Persian J. Acarol., 15(2): 150206.

https://www.persianacarology.org

Research Article https://biotaxa.org/pja https://doi.org/10.22073/pja.150206

First record of *Pseudotydeus* (Acari: Ereynetidae) from Russia with description of a new species from Western Siberia

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Received:
31 December, 2025
Accepted:
03 February, 2026
Published:
15 April, 2026
Subject Editor:
A. Saboori

http://zoobank.org/urn:lsid:zoobank.org:pub:9D150164-B891-47DB-8455-89ADC908388E

ABSTRACT

The genus *Pseudotydeus* (Acari: Ereynetidae) is recorded from Russia for the first time. Female and male of *P. pusillus* **sp. nov.** were collected from the forest litter in the Carbon Measurement Test Area in the Tyumen Oblast, Western Siberia, Russia. The male is described for the first time in *Pseudotydeus*. The generic diagnosis is modified.

KEYWORDS

Ereynetinae, mites, morphology, Palearctic, systematics, Tydeoidea

CITE: Khaustov, A.A. & Khaustov, V.A. (2026) First record of *Pseudotydeus* (Acari: Ereynetidae) from Russia with description of a new species from Western Siberia. *Persian Journal of Acarology*, 15(2): 150206.
https://doi.org/10.22073/pja.150206

INTRODUCTION

The genus *Pseudotydeus* and its type species, *P. perplexus* were described by Baker & Delfinado (1974) in the monotypic subfamily Pseudotydeinae in the family Tydeidae. André (1980) examined the paratype of *P. perplexus* and revealed that it was described based on tritonymph. He also clarified the chaetotaxy of legs and palps and provided new generic diagnosis. André and Fain (2000) based on phylogenetic analysis moved *Pseudotydeus* to the family Ereynetidae and synonymized Pseudotydeinae under Ereynetinae. André and Ducarme (2003) described a second species, *P. lebruni* based on single female collected from a cave in Belgium. They also modified the diagnosis of the genus. Since that time, no other species were described or recorded.

This study provides the description of third species of *Pseudotydeus* from Western Siberia, Russia.

MATERIAL AND METHODS

Mites were extracted from samples using Berlese funnels. All mites were mounted in Hoyer's medium. Mite morphology was studied using a Carl Zeiss AxioImager A2 compound microscope with phase-contrast and differential interference contrast (DIC) illumination. Notation applied to the body and leg setae follow the system of Grandjean, overviewed by Kethley (1990) and André (1981b), respectively; palpal setation follows André (1981a). Photomicrographs were taken with an AxioCam ICc5 digital camera. All measurements are given in micrometers (µm) for the holotype and for five paratypes (in parentheses). Figures herein contain images assembled from multiple focal planes using the Helicon Focus 7.7.5 software, using algorithm B, with subsequent manual addition of significant details from individual focal planes.

RESULTS

TAXONOMY

Family Ereynetidae Oudemans, 1931

Subfamily Ereynetinae Oudemans, 1931

Genus *Pseudotydeus* Baker& Delfinado, 1974

Type species: *Pseudotydeus perplexus* Baker & Delfinado, 1974 by original designation

Diagnosis

As of André and Ducarme (2003) with the following corrections: 1) five pairs of genital and five pairs of aggenital setae in adults; 2) three pairs of eugenital setae in males; 3) palpal femorogenu with ventral dome-shaped protuberance. Eye spots present (Fig. 6).

Pseudotydeus pusillus sp. nov. (Figs 1–5)

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Description

FEMALE (Figs 1–4) – Body oval (Figs 1A, 4A). Length of idiosoma 170 (170–210), maximum width 125 (125–150).

Idiosomal dorsum (Figs 1, 3A–C) – Body striated, without reticulate elements; striation with small cuticular papillae. All dorsal setae and trichobothria *sci* strongly barbed. Prodorsum mostly with longitudinal striae (Fig. 3A); hysterosomal dorsum mostly with transverse striae anteriad setae f1 and longitudinal to oblique poateriad f1 (Figs 3B, C). Lyrifissures *ia* located anterolaterad setae *d*; *im* posterolaterad *e*, and *ip* posterolaterad *f1* (Fig. 3B). Lengths of setae: *vi* 12 (12–14), *ve* 9 (9–10), *sci* 50 (50–52), *sce* 16 (16), *c1*10 (9–10), *c2* 12 (11–12), *d* 10 (9–10), *e* 10 (9–10), *f1* 11 (11), *f2* 13 (12–13), *h1* 12 (12), *h2* 14 (14–15), *ps1* 9 (9), *ps2* 11 (11), *ps3* 12 (12).

