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Article

A new genus and species of Tydeidae (Acari: Prostigmata) from Western Siberia, Russia

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ABSTRACT

A new monotypic genus and species *Andrelorryia hajiqanbari* gen. et sp. nov., are described from Western Siberia, Russia. The new genus was previously mentioned in literature as Generic Unit TY2 and differs from *Nudilorryia* by the absence of the seta *l*' on palptibia and absence of the solenidion on tarsus II.

KEY WORDS: Mites; morphology; Palearctic; systematics; Tydeinae; Tydeoidea.

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INTRODUCTION

The family Tydeidae is a diverse group of mites distributed worldwide and currently includes about 30 genera and more than 300 species (Silva *et al.* 2016; Kaźmierski *et al.* 2018; Khaustov *et al.* 2020). Most tydeid mites are fungivorous, however some species are predators of small arthropods, phytophagous and scavengers (Walter *et al.* 2009). The history of tydeid mites studies and current state of knowledge in taxonomy are discussed in Kaźmierski (1998) and Silva *et al.* (2016). Tydeid mites of Asian Russia are almost completely unstudied. There is only one paper describing three new species of *Lorryia* sensu Kaźmierski, 1989 from Siberia (Kaźmierski 2008).

During this study, a new genus and species of Tydeidae collected from rotting bark and rotting honey fungus (*Armillaria mellea*) in Western Siberia, Russia are introduced. In the generic revision of Tydeidae provided by André (1980) this genus was reported as Generic Unit TY2 based on undescribed species from USA. The aim of this paper is to describe these new taxa of Tydeidae.

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

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(1981b), respectively, with minor modifications; palpal setation follows André (1981a). The systematics of Tydeidae follows Kaźmierski (1998). 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).

SYSTEMATICS

Family Tydeidae Subfamily Tydeinae

***Andrelorryia* gen. nov.** (Generic Unit TY2 in André 1980, p. 157)

<http://zoobank.org/urn:lsid:zoobank.org:act:AF46F335-1B3B-443B-837A-79D5D931E524>

Type species: *Andrelorryia hajiqanbari* sp. nov.

Diagnosis

Adults – Prodorsum recurved, with four setae (*vi*, *ve*, *sci*, *sce*); trichobothria (*sci*) whiplike, differ in shape from other prodorsal setae.

Hysterosoma – Dorsal chaetotaxy: 10 (*c1*, *c2*, *d*, *e*, *f1*, *f2*, *h1*, *h2*, *ps1*, *ps2*). Genital organotaxy: 0: 4-6-4. Epimeral formula: 3-1-4-2.

Legs – Chaetotaxy: I (8-3+1-3-3-0); II (6-2-2-3-0); III (5-2-1-2-1); IV (5-2-1-1-0). Solenidiotaxy: 1 (ω I), solenidion ω on tarsus II absent.

Gnathosoma – Palpal organotaxy: (6-1-2) + ω . Seta *l*'' on palptibia absent.

Immatures – Unknown.

Differential diagnosis

The new genus is most similar to *Nudilorryia* Kaźmierski, 1996 in having the same leg chaetotaxy, epimeral formula, number of dorsal hysterosomal and genital setae. It differs from *Nudilorryia* by the absence of the solenidion ω on tarsus II and seta *l*'' on palptibia (both present in *Nudilorryia*).

Remarks

André (1980) in his generic revision of Tydeidae created several unnamed “Generic Units”. One of them, Generic Unit TY2, has the same diagnosis as *Andrelorryia* gen. nov. and undoubtedly represents the same genus. The diagnosis of the “Generic Unit TY2” was based on two specimens (male and female) of undescribed species collected from moss and litter on Fir stump in Oregon, USA (André 1980).

Species included

The genus *Andrelorryia* gen. nov. includes only one species, *A. hajiqanbari* sp. nov., collected from rotting bark and fungi in Western Siberia, Russia. Potentially it includes a second species reported from USA as “Generic Unit TY2”.

Etymology

The name of the new genus is combined from two parts: *Andre*, the family name of Belgian acarologist Henry André, who discovered “Generic Unit TY2”, and *Lorryia*, the genus name of tydeid mites, which includes many species with reticulate type of ornamentation.

***Andrelorryia hajiqanbari* sp. nov.**

<http://zoobank.org/urn:lsid:zoobank.org:act:0E514566-AABE-4BCE-9074-C5BB08BB34BB>

Description

FEMALE – Body ovate. Length of idiosoma 285 (265–285), maximum width 200 (195–210).

