

NEW ORIBATID MITES (ACARI: ORIBATEI) OF THE GENERA *DISSORHINA* AND *CERATOZETOIDES* FROM MONGOLIA

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ORIBATEI
DISSORHINA
CERATOZETES
NEW SPECIES
MONGOLIA

SUMMARY: The oribatid mites *Dissorhina bulganensis* sp. nov. and *Ceratozetoides aokii* sp. nov. are described from Mongolia. *D. bulganensis* sp. nov. is distinguished from the other known congeneric species in having a pair of heavily pigmented longitudinal ridges anteriorly of lamellar costulae between lamellar setae, two pairs of strongly sclerotized ridges on the interlamellar region and a pair of weakly sclerotized ridges along the lateral margins of the prodorsum. *C. aokii* sp. nov. differs from closely related species in the well-developed and relatively wide head of the sensillus, the insertions of the interlamellar setae, which are located under the anterior margin of notogaster, and the relatively narrow lamellae.

ORIBATEI
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NEUE ARTEN
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ZUSAMMENFASSUNG: Es wurde zwei Milbenarten *Dissorhina bulganensis* sp. nov. und *Ceratozetoides aokii* sp. nov. aus der Mongolei neue beschrieben. *D. bulganensis* sp. nov. unterscheidet sich von bekannten Arten der Gattung durch sehr stark pigmentierte paar Streifen vor der Lamellar Costulae; durch sehr stark sklerotisierte paar Streifen in der Interlamellar Region; und durch schwach sklerotisierte Streifen entlang der Prodorsum-Seite. *C. aokii* sp. nov. charakterisiert sich von anderen Verwandten der Gattung durch sehr gut entwickelte, relativ breite (dicke) Koepfe des Sensillus; durch die Lage der Interlamellar-Haare, die sich unter dem Vorderkante der Notogaster befindet, und durch die relativ duenne Lamellae.