Idiosomal venter (Figs 2, 3 D–F) – Ventral surface striated; with longitudinal striae between setae *1a* and *3a–4a*; transverse between setae *1a–3a* (Figs 3D, E). All ventral setae strongly barbed. Lyrifissures *ih* located anterolaterad setae *ps2*. With two pairs of perigenital double discs (Fig. 3F arrows). Progenital chamber oval in outline. Epimeral formula: 3–1–4–3; five pairs of aggenital and five pairs of genital setae. Claparede's organ not evident.

Gnathosoma (Figs 3D, 4A, B) – Palps 4-segmented; femorogenu and tibia with one strongly barbed dorsal setae each. Tarsus with one ventral solenidion and seven setiform structures; *acm* and (*p*) eupathid-like, other setae simple; seta *l"* multibranched, seta *v* weakly barbed in basal part, other tarsal setae smooth. Ventral face of femorogenu with large dome-shaped protuberance (Fig. 3D arrow). Palpal supracoxal seta (*ep*) very short, rod-shaped (Fig. 3A). Length of palptarsus 11, length of cheliceral stilettos 6. Subcapitulum with two pairs of strongly barbed subcapitular setae (*sc1*, *sc2*) and two pairs of minute and smooth adoral setae; setae *sc2* about three times longer than *sc1* (Fig. 3D).

Legs (Figs 3, 8) – Empodia with small empodial hooks; apotele with claws serrate (Fig. 8B), their tips flattened (Figs 4C–J). Setation of legs typical for the genus. All leg setae strongly barbed. Supracoxal seta (*el*) sjort, rod-shaped. Solenidion *ω* (11 in length) of tarsus I situated together with seta *ft'*; solenidion *φ* of tibia I apparently absent. Tibia I with cluster of setae *d*, *k* and *l"*; seta *d* very small and barbed distally; seta *k* smooth, subequal with seta *d* in length. Tarsus II with short, lanceolate solenidion *ω* (5 in length). Antiaxial face of femur and genu of leg IV with striae.

MALE – Similar to female and differs only in having small slit-like genital opening and three pairs of short and barbed eugenital setae (Fig. 5).

LARVA, PROTONYMPH, DEUTONYMPH and TRITONYMPH unknown.

