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**A NEW SPECIES OF THE GENUS *EUEREMAEUS* MIHELČIČ, 1963
(ACARI: ORIBATIDA: EREMAEIDAE) FROM THE RUSSIAN FAR EAST**

S. G. Ermilov¹⁾, N. A. Ryabinin²⁾

1) Institute of Environmental and Agricultural Biology (X-BIO), Tyumen State University, 10 Semakova Str., Tyumen 625003, Russia. E-mail: ermilovacari@yandex.ru

2) Institute of Water and Ecological Problems, Far Eastern Branch, Russian Academy of Sciences, 56 Dikopoltsev Str., Khabarovsk 680000, Russia. E-mail: nryabinin46@gmail.com

Summary. *Eueremaeus badzhalensis* sp. n. is described from Khabarovskii krai. The new species differs from *E. trionus* (Higgins) and *E. elongatus* (Fujikawa) by the larger body size and the presence of prodorsal enantiophyses, by lateral carinae, long costulae and comparatively short bothridial setae with globular heads. A key to species of *trionus*-group of the genus *Eueremaeus* is provided.

Key words: eremaeid mites, taxonomy, new species, key, Khabarovskii krai, Russia.

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Резюме. Из Хабаровского края описан *Eueremaeus badzhalensis* sp. n. Новый вид отличается от *E. trionus* (Higgins) и *E. elongatus* (Fujikawa) более крупными размерами тела, а также присутствием продорсальных энантиофизисов, боковых карин, длинных костул и сравнительно коротких трихоботрий, имеющих глобулярные головки. Приведена определительная таблица видов группы *trionus* рода *Eueremaeus*.

INTRODUCTION

The oribatid mite genus *Eueremaeus* (Acari: Oribatida: Eremaeidae) was proposed by Mihelčič (1963) with *Eremaeus oblongus* Koch, 1835 as type species. The main generic characters were summarized by Behan-Pelletier (1993). At present, the genus comprises 33 species and three subspecies, which are distributed in the Holarctic, Oriental and Neotropical regions (Subías, 2020).

At present, the oribatid mite fauna of the Russian Far East is moderately investigated, and only four species/subspecies of *Eueremaeus* were registered (Ryabinin, 2015; Ryabinin et al., 2018), namely *E. elongatus* (Fujikawa, 1972), *E. oblongus* (Koch, 1835), *E. oblongus quadrilamellatus* (Hammer, 1952), *E. oblongus silvestris* (Forslund, 1956). A new species of *Eueremaeus* from Khabarovskii krai is described and illustrate in this paper.

MATERIAL AND METHODS

Our work is based on materials collected by second author and stored in the collection of the Institute of Water and Ecological Problems, Far Eastern Branch, Russian Academy of Sciences, Khabarovsk, Russia.

Specimens were mounted in lactic acid on temporary cavity slides for measurement and illustration. All body measurements are presented in micrometers. Drawings were made with a camera lucida using a Leica transmission light microscope “Leica DM 2500”. SEM micrographs were made with the aid of a JEOL–JSM-6510LV SEM microscope.

General morphological terminology used in this paper mostly follows that of F. Grandjean: see Travé & Vachon (1975) for references, Norton (1977) for leg setal nomenclature, and Behan-Pelletier (1993) and Norton & Behan-Pelletier (2009) for overview.