Idiosomal dorsum (Figs. 1, 6A, 7A–C) – Dorsal ornamentation type “*Lorryia*”; reticulation forms discrete areas divided by striated integument: Asce, A(vi)(ve)(sci), Asce, A0[c2] (in lateral position), Ac2, A(c1), Ac2, A0[c2] (in lateral position), A[c2]0[el], A[c2]0[el], Ael, A(dl), Ael, A(f2)(fl) and A(h2)(hl)(psl); Cross-ties "Y"-shaped, rarely "X"-shaped. Frames of polygonal cells with rare 'I'-shaped costulae (Figs. 7A–C). Dorsal hysterosomal setae subequal in length and shape, slightly curved, blunt-tipped and with distinct blunt barbs; trichobothria smooth, whip-like, more than three times longer than other dorsal setae. Cupuli *ia*, *im* and *ih* oval, hardly discernible inside polygonal cells. Lengths of setae: *vi* 21 (19–21), *ve* 21 (18–21), *sci* 75 (70–76), *sce* 23 (19–23), *c1* 19 (17–19), *c2* 23 (19–23), *d* 21 (18–21), *e* 22 (19–22), *f1* 22 (18–22), *f2* 24 (22–24), *h1* 24 (22–24), *h2* 25 (21–25), *ps1* 17 (16–19).

Idiosomal venter (Figs. 2, 6B, 7D) – Cuticular tubercles on ventral stria in general smaller than on dorsal surface; stria between setae *3a* and *4a* V-shaped (Fig. 7D). Coxal organ small, ovate. Ventral setae smooth and pointed. Anal valves smooth.