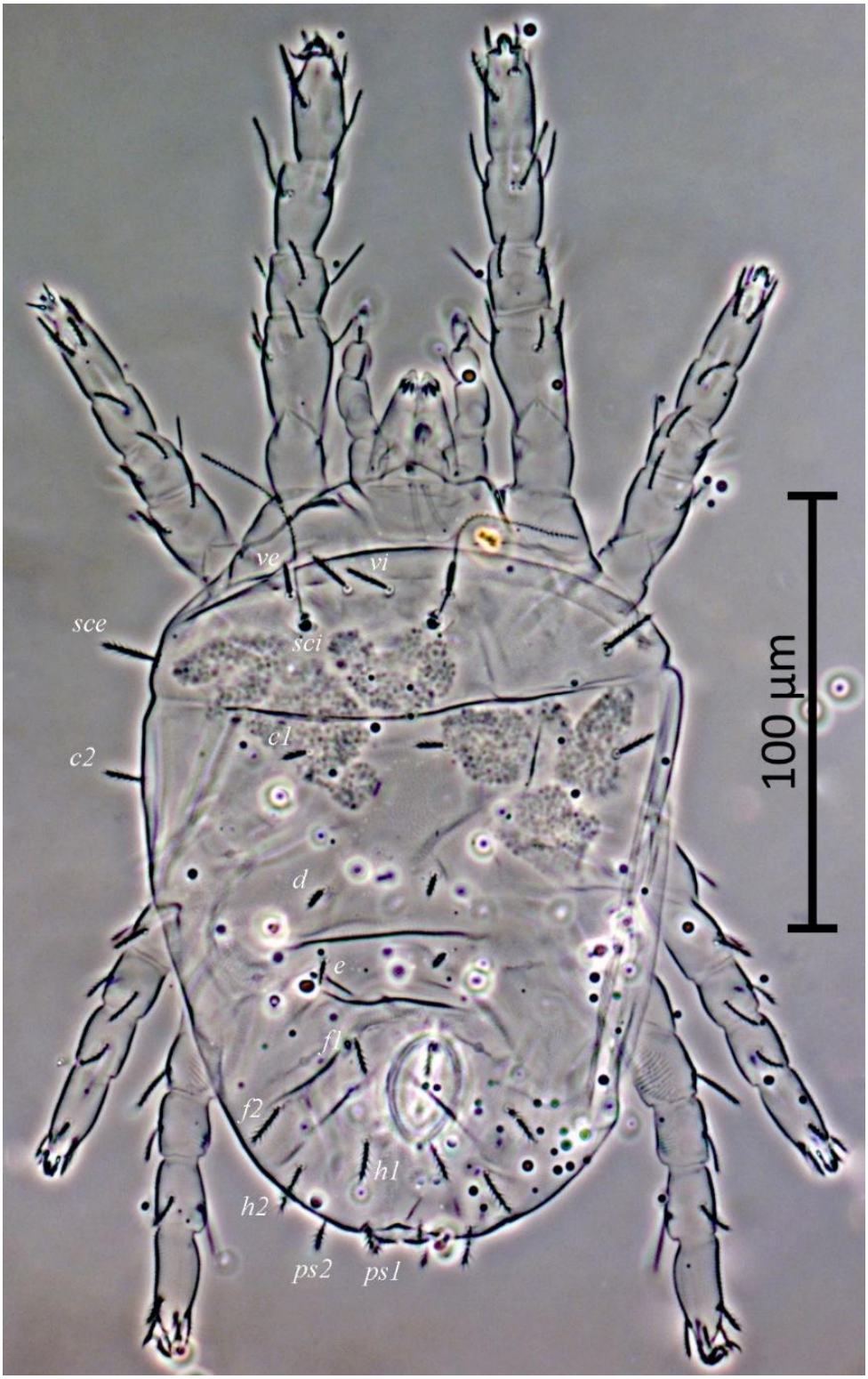

Figure 1. Phase-contrast micrograph of *Pseudotydeus pusillus* **sp. nov.** (holotype female) – General view dorsally.

Type material

Female holotype, slide ZISP T-Tyd-9, **RUSSIA**, Tyumen Oblast, vicinities of Kuchak lake, 57° 21' N, 66° 02' E, in forest litter, 15 October 2025, coll. V.A. Khaustov; paratypes: 30 females, 3 males, same data.