The following abbreviations are used in the figures: *cos* – costula; *tcos* – transcostula; *car* – carina; *tu* – tutorium; *ea* – enantiophysis; *ro*, *le*, *in*, *bs*, *ex* – rostral, lamellar, interlamellar, bothridial and exobothridial setae, respectively; *bo* – bothridium; *c*, *la*, *lm*, *lp*, *h*, *p* – notogastral setae; *ia*, *im*, *ip*, *ih*, *ips* – notogastral lyrifissures; *a*, *m*, *h* – subcapitular setae; *or* – adoral seta; *d*, *l*, *v*, *cm*, *acm*, *ul*, *sul*, *vt*, *lt* – palp setae; ω – palp and leg solenidion; *cha*, *chb* – cheliceral setae; *Tg* – Trägårdh’s organ; *I*, *II* – pedotecta I, II, respectively; *1a*, *1b*, *1c*, *2a*, *3a*, *3b*, *3c*, *4a*, *4b*, *4c* – epimeral setae; *g*, *ag*, *an*, *ad* – genital, aggenital, anal and adanal setae, respectively; *iad* – adanal lyrifissure; *dis* – discidium; *pp* – postanal process; *pms* – posteromarginal sclerite; *Tr*, *Fe*, *Ge*, *Ti*, *Ta* – leg trochanter, femur, genu, tibia, tarsus, respectively; *pa* – leg porose area; σ , ϕ – leg solenidia; ε – tarsus I famulus; *v*, *ev*, *bv*, *l*, *d*, *ft*, *tc*, *it*, *p*, *u*, *a*, *s*, *pv* – leg setae.

DESCRIPTION OF NEW SPECIES

Family Eremaeidae

Genus *Eueremaes* Mihelčič, 1963

Eueremaes badzhalensis Ermilov et Ryabinin, sp. n.

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Figs 1–17

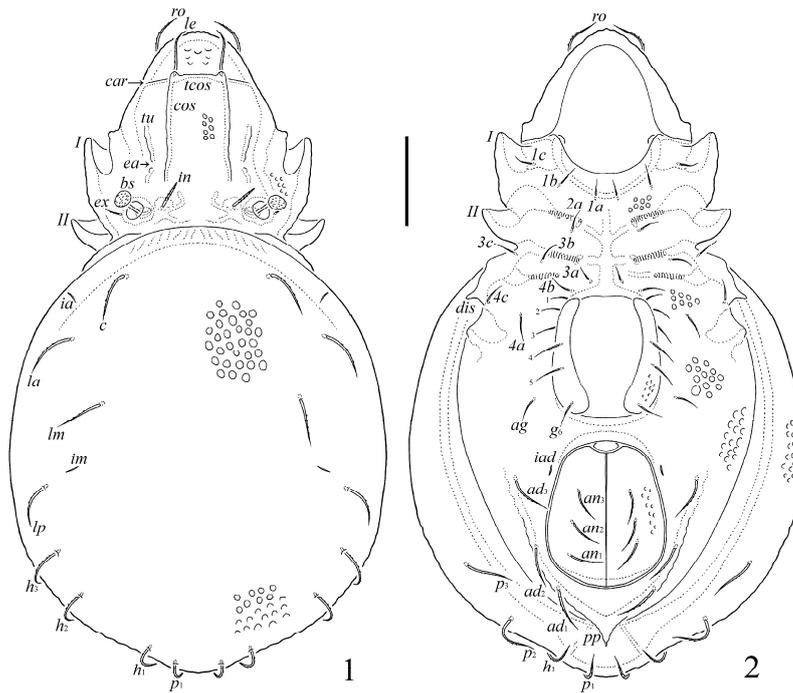
MATERIAL EXAMINED. Holotype – ♀, **Russia:** Khabarovskii krai, Verkhnebureinsky District, Badzhalsky Range near Mogdy River, 50.516599° N, 133.856580° E, deciduous forest with larch, spruce, alder, cedar elfin, ledum, cowberry and mosses (*Sphagnum* sp.), in decaying moss near spruce, 4.VII 1987, leg. N.A. Ryabinin. Paratypes: 9 ♀, the same label as holotype. All specimens are preserved in ethanol with a drop of glycerol.

TYPE DEPOSITION. The holotype is deposited in the collection of the Senckenberg Institute, Görlitz, Germany. Nine paratypes are deposited in the collection of the Tyumen State University Museum of Zoology, Tyumen, Russia.

