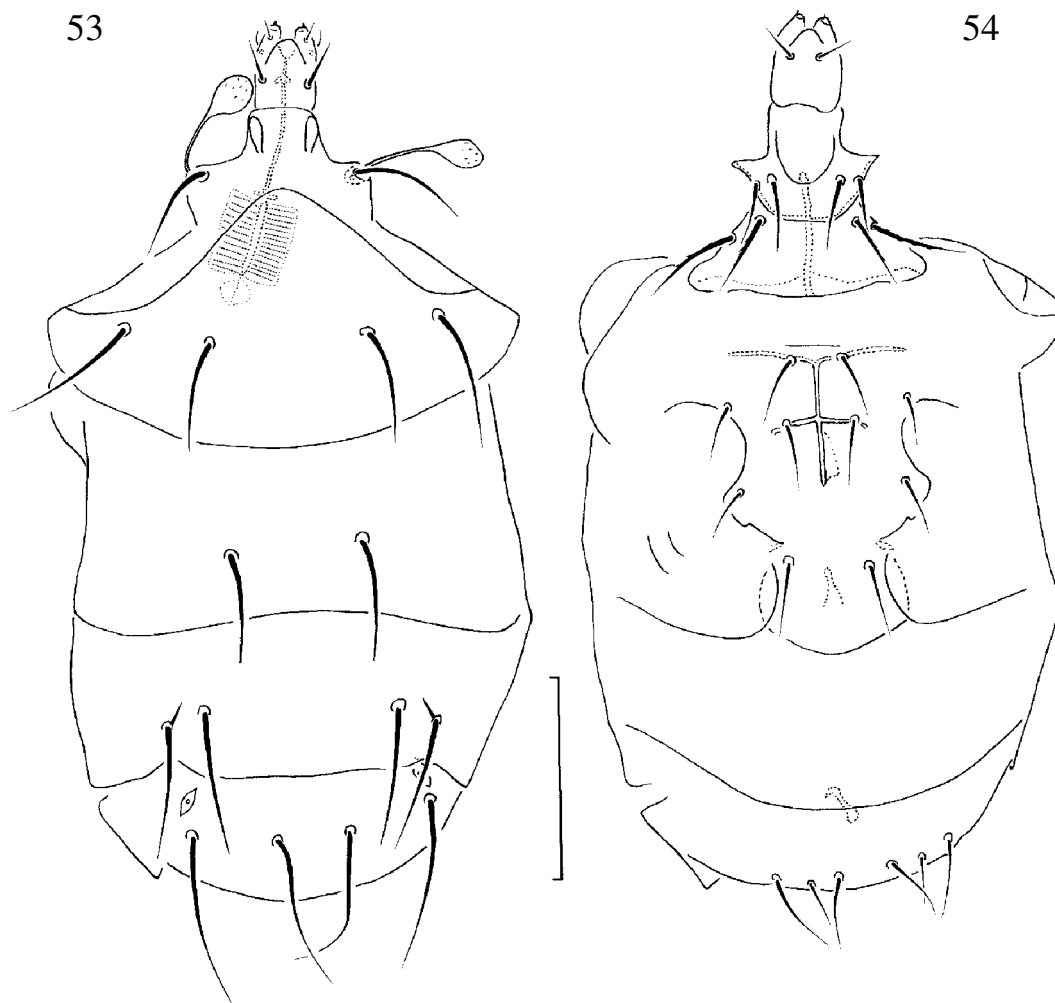


Figs. 43–47. *Premicrodispus krczali* sp. n., female: 43 — dorsum, 44 — venter (scale bar 50  $\mu$ m), 45–47 — legs I, II, IV, respectively (scale bar 20  $\mu$ m).





Figs. 48–52. *Premicrodispus longicaudus* sp. n., female: 48 — dorsum, 49 — venter (scale bar 50  $\mu$ m), 50–52 — legs I, II, IV, respectively (scale bar 20  $\mu$ m).