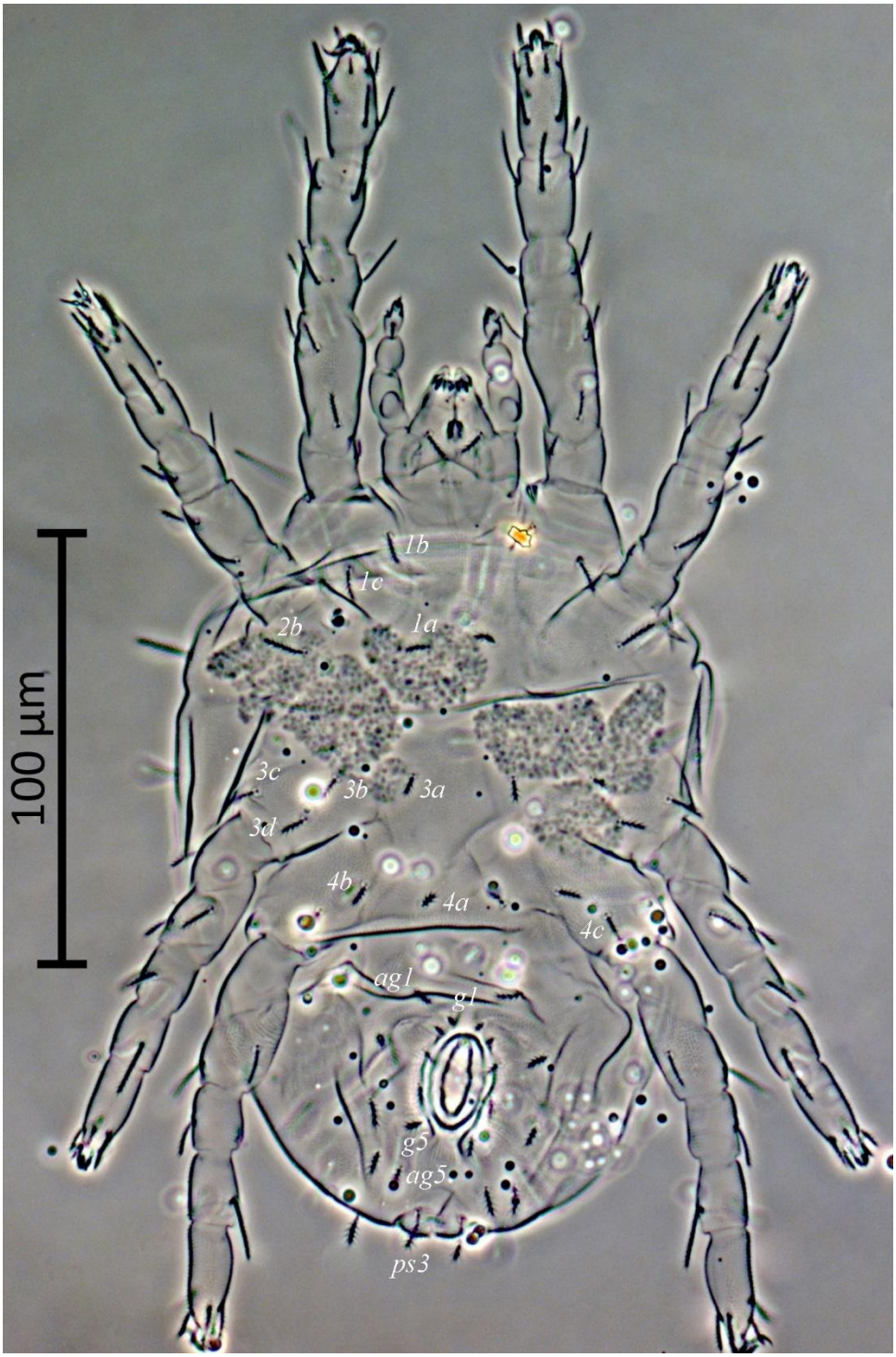

Figure 2. Phase-contrast micrograph of *Pseudotydeus pusillus* **sp. nov.** (holotype female) – General view ventrally.

Type deposition

The holotype and one female paratype are deposited in the acarological collection of the Zoological Institute of RAS, Saint Petersburg, Russia; other paratypes are deposited in the collection of the University of Tyumen Museum of Zoology, Tyumen, Russia.

Etymology

The name of the new species derived from Latin *pusillus* meaning *tiny* and refers to its very small body size.

Differential diagnosis

Female of the new species is very similar to *P. lebruni*. However, it differs from *P. lebruni* in having short (5) lanceolate solenidion *ω* on tarsus II vs. solenidion *ω* on tarsus II longer (about 8) and uniformly narrow (see Fig. 12 in Andre and Ducarme 2003 in *P. lebruni*).