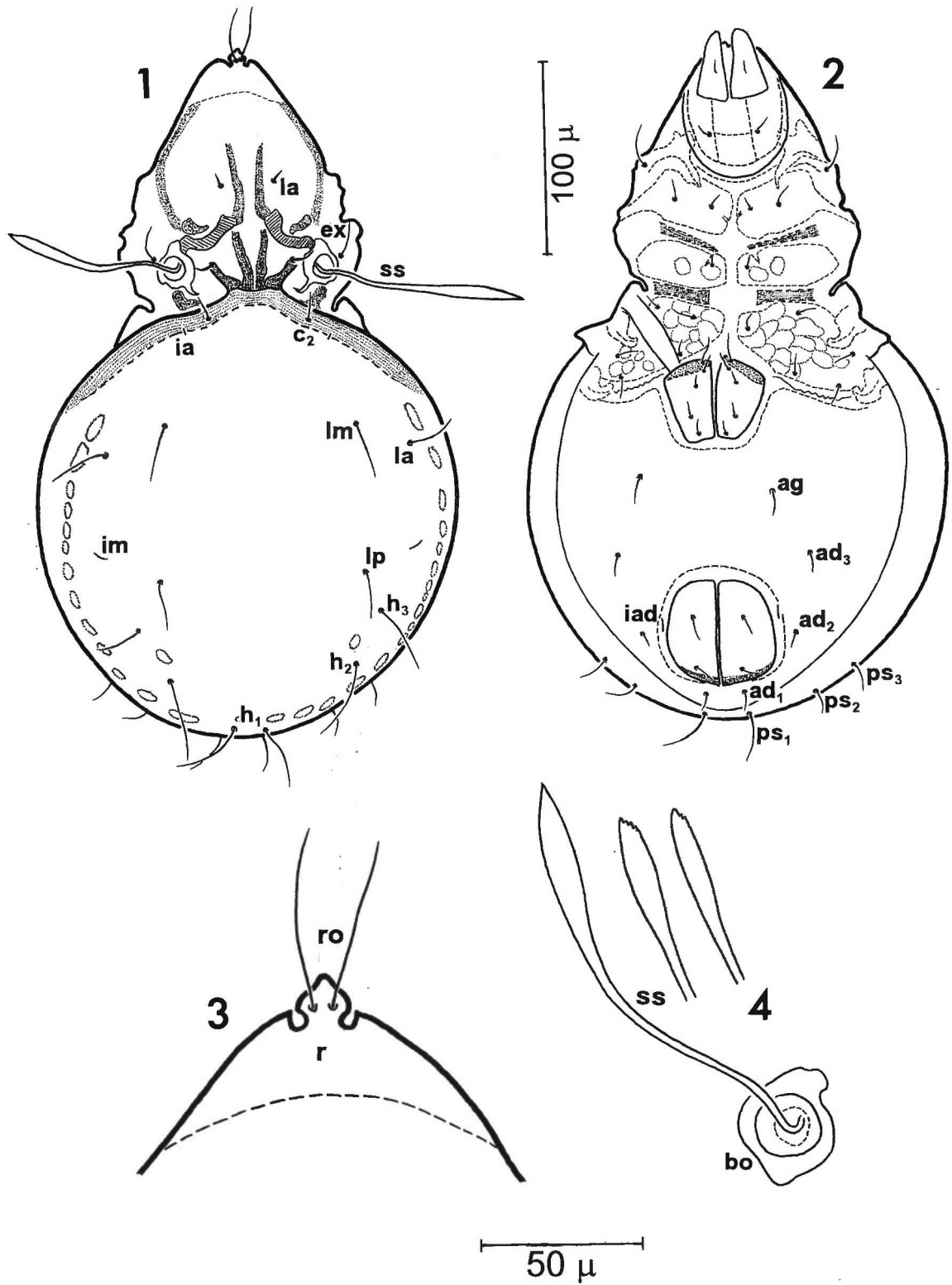
INTRODUCTION

The complexity of the oribatid mite family Oppiidae is well known and the family has been revised and studied by several authors. BALOGH (1983), in a partial revision of the family, proposed the new genus *Cosmoppia*, the type species of which is *Eremaeus ornatus* Oudemans, 1900. SUBIAS & BALOGH (1988) consider *Cosmoppia* to be a junior synonym of *Dissorhina* Hull, 1916. *Dissorhina* seems to be distributed

only in the Holarctic Region and apparently includes four species and four subspecies (SUBIAS & BALOGH, 1989; GORDEEVA & MELAMUD, 1991). I describe below a new species from the mountains in Central region of Mongolia, which is named *Dissorhina bulganensis* sp. nov.

The oribatid mite family Ceratozetidae is one of the richest in terms of number of species, but its classification is most difficult. SHALDYBINA (1966, 1975) divided the subfamily Ceratozetinae Jacot, 1925 into three genera on the basis of the presence or

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FIGS. 1-4: *Dissorhina bulganensis* sp. nov.

1. — Dorsal aspect. 2. — Ventral aspect. 3. — Rostral part. 4. — Variation of sensillus.

absence of a desclerotized line of pteromorphae, the number of notogastral setae, the shape of the lamellar cusps, the body size of adults, and the immature characters. These genera are *Ceratozetes* Berlese, 1908 (type species *Oribata gracilis* Michael, 1884), *Ceratozetella* Shaldybina, 1975 (type species *Ceratozetes minimus* Sellnick, 1928) and *Ceratozetoides* Shaldybina, 1975 (type species *Ceratozetes cisalpinus* Berlese, 1908). However, BALOGH & BALOGH (1992), in their review of the world oribatid genera, did not recognize the validity of *Ceratozetella* and *Ceratozetoides*, considering these genera as synonyms of *Ceratozetes*. Later, PAVLITSHENKO (1994) published a taxonomic review of the Ceratozetoidea of the Ukraine and recognized the validity of the genera *Ceratozetella* and *Ceratozetoides*. PAVLITSHENKO (1994) was of the opinion that the species which have ten pairs of notogastral setae, well-developed lateral dens of lamellar cusps, smooth rostrum and monodactylous tarsi should be removed from the genus of *Ceratozetes*. In addition, he classified several *Ceratozetes* species (*C. fiellbergi* Behan-Pelletier, 1986; *C. kutchin* Behan-Pelletier, 1986; *C. unipiag* Behan-Pelletier, 1986) in the genus *Ceratozetella*. However, he did not mention the classification of oribatid mites proposed by BALOGH & BALOGH (1992). I have followed the system proposed by SHALDYBINA (1966, 1975) and PAVLITSHENKO (1994) and describe a new species under the name of *Ceratozetoides aokii* sp. nov. In my opinion, only six species can be classified in the genus *Ceratozetoides* at present, all of which are Holarctic, mostly from Europe and Asia.