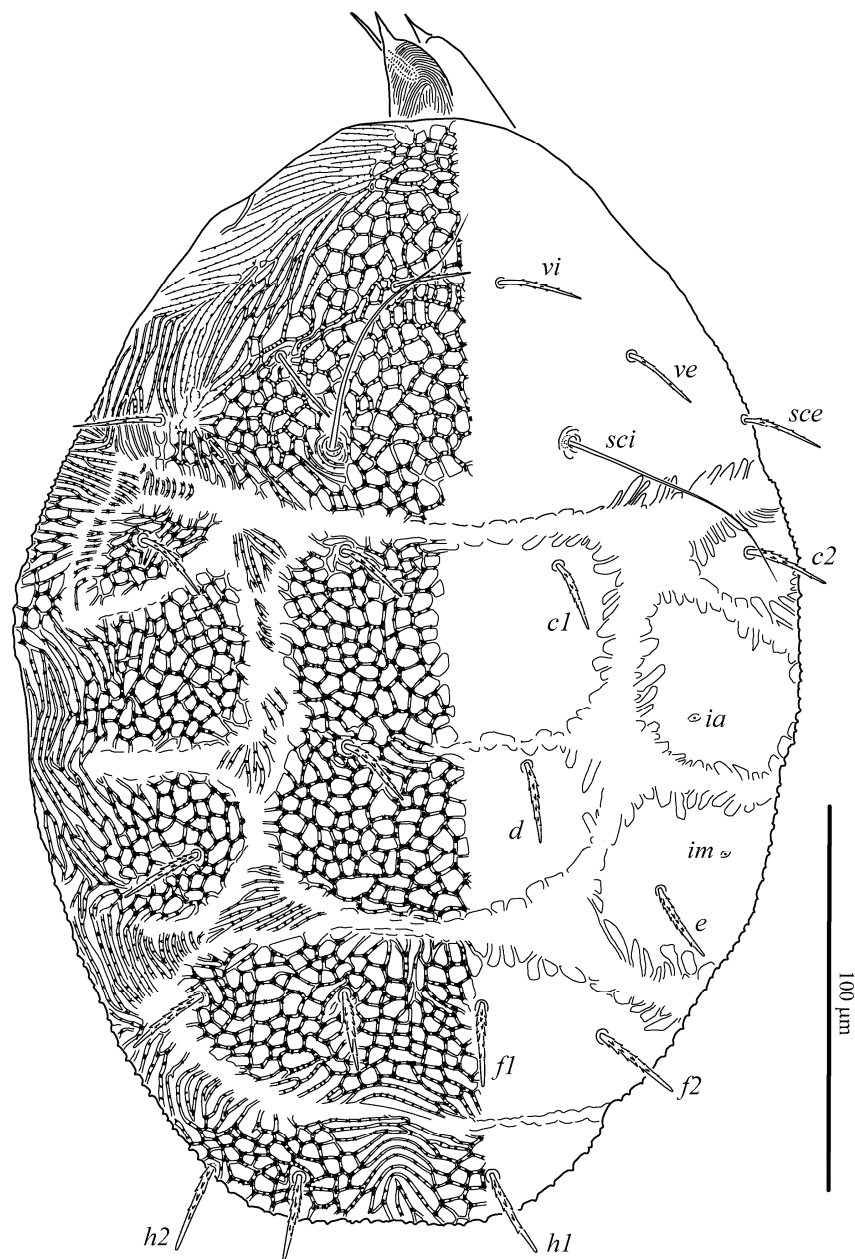


Figure 1. *Andrelorryia hajiqanbari* gen. et sp. nov. (female) – Dorsum of body (legs omitted).

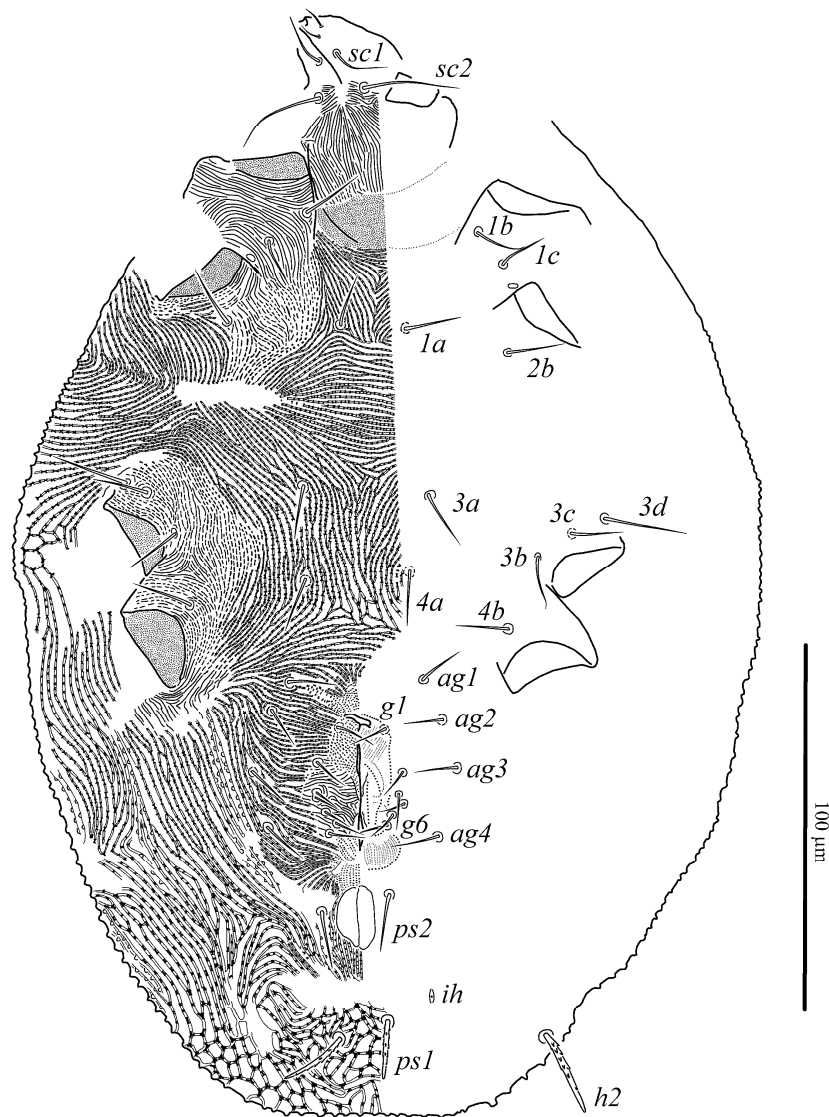


Figure 2. *Andrelorryia hajiqanbari* gen. et sp. nov. (female) – Venter of body (legs omitted).