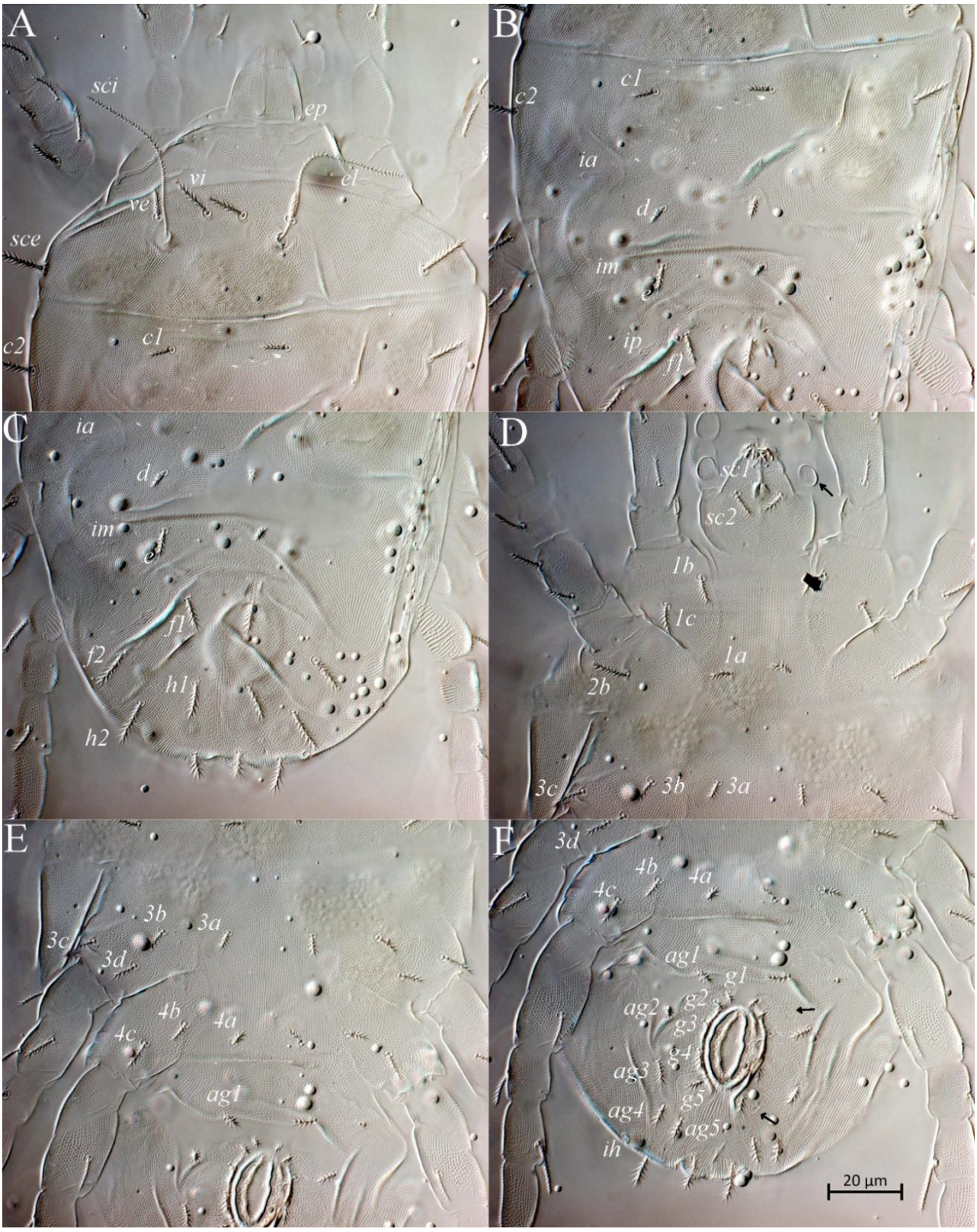

Figure 3. DIC micrographs of *Pseudotydeus pusillus* **sp. nov.** (holotype female) – **A.** Proterosoma, dorsal aspect; **B.** Metapodosoma, dorsal aspect; **C.** Opisthosoma, dorsal aspect; **D.** Proterosoma, ventral aspect, arrow points to dome-shaped protuberance; **E.** Metapodosoma, ventral aspect; **F.** Opisthosoma, ventral aspect, arrows point to perigenital discs.