Figs. 53–54. *Premicrodispus tenuisetus* sp. n., female: 53 — dorsum, 54 — venter. Scale bar 50  $\mu$ m.

of dorsal setae:  $sc_2$  29 (28–31),  $c_1$  23 (22–23),  $c_2$  34 (34–38),  $d$  18 (16–18),  $e$  21 (18–21),  $f$  23 (22–24),  $h_1$  36 (33–36),  $h_2$  33 (29–33). Distances between dorsal setae:  $sc_2$ – $sc_2$  36 (32–36),  $c_1$ – $c_1$  39 (39–41),  $c_1$ – $c_2$  21 (18–21),  $d$ – $d$  33 (33–35),  $e$ – $f$  7 (7–8),  $f$ – $f$  53 (51–53),  $h_1$ – $h_1$  14 (14–15),  $h_1$ – $h_2$  23 (21–23). Idiosomal venter (Fig. 49). All ventral plates smooth. Setae of anterior sternal plate and  $ps_3$  indistinctly barbed. Other ventral setae smooth. Apodemes 3 weakly sclerotized. Apodemes 4 short, reaching slightly beyond setae 3b. Apodemes 5 absent. Setae 4a absent. Setae  $ps_2$  absent. Anterior margin of posterior sternal plate weakly convex. Length of ventral setae: 1a 19 (17–19), 1b 15 (14–15), 2a 19 (18–20), 2b 19 (18–20), 3a 14 (14–15), 3b 13 (13–14), 3c 12 (12–14), 4b 15 (14–16), 4c 12 (12–13),  $ps_1$  21 (20–21),  $ps_3$  34 (33–34). Legs (Figs. 50–52). Solenidia  $\omega_1$  12 (11–12) >  $\omega_2$  4 <  $\phi_1$  6 (6–7) >  $\phi_2$  3. Solenidion  $\omega_1$  finger-shaped. Solenidion  $\phi_1$  baculiform. Solenidia  $\omega_2$  and  $\phi_2$  uniformly thin. Leg II as on Fig. 51. Solenidion  $\omega$  (11–14) finger-shaped.

**Male and larva unknown.**

**Type material.** Female holotype, slide No. AK260501/1, and 3 female paratypes, UKRAINE: Crimea, Ay-Petri mountain pasture, near Shaytan-Merdven bridgeway, in soil, 26 May 2001, coll. A.A. Khaustov.

**Type depositories.** The holotype is deposited in SIZ, paratypes in NBG.

**Etymology.** The name of this new species refers to the long pseudanal (caudal) setae.

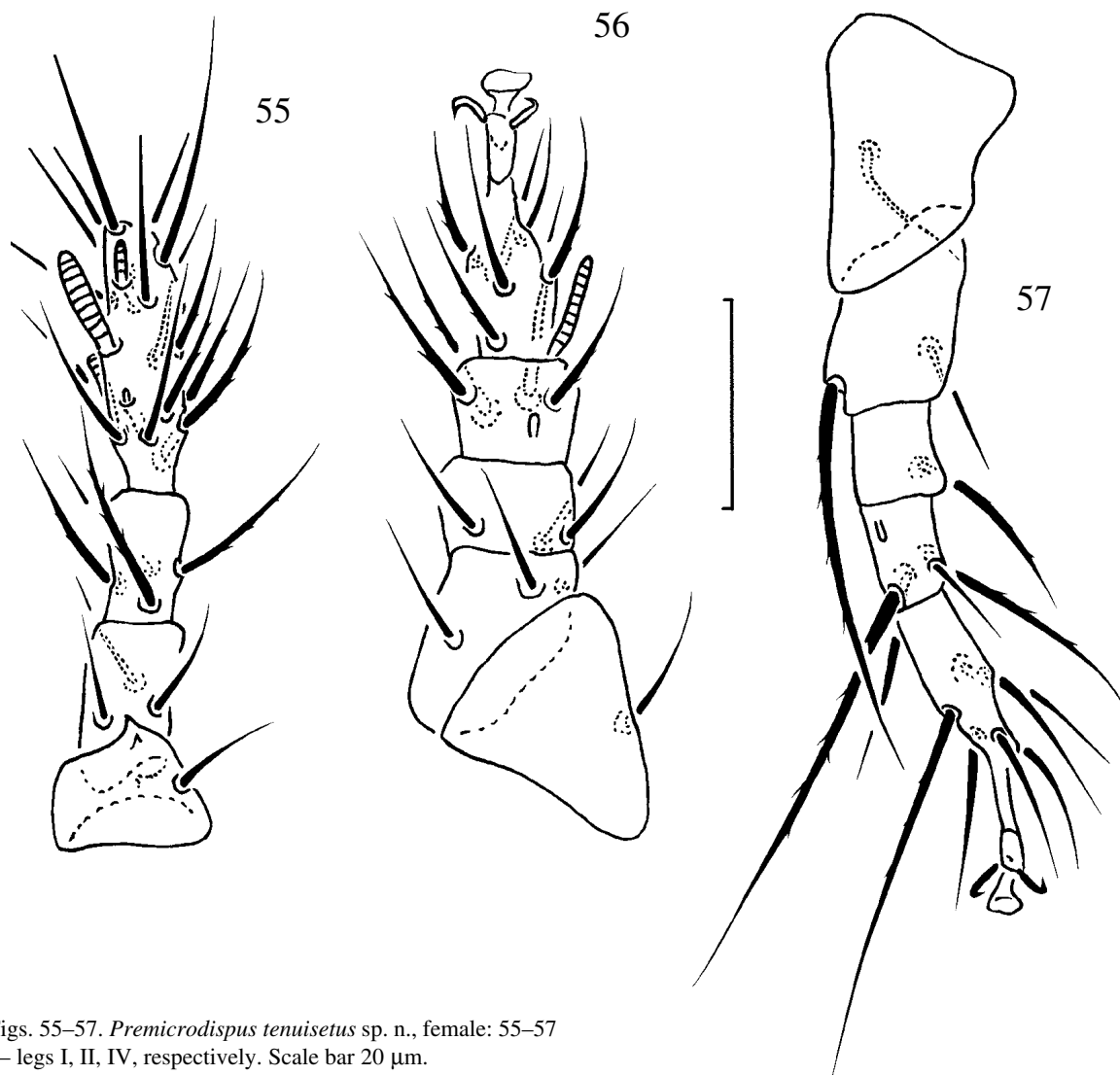
**Differential diagnosis.** The new species is most similar to *P. montanus* sp. n. but differs by setae  $ps_3$  which are much longer than  $ps_1$  ( $ps_1$  and  $ps_3$  are subequal in *P. montanus*).