Gnathosoma (Fig. 3) – Gnathosoma partly or completely covered by idiosoma. Cheliceral stylets 25 (23–25) longer than palptarsus 13 (12–13) and combined length of palptarsus and eupathidium (*p*) 20 (18–20). Palpal terminal eupathidium with T-shaped projection distally; seta *d* bifurcate distally. All palpal setae smooth. Subcapitulum (Fig. 3A) with smooth and pointed subcapitular setae (*sc1*, *sc2*) and two pairs of short smooth and pointed adoral setae (*or1*, *or2*). Gnathosomal supracoxal setae not evident.

Legs (Fig. 4) – Empodia without empodial hooks; tarsal claws serrate. **Leg I** (Fig. 4A). Setae (*p*), (*tc*) and *ft* of tarsus eupathid-like, smooth; setae *d* of femur and *l* of genu blunt-tipped and weakly barbed, other leg setae pointed and smooth or with few weak barbs. Solenidion ω 8 (7–8) baculiform; famulus *k* on tibia multibranch distally. Leg supracoxal seta (*el*) smooth, rod-like, located dorsally near trochanter. **Leg II** (Fig. 4B). Setae *d* of femur, *l* of genu and (*p*) of tarsus blunt-tipped and weakly barbed, other leg setae pointed and smooth or with few weak barbs. **Leg III** (Fig. 4C). Setae *v* of trochanter, *d* of femur, *l* of genu and (*p*) of tarsus blunt-tipped and weakly barbed, other leg setae pointed and smooth or with few weak barbs. **Leg IV** (Fig. 4D). Setae *l* of genu and

(*p*) of tarsus blunt-tipped and weakly barbed, other leg setae pointed and smooth or with few weak barbs.

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

Larva, protonymph, deutonymph and tritonymph unknown.

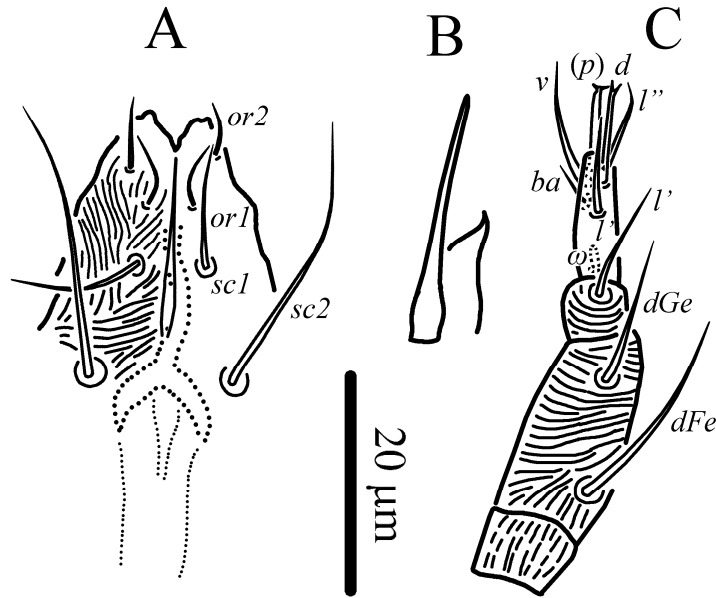


Figure 3. *Andrelorryia hajiqanbari* gen. et sp. nov. (female) – A. Subcapitulum; B. Cheliceral stylet; C. Right palp, dorsal aspect.