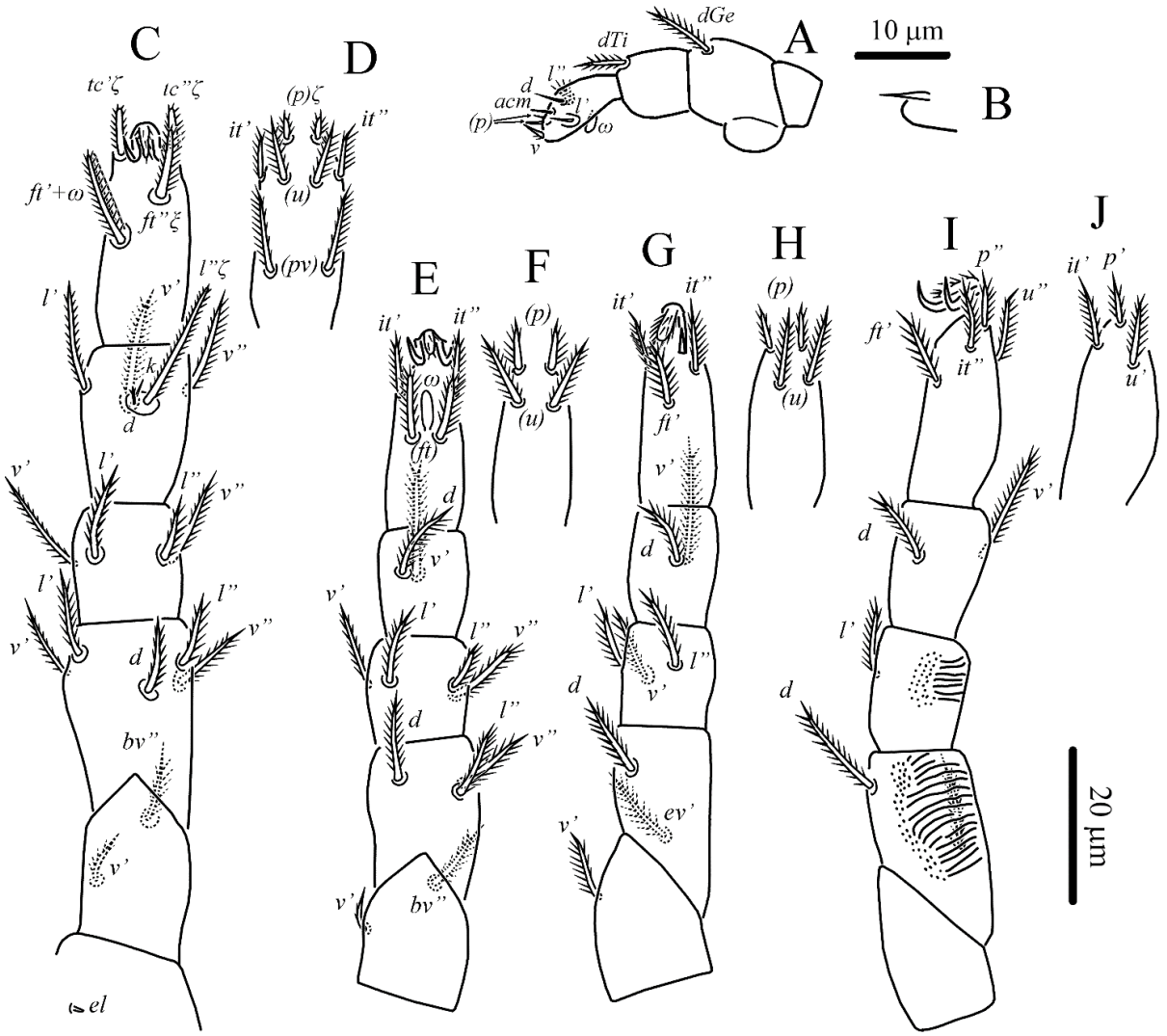

Figure 4. *Pseudotydeus pusillus* **sp. nov.** (holotype female) – **A.** Palp, lateral aspect; **B.** Cheliceral stylet; **C, E, G, I.** Legs I-IV, respectively, dorsal aspect; **D, F, H, J.** Distal part of tarsi I-IV, respectively, ventral aspect.

DISCUSSION

Presence of solenidion φ on tibia I. André (1980) redescribed single specimen of deutonymph paratype of *Pseudotydeus perplexus* and illustrated cluster of setiform structures on tibia I (see his Fig. 16B). According to André (1980) this cluster includes very short and barbed seta *d*, long and smooth seta *k* and long and strongly barbed seta *l"* located close to seta *k*. He also illustrated small cuticular invagination with opening laterad seta *l"* (see Fig. 16D in André 1980) and designated it as recessed solenidion *φ*. André and Ducarme (2003) described *Pseudotydeus lebruni* based on single female specimen from Belgium. They provided phase-contrast photos of tibia I on Figures 8 and 9. On Figure 8 they designated two setiform structures, short *k* and long *l"*. Also, they pointed to "recessed" solenidion *φ*. Most likely their seta *k* is homologous to seta d in André (1980) because of characteristic shape (short and barbed). The presence of "recessed" solenidion *φ* is not clear. We examined tibia I in numerous specimens of *Pseudotydeus pusillus* **sp. nov.** and found three setiform structures in dorsal cluster very similar to Fig. 16B in André (1890). However, seta *k* in *P. pusillus* **sp. nov.** is short (not as long as *l"*). All attempts to find "recessed" solenidion laterad seta *l"* using compound microscope with phase and differential interference contrasts were not successful. Apparently solenidion φ is absent at least in *P. pusillus* **sp. nov.** The presence of "recessed" solenidion on tibia I (ereynetal organ) is a key character of the family Ereynetidae (André and Fain 2000; Walter *et al.* 2009) and *P. pusillus* **sp. nov.** looks like intermediate form between the families Iolinidae and Ereynetidae. However, another important character of Ereynetidae, the presence of setal clusters on tibia and tarsus I, is present.