***Premicrodispus tenuisetus* Khaustov sp. nov.**

Figs. 53–57.

**Description. Female.** Idiosomal length 210 (205), maximum width 117 (112).

Gnathosoma dorsally with 1 pair of setae. Idiosomal dorsum (Fig. 53). All tergites smooth. All dorsal setae thin and smooth. Bases of setae  $e$  associated with weakly developed short apodemes.



Figs. 55–57. *Premicrodispus tenuisetus* sp. n., female: 55–57 — legs I, II, IV, respectively. Scale bar 20  $\mu$ m.

Setae *d* and *f* almost sharply pointed. Length of dorsal setae: *sc*<sub>2</sub> 33 (34), *c*<sub>1</sub> 31 (29), *c*<sub>2</sub> 38 (39), *d* 32 (32), *e* 39 (41), *f* 41 (43), *h*<sub>1</sub> 43 (47), *h*<sub>2</sub> 51 (52). Distances between dorsal setae: *sc*<sub>2</sub>–*sc*<sub>2</sub> 38 (38), *c*<sub>1</sub>–*c*<sub>1</sub> 41 (45), *c*<sub>1</sub>–*c*<sub>2</sub> 19 (21), *d*–*d* 33 (44), *e*–*f* 11 (10), *f*–*f* 51 (58), *h*<sub>1</sub>–*h*<sub>1</sub> 18 (21), *h*<sub>1</sub>–*h*<sub>2</sub> 22 (21). Idiosomal venter (Fig. 54). All ventral plates smooth. Setae of anterior sternal plate indistinctly barbed. Other ventral setae smooth. Apodemes 3 weakly sclerotized. Apodemes 4 short, reaching slightly beyond setae 3*b*. Apodemes 5 absent. Setae 4*a* absent. Setae *ps*<sub>2</sub> present. Anterior margin of posterior sternal plate weakly straight. Length of ventral setae: 1*a* 22 (17), 1*b* 17 (15), 2*a* 22 (24), 2*b* 30 (28), 3*a* 19 (18), 3*b* 18 (17), 3*c* 16 (14), 4*b* 21 (19), 4*c* 17 (15), *ps*<sub>1</sub> 21 (22), *ps*<sub>2</sub> 13 (16), *ps*<sub>3</sub> 25 (28). Legs (Figs. 55–57). Solenidia  $\omega_1$  8 (10) >  $\omega_2$  4 <  $\phi_1$  9 (10) >  $\phi_2$  2. Solenidion  $\omega_1$  finger-shaped. Solenidion  $\phi_1$  baculiform. Solenidion  $\omega_2$  uniformly thin, solenidion  $\phi_2$  very small, knob-like. Leg II as on Fig. 56. Solenidion  $\omega$  (9–10) finger-shaped.