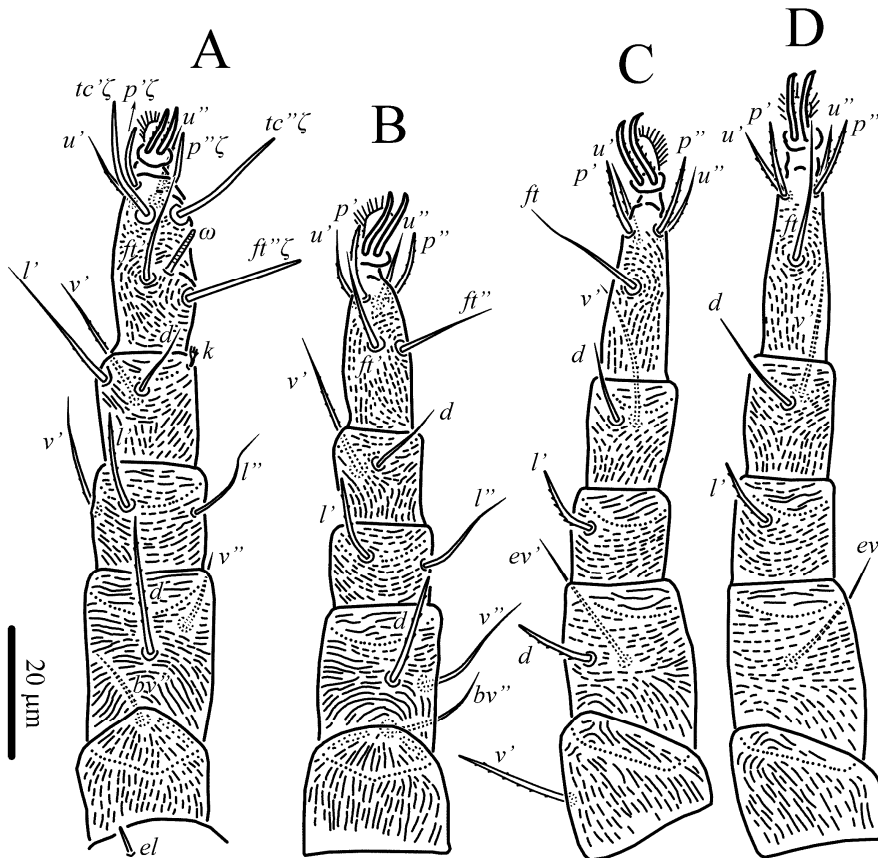


Figure 4. *Andrelorryia hajiqanbari* gen. et sp. nov. (female) – A–D. Right legs I–IV, respectively, dorsal aspect.

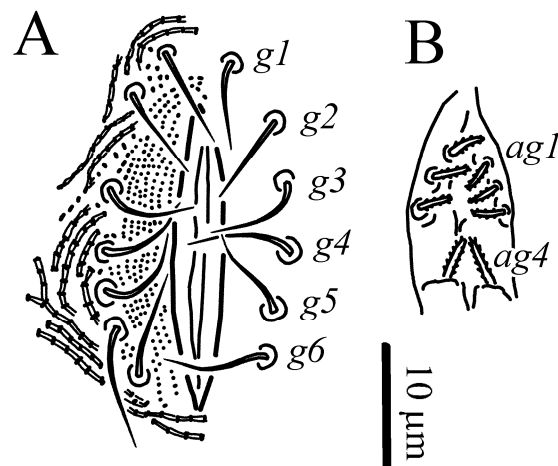


Figure 5. *Andrelorryia hajiqanbari* gen. et sp. nov. (male) – **A.** Genital opening and genital setae; **B.** Eugenital setae.