All measurements are given in micrometers (μm). The average measurement is given in brackets after the range.

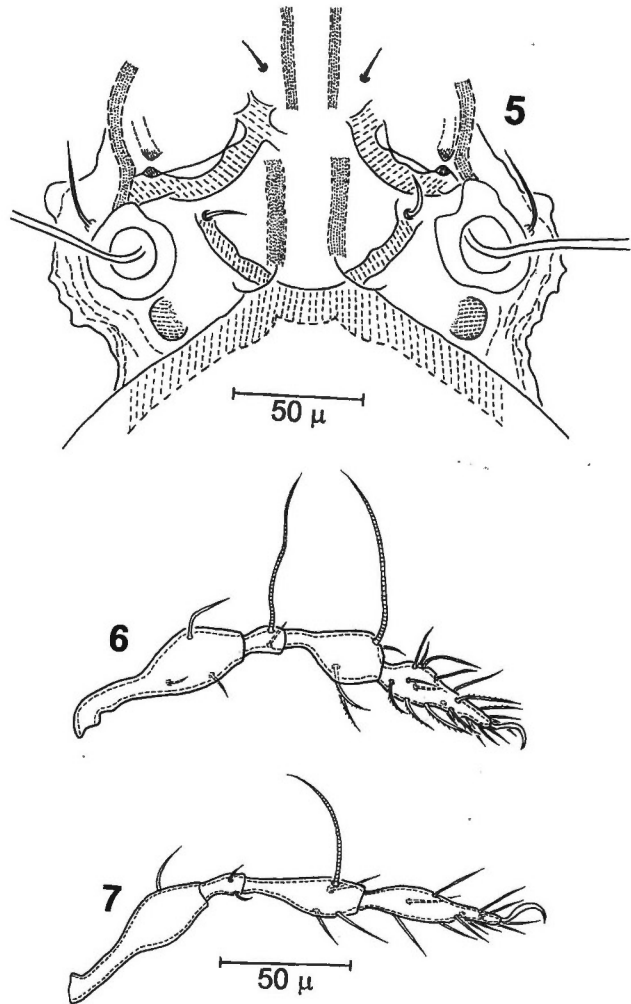
***Dissorhina bulganensis* sp. nov.**

(Figs. 1–7)

Colour. Light brown.

Measurements. Body length 248–288 (272); width of hysterosoma 134–160 (136).

Prodorsum. Rostrum incised, tripartite, median lobes as a small tubercle (Figs. 1, 3). Rostral setae fairly long, extending 5/6 of their length beyond the tip of rostrum and located very near to each other on



FIGS. 5–7: *Dissorhina bulganensis* sp. nov.

5. — Posterior part of prodorsum. 6. — Leg I (antiaxial view, trochanter removed). 7. — Leg. IV (antiaxial view, trochanter removed).

the median tubercle. Lamellar setae slightly nearer to interlamellar setae than to rostral ones; short, smooth, situated some distance anterior to apices of costulae at about same level as tectopodia I. Interlamellar setae smooth, a little longer than lamellars and situated on the anterior end of each lateral prodorsal ornamentation. Costulae rather wide but short, tips not reaching to middle level of prodorsum. Anterior half of costulae wider than posterior basal part and strongly converging anteriorly. A pair of sclerotized longitudinal ridges appears to extend anterior of costulae between lamellar setae. Outside the costulae, on each side, is a dark longitu-

dinal ridge, almost equal in length to that of sensillus. Interlamellar region with two pairs of sclerotized longitudinal ridges; median pair slightly sclerotized, directed anteriad, almost reaching anterior end of costulae; lateral pair strongly sclerotized, directed anterolaterad, reaching alveoli of interlamellar setae (Fig. 1, 5). Bothridium directed posterolaterad. Sensillus long, with a fusiform head, its distal portion mostly smooth, but sometimes slightly roughened at tip (Fig. 4). Exobothridial setae rather long, almost twice longer than lamellar ones, located anterolaterally to each bothridium.

Notogaster. Notogaster almost round, slightly longer than wide. Anterior margin strongly sclerotized. Ten pairs of notogastral setae present. Setae c_2 short, about half as long as remaining notogastral setae, inserted on anterior sclerotized margin of notogaster. Setae h_1 , h_2 and h_3 distinctly longer than other setae. Distance between bases of setae h_1 - h_1 a little shorter than that of ps_1 - ps_1 . Lyrifissures *im* located anterolaterad to setae *lp*. A few muscle sigillae scattered along lateral and posterior margins of notogaster (Fig. 1).