DIAGNOSIS. Body size 713–796 × 398–464. Body foveolate. Prodorsum with costulae, transcostula, lateral carinae, tutoria and enantiophyses. Rostral and lamellar setae long, setiform, barbed. Interlamellar setae of medium size, thickened, erect, barbed. Bothridial setae short, with globular, barbed heads. Notogastral setae of medium size, setiform, barbed. Epimeres with setal formula 3-1-3-3. Three pairs of anal and three pairs of adanal setae present. Postanal process triangular. Leg trochanters III and IV with triangular anterodorsal processes. Leg companion setae *d* on tibia I–IV and on genua I–III present.

DESCRIPTION. Female. Body length 796 (holotype), 713–796 (nine paratypes); body width 464 (holotype), 398–464 (nine paratypes).

Integument (Figs 1–5, 8–17). Body brown. Dorsal, lateral and ventral sides, genital and anal plates, subcapitular mentum and genae, and leg femora I–IV and trochanters III and IV densely foveolate (diameter of foveolae up to 10). Subcapitular rutelli slightly striate. Body and legs covered with covering layer of gel-like cerotegument, including microgranules and bacillar structures.



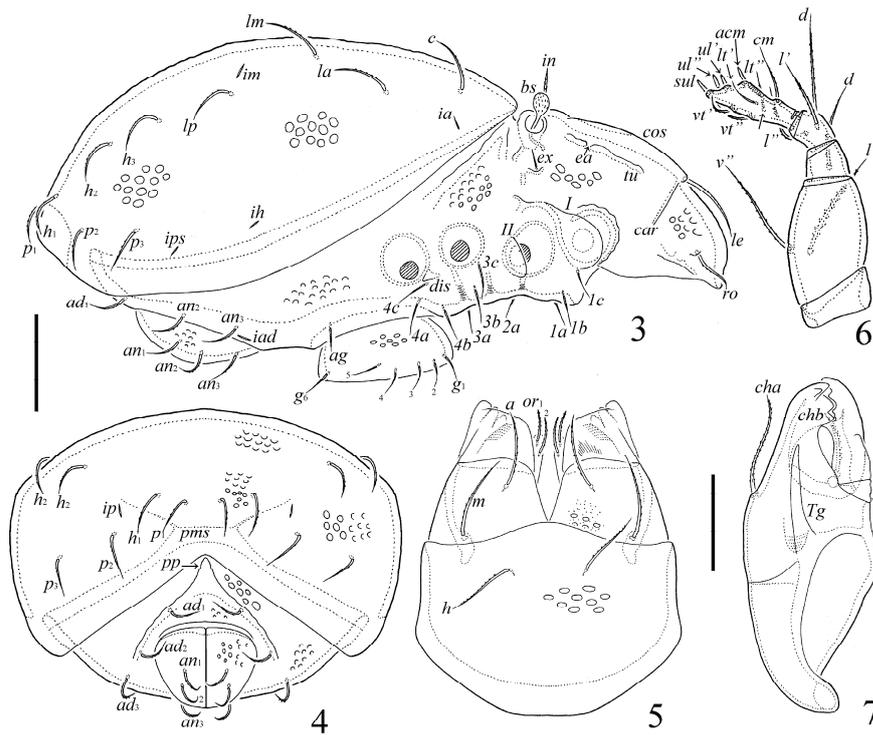
Figs 1–2. *Eueremaeus badzhalensis* sp. n., adult: 1 – dorsal view (legs not shown); 2 – ventral view (gnathosoma and legs not shown). Scale bar 100 μ m.

Table 1. Leg setation and solenidia of adult *Eueremaeus badzhalensis* sp. n.