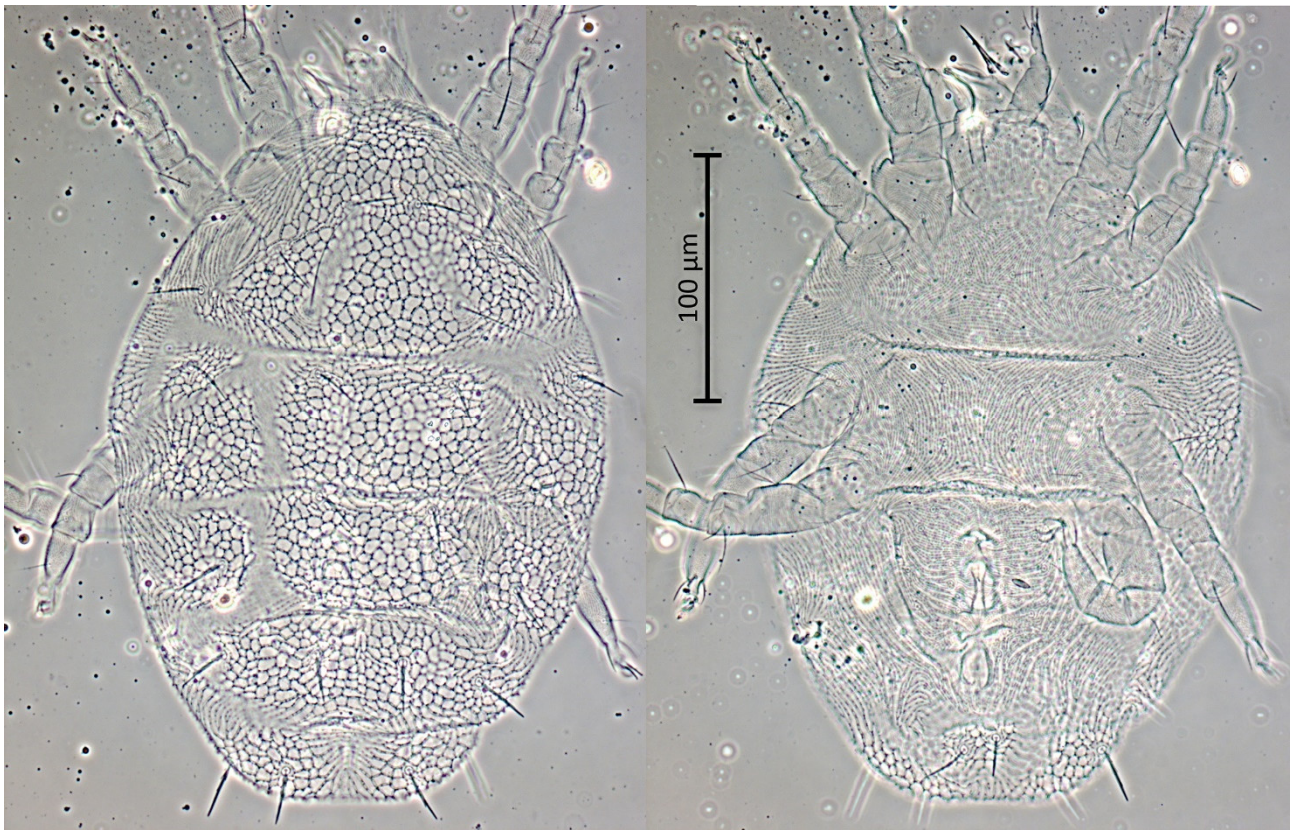


Figure 6. Phase-contrast micrographs of *Andrelorryia hajiqanbari* gen. et sp. nov. (female) – **A.** General view dorsally; **B.** General view ventrally.

Type material

Female holotype, slide ZISP T-Tyd-001, RUSSIA, Tyumen Region, Tyumen District, vicinity of settlement Uspenka, 57° 03' 44.1" N, 65° 03' 50.1" E, in rotting bark of *Alnus* sp., 02 May 2019, collected by A.A. Khaustov; paratypes: 11 females, same data; 1 female, 1 male, RUSSIA, Tyumen Region, Nizhnetavdinskiy District, vicinity of settlement Tyunevo, 57° 22' 53.3" N, 65° 41' 13.8" E, in rotting honey fungus (*Armillaria mellea*), 25 September 2018, collected by A.A. Khaustov.