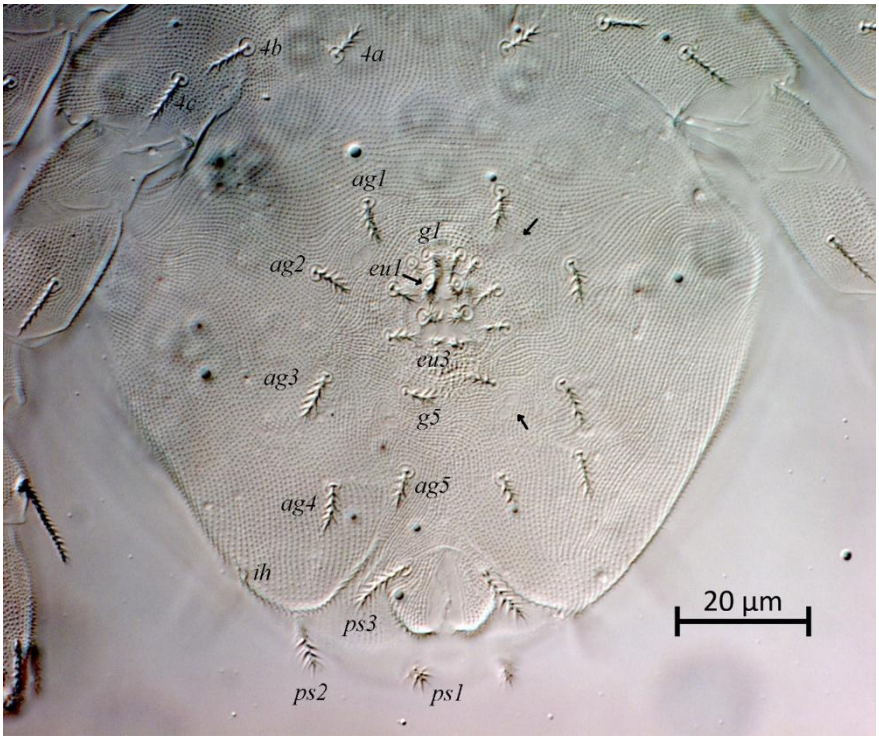

Figure 5. DIC micrographs of *Pseudotydeus pusillus* **sp. nov.** (male) – Opisthosoma, ventral aspect; arrows point to perigenital discs.