Leg	Tr	Fe	Ge	Ti	Ta
I	v'	$d, (l),$ bv'', v''	$(l), v', d\sigma$	$(l), (v), d\phi_1, \phi_2$	$(ft), (tc), (it), (p), (u), (a), s, (pv),$ $(pl), l'', v', \varepsilon, \omega_1, \omega_2$
II	v'	$d, (l),$ bv'', v''	$(l), v', d\sigma$	$(l), (v), d\phi$	$(ft), (tc), (it), (p), (u), (a), s, (pv),$ $l'', v', \omega_1, \omega_2$
III	$l', l'^*,$ v'	d, l', ev'	$l', d\sigma$	$l', (v), d\phi$	$(ft), (tc), (it), (p), (u), (a), s, (pv)$
IV	v'	d, ev'	d, l'	$l', (v), d\phi$	$ft'', (tc), (p), (u), (a), s, (pv)$

Note: Roman letters refer to normal setae, Greek letters to solenidia (except ε = famulus); $d\phi$ and $d\sigma$ – seta and solenidium coupled, l'^* – seta present or absent; single prime (') marks setae on anterior and double prime (') setae on posterior side of the given leg segment; parentheses refer to a pair of setae.

Prodorsum (Figs 1, 3, 12, 14–17). Rostrum broadly rounded. Costulae long, parallel, with minute cusps. Transcostula and additional carinae (lateral to costular cusps) well developed. Tutoria ridge-like, with abrupt posterior ends, opposing separate tubercles to form prodorsal enantiophyses. Rostral (61–69) and lamellar (82–94) setae setiform, barbed, le inserted on costular cusps. Interlamellar setae (49–57) thickened, erect, barbed. Exobothridial setae (20) setiform, thin, roughened. Bothridial setae (41–45) with short, smooth stalk and short, globular, barbed heads.



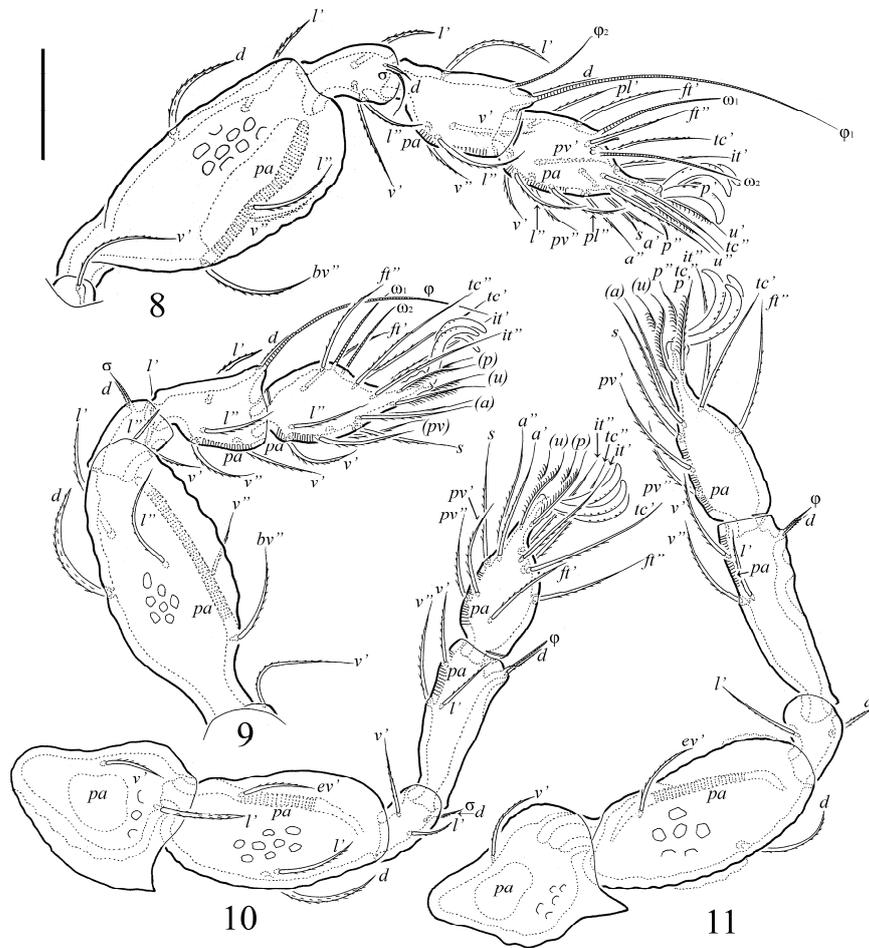
Figs 3–7. *Eueremaes badzhalensis* sp. n., adult: 3 – lateral view (gnathosoma and legs not shown); 4 – posterior view; 5 – subcapitulum, ventral view; 6 – palp, right, paraxial view; 7 – chelicera, left, paraxial view. Scale bar 100 μ m (3, 4), scale bar 50 μ m (5, 7), scale bar 20 μ m (6).