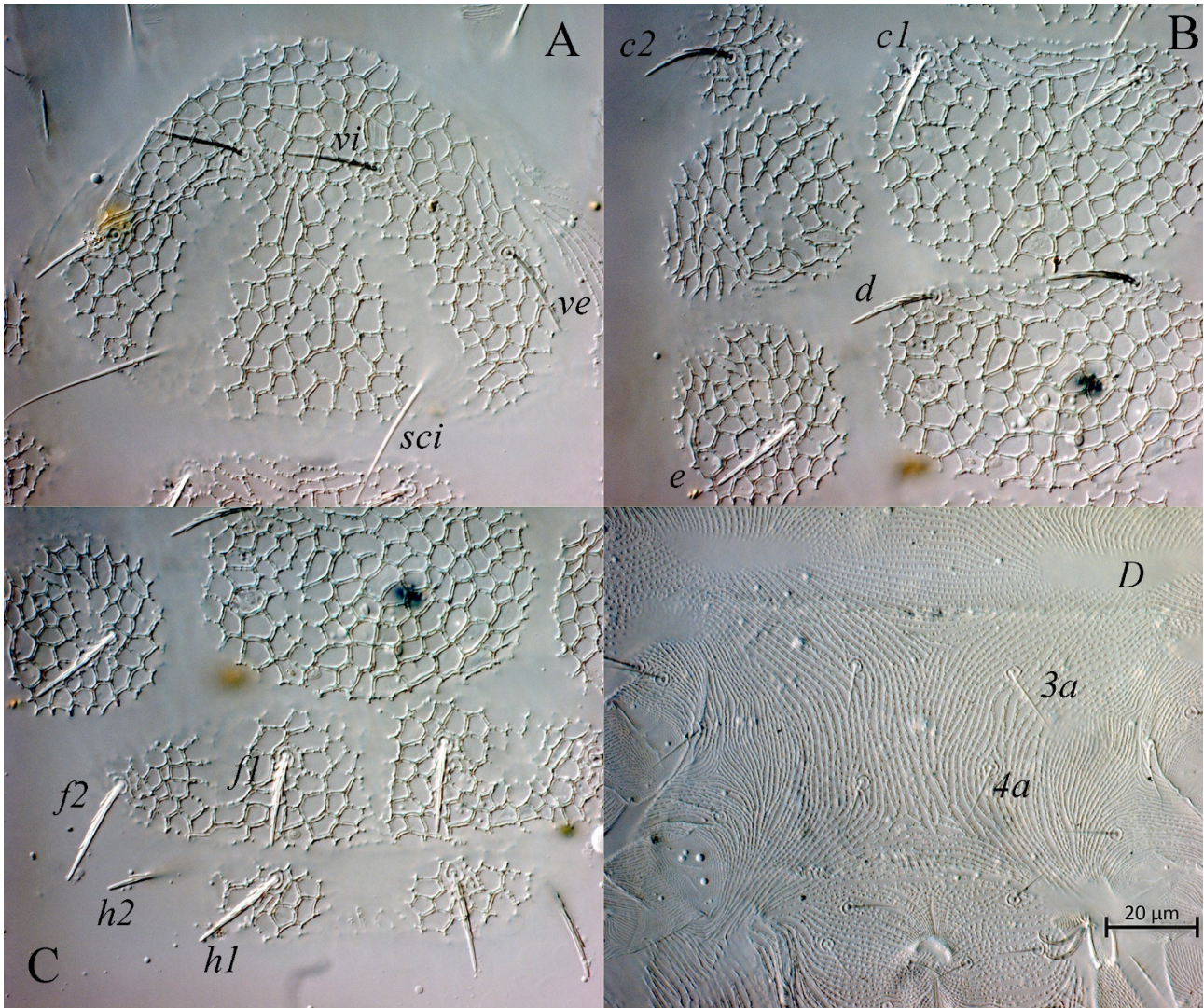


Figure 7. DIC micrographs of *Andrelorryia hajiqanbari* gen. et sp. nov. (female) – A. Prodorsum; B. Metapodosomal dorsum; C. Opisthosomal dorsum; D. Metapodosomal venter.

Type deposition

The holotype and four female paratypes are deposited in the acarological collection of Zoological Institute of RAS, Saint Petersburg, Russia; one female paratype is deposited in the acarological collection of Jalal Afshar Zoological Museum, College of Agriculture, University of Tehran, Iran (JAZM); other paratypes are deposited in the collection of the Tyumen State University Museum of Zoology, Tyumen, Russia.

Etymology

The new species named after Iranian acarologist Dr. Hamidreza Hajiqanbar who recently passed away and for his contribution to acarology.

DISCUSSION

The present generic concept of Tydeidae is based on chaetotaxy of idiosoma, legs and palps. Any difference in number of setae and solenidia on legs and palps is a characteristic for particular genus (Kazmierski 1998). The newly proposed genus *Andrelorryia* is characterized by the absence of seta

l'' on palptibia and solenidion ω on tarsus II and well fits to present system of Tydeidae. However, loss of setal structures in Tydeidae could be a result of homoplasy. Despite the availability of some publications on the general molecular phylogeny of acariform mites (Dabert *et al.* 2010; Klimov *et al.* 2018), very poor data on molecular phylogeny of Tydeidae are available at this time. It seems that, only the reconstruction of phylogeny based on multigene analysis will be able to clarify the situation with validity of the numerous created tydeid genera.

ACKNOWLEDGEMENTS

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جنس و گونه جدیدی از Tydeidae (Acari: Prostigmata) از سیبری غربی، روسیه

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چکیده

جنس و گونه تک‌تایی جدید *Andrelorryia hajiqanbari gen. et sp. nov.* از سیبری غربی، روسیه توصیف می‌شوند. جنس جدید پیش‌تر در منابع به‌عنوان Generic Unit TY2 ذکر شده بود و با *Nudilorryia* به دلیل نبودن موی "l" روی ساق پالپ و نبودن سولنیدی در پنجه پای دوم متفاوت است.

واژگان کلیدی: کنه‌ها؛ ریخت‌شناسی؛ پالئارکتیک؛ رده‌بندی؛ زیرخانواده Tydeinae؛ بالاخانواده Tydeoidea.

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