**Male and larva unknown.**

**Type material.** Female holotype, slide No. AK111100 and 1 female paratype, UKRAINE: Crimea, vicinity of Yalta, in soil, 11 November 2000, coll. A.A. Khaustov.

**Type depositories.** The holotype is deposited at SIZ, the paratype is in NBG.

**Etymology.** The name of this new species refers to the long and slender dorsal setae.

**Differential diagnosis.** The new species is most similar to *P. subvarsoviensis* (Mahunka et Zyromska-Rudska, 1975) but differs by the subequal setae *h*<sub>1</sub> and *h*<sub>2</sub> (*h*<sub>1</sub> are much shorter than *h*<sub>2</sub> in *P. subvarsoviensis*), and by the pseudanal setae subequal with the setae of the posterior sternal plate (pseudanal setae distinctly shorter than the setae of posterior sternal plate in *P. subvarsoviensis*).

**KEY TO PALEARCTIC SPECIES OF THE GENUS *PREMICRODISPUS* (FEMALES)**

- 1. Setae 4*a* present .....2
- Setae 4*a* absent .....5

2. Setae  $ps_2$  present ..... *P. stenops* (Mahunka, 1969)  
 — Setae  $ps_2$  absent ..... 3
3. Bases of setae  $f$  associated with well developed apodemes directed anteromedially .....  
 ..... *P. lineatus* (Mahunka, 1986)  
 — Apodemes associated with bases of setae  $f$  absent ..... 4
4. Setae  $ps_1$  and  $ps_3$  subequal in length, setae  $d$  distinctly shorter than distance between their bases .....  
 ..... *P. parasilvestris* (Rack, 1974)  
 — Setae  $ps_1$  distinctly longer than  $ps_3$ , setae  $d$  distinctly longer than distance between their bases .....  
 ..... *P. dzumaevi* (Sevastianov et Chydyrov, 1991)
5. Setae  $ps_2$  present ..... 6  
 — Setae  $ps_2$  absent ..... 8
6. Setae  $h_2$  distinctly shorter than  $h_1$  ..... *P. akermanae* (Sevastianov et Zahida Al Douri, 1988)  
 — Setae  $h_2$  subequal or longer than  $h_1$  ..... 7
7. Setae  $h_1$  much shorter than  $h_2$ , pseudanal setae distinctly shorter than setae of posterior sternal plate .....  
 ..... *P. subvarsoviensis* (Mahunka et Zyromska-Rudska, 1975)  
 — Setae  $h_1$  of similar length with  $h_2$ , pseudanal setae and setae of posterior sternal plate subequal .....  
 ..... *P. tenuisetus* sp. n.
8. Setae  $sc_2$  and  $d$  subequal, all dorsal setae long and flexible .....  
 ..... *P. longisetosus* (Mahunka, 1970)  
 — Setae  $sc_2$  distinctly longer than  $d$ , at least setae  $d$  short, blunt-ended ..... 9
9. Setae  $ps_3$  much longer than  $ps_1$  .....  
 ..... *P. longicaudus* sp. n.  
 — Setae  $ps_3$  and  $ps_1$  subequal ..... 10
10. Anterior margin of posterior sternal plate distinctly convex ..... 11  
 — Anterior margin of posterior sternal plate straight .....  
 ..... *P. kaliszewskii* sp. n.
11. Bases of setae  $e$  associated with well developed apodemes ..... 12  
 — Apodemes associated with bases of setae  $e$  absent or vestigial ..... 13
12. Setae  $sc_2$  and  $c_1$  subequal, setae  $c_2$  and  $c_1$  situated almost at the same level .....  
 ..... *P. rackae* sp. n.  
 — Setae  $sc_2$  distinctly longer than  $c_1$ , setae  $c_2$  situated distinctly anterior to  $c_1$  .....  
 ..... *P. brevisetus* sp. n.
13. Setae  $e$  distinctly shorter than  $f$ ... *P. montanus* sp. n.  
 — Setae  $e$  longer than  $f$  ..... *P. krczali* sp. n.

#### ACKNOWLEDGEMENTS

I thank Dr. W. L. Magowski (A. Mickiewicz University, Poznan, Poland), for reviewing the manuscript and making helpful suggestions. I also thank Mr. A. Sergeenko (Nikita Botanical Gardens, Yalta, Ukraine) for help during preparation of the figures.

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