Notogaster (Figs 1–4, 12–14, 17). Anterior margin convex medially. Ten pairs of notogastral setae (57–69) setiform, barbed. Lyrifissures *ia*, *im*, *ip*, *ih* and *ips* distinct. Opisthonotal glands openings not evident.

Gnathosoma (Figs 5–7, 13). Subcapitulum longer than wide (176–184 \times 132–138). Three pairs of subcapitular setae (*a* and *h*, 32–36; *m*, 41–45) and two pairs of adoral setae (16–20) setiform, barbed. Palps (102–106) with typical setation 0–2–1–3–9(+ ω). Solenidion of palptarsi short, bacilliform, distally pressed to tubercle bearing seta *acm*. Postpalpal setae (8) spiniform, roughened. Axillary sacculi not evident. Chelicerae (176–184) with two setiform, barbed setae (*cha*, 57–61; *chb*, 30–32).

Epimeral and lateral podosomal regions (Figs 2, 3, 13, 14). Epimeres with setal formula 3-1-3-3. Setae (*1a*, *2a*, *3a*, 28–32; others 36–41) setiform, barbed. The second pair of setae on epimeres II completely absent. Discidia triangular.

Anogenital region (Figs 2–4, 13, 14). Six pairs of genital (30–32), one pair of aggenital (30–32), three pairs of anal (41–45) and three pairs of adanal (41–45) setae setiform, barbed. Adanal lyrifissures located close and parallel to anal plates. Postanal process well developed, triangular. Posteromarginal sclerite poorly visible.