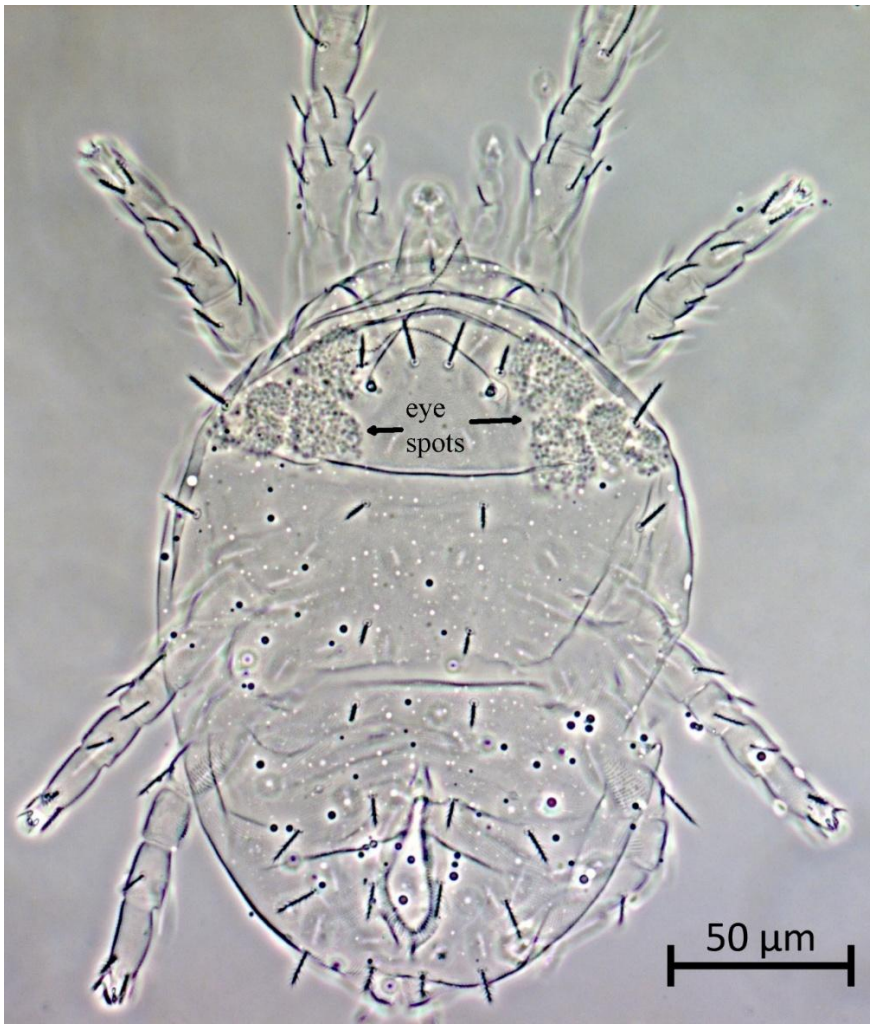

Figure 6. Phase-contrast micrograph of *Pseudotydeus pusillus* **sp. nov.** (female) – Dorsum of body showing large eye spots.

Number of genital and aggenital setae. In the diagnosis of the genus *Pseudotydeus* as well as on Figure 4 in André and Ducarme (2003) the number of genital setae is six and aggenital is four. However, in all our specimens of *P. pusillus* **sp. nov.** (Figs 3F, 5) as well as in Figure 4 in *P. lebruni* the number of genital and aggenital setae is 5+5.

First discovery of male. During this study we found several males of *P. pusillus* **sp. nov.** Males distinguishable from females only in form of genital opening and presence of three pairs of eugenital setae (Fig. 5). The number and location of eugenital setae is similar to those in many ereynetid species. The structure of genital area in males is another evidence of correct placement of *Pseudotydeus* in the family Ereynetidae.

ACKNOWLEDGEMENTS

The authors are grateful to Ms. Hanin Mzik (University of Tyumen) for the help during the sampling.

Author contributions: Manuscript and taxonomy conclusions: A.A.K.; Sampling, measurements and images: V.A.K.

Funding: The study was funded by the Ministry of Science and Higher Education of the Russian Federation within the framework of the Carbon Measurement Test Area in Tyumen Region (FEWZ-2024-0016).

Ethics approval and consent to participate: This study only included arthropod material, and all required ethical guidelines for the treatment and use of animals were strictly adhered to in accordance with international, national, and institutional regulations. No human participants were involved in any studies conducted by the authors for this article.

Competing interests: The authors declare no conflict of interest.

Generative AI statement: The authors must declare declare no use of AI in the creation of this manuscript.

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نخستین گزارش جنس *Pseudotydeus* (Acari: Ereynetidae) از روسیه همراه با توصیف گونهٔ جدیدی از سیبری غربی

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چکیده

جنس *Pseudotydeus* (Acari: Ereynetidae) برای نخستین بار از روسیه گزارش می‌شود. ماده و نر گونهٔ جدید ***P. pusillus* sp. nov.** از لاشبرگ جنگل در ناحیهٔ آزمون اندازه‌گیری کربن از تیومن اُبلاست، سیبری غربی، روسیه جمع‌آوری شد. جنس نر برای نخستین بار در جنس *Pseudotydeus* توصیف شد. صفات مشخصه جنس تغییر داده شد.

واژگان کلیدی: زیرخانوادهٔ Ereynetinae، هرناها، ریخت‌شناسی، پالئارکتیک، رده‌بندی، بالاخانواده Tydeoidea

CITE: Khaustov, A.A. & Khaustov, V.A. (2026) First record of *Pseudotydeus* (Acari: Ereynetidae) from Russia with description of a new species from Western Siberia. *Persian Journal of Acarology*, 15(2): 150206.
https://doi.org/10.22073/pja.150206

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ع. صبوری