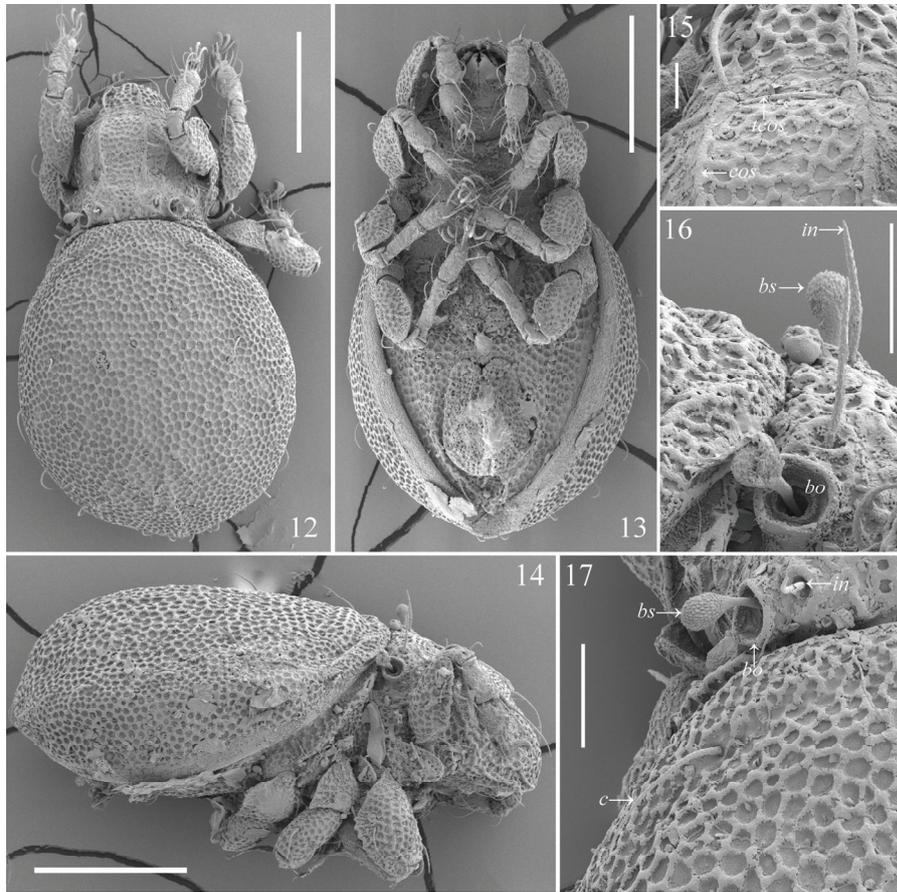


Figs 8–11. *Eueremaeus badzhalsensis* sp. n., adult: 8 – leg I, right, antiaxial view; 9 – leg II, right, antiaxial view; 10 – leg III, right, antiaxial view; 11 – leg IV, right, antiaxial view. Scale bar 50 μ m.

Legs (Figs 8–11, 12–14). Tridactylous, claws of all legs strong, similar in size, barbed on dorsal sides. Ventroparaxial porose areas on femora I–IV and on trochanters III and IV, proximoventral porose areas on tarsi I–IV and distoventral porose areas on tibiae I–IV slightly developed. Tibia I and II with anterodorsal apophyses. Trochanters III and IV with triangular anterodorsal processes. Formulas of leg setation and solenidia: I (1–5–4–5–20) [1–2–2], II (1–5–4–5–17) [1–1–1], III (2(or 3)–3–2–4–15) [1–1–0], IV (1–2–2–4–12) [0–1–0]; homologies of setae and solenidia indicated in Table 1. Setae *p* on tarsi II–IV and *u* on tarsi I–IV shortly ciliate. Companion setae *d* on tibia I–IV and on genua I–III present.

ETYMOLOGY. The species name *badzhalsensis* refers to the place of origin, Badzhalsky Range (Khabarovskii krai, Russia).

REMARKS. The new species belongs to the *trionus*-group (Behan-Pelletier, 1993), which comprises *Eueremaeus*-species with three pairs of anal and three pairs of adanal setae. The distinctive characters of these species can be found in an identification key below.



Figs 12–17. *Eueremaeus badzhalensis* sp. n., adult, SEM micrographs: 12 – dorsal view; 13 – ventral view; 14 – lateral view; 15 – transcostula and distal parts of costulae; 16 – basal part of prodorsum, lateral view; 17 – basal part of prodorsum and anterior part of notogaster, left half, dorsal view. Scale bar 200 μ m (12–14), scale bar 50 μ m (15–17).

Key to species of *trionus*-group of *Eueremaeus*

1. Bothridial setae short, with globular head; prodorsal enantiophyses and lateral transverse carinae present; costulae long, reaching insertions of lamellar setae; body size: 713–796 \times 398–464 [Palearctic Region: Russian Far East] *Eueremaeus badzhalensis* sp. n.
- Bothridial setae long, with clavate head; prodorsal enantiophyses and lateral carinae absent; costulae of medium size, not reaching insertions of lamellar setae, or absent 2

2. Body foveolate; costulae completely absent; anal and adanal setae of medium length; body size: 467–510 × 230 [Nearctic Region; Palaearctic Region: northwest of Siberia
 *Eueremaeus trionus* (Higgins, 1979)
 – Body not foveolate; costulae present; anal and adanal setae short; body size: 442–586 ×
 200–329 [East part of the Palaearctic Region]
 *Eueremaeus elongatus* (Fujikawa, 1972)

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