Epimeral region. With irregularly spaced muscle sigillae, well developed on epimeral fields *III* and *IV*. Epimeral borders *I*, *II*, *SJ* and *IV* well developed, extending to mid-line to join an irregular sternal border. Epimeral border *III* absent. Sternal border divides epimeral fields into right and left field. All apodemata except *apo.3* well developed, with a complicated rugosity on apodema *apo.4* (Fig. 2). Epimeral setae rather long and smooth, setae *lc* about 1.8 times as long as remaining setae. Setal formula 3-1-2-3.

Ano-genital region. Anal and genital apertures located far from each other; anal aperture a little larger than genital one. Five pairs of genital and one pair of aggenital setae present. Seta g_5 distinctly longer than other genital setae, length nearly equal to that of seta *ag*. Setae g_1 , g_4 and g_5 situated close to median margin of genital plates, while g_2 and g_3 arranged rather distant from both median and lateral margins. Distance between bases of aggenital setae nearly equal to that of setae ad_2 - ad_2 . Two pairs of anal and three pairs of adanal setae present. Adanal setae ad_1 in postanal, ad_2 in paraanal, ad_3 in preanal

positions. Adanal lyrifissure *iad* located anterior to level of adanal setae ad_2 , removed from lateral margins of anal aperture by half its length or a little more (Fig. 2).

Legs. All tarsi monodactylous, setation of legs I and IV as shown in figs. 6-7, being normal for the genus. Tarsi III and IV slightly longer and more slender than tarsi I and II; tarsus : tibia length ratios as follows: I (1.2 : 1); II (1.2 : 1); III (1.2 : 1); IV (1 : 1). Solenidium ω_1 longer and slightly thicker than ω_2 . Tibial solenidium φ_1 and genual solenidium σ of leg I much longer than other setae.

Type series. Holotype and three paratypes from Mt. "Bulgan", Erdenebulgan District, Arkhangai Province, Mongolia, litter of birch forest (*Betula plataphylla*), 47°20'N., 101°25'E.; eight paratypes from: Mt. "Khangai", District Bulgan, Arkhangai Province, litter of larch forest (*Larix sibiricus*), 47°10'N., 100°40'E., 18 Sept. 1990, leg. B. BAYARTOGTOKH. Holotype and nine paratypes deposited in the Acarology Collection of the Department of Zoology, National University of Mongolia; two paratypes deposited in the National Science Museum, Tokyo, Japan.

Remarks. This new species differs from the known species of *Dissorhina* in having: a pair of slightly pigmented longitudinal ridges anterior to the lamellar costulae between lamellar setae; two pairs of sclerotized ridges on the interlamellar region; and a pair of weakly sclerotized ridges along the lateral margins of the prodorsum. It is closely related to *D. longipilosa* (Kunst, 1957) and *D. ornata* (Oudemans, 1900), but can be distinguished from the former by the 1) very short interlamellar setae, 2) almost round shape of notogaster, 3) anteriorly widened shape of lamellar costulae, 4) relatively short notogastral setae *lm* and *lp*, and 5) more posterior and anterior positions of genital setae g_2 and g_3 , respectively. From the type species (*D. ornata*), the new species can be distinguished by the relatively long notogastral and exobothridial setae, the presence of longitudinal ridges on the prodorsum and the minutely barbed head of the sensillus.

Etymology. The specific name *bulganensis* refers to the type locality of this species, Mt Bulgan in the central region of Mongolia.

Ceratozetoides aokii sp. nov.

(Figs. 8–11)

Colour. Dark brown.

Measurements. Body length 760–788 (775), width of hysterosoma 532–560 (552).

Prodorsum. Rostrum with wide parallel-sided indentation, forming two lateral teeth; margin between teeth strongly convex, without medial indentation. Rostral setae unilaterally barbed, extending well beyond tip of rostrum. Lamellae rather long, slightly converging, reaching anteriorly to level of insertions of rostral setae. Lateral margin of lamellae with longitudinal striations; greatest width of lamellae at base of cusps, posterior portions distinctly narrowed. Lamellar cusps fairly long, a little shorter than rest of lamellae, parallel to each other, with pointed lateral dens, without medial dens. Lamellar setae weakly barbed, long, extending about half their length beyond tip of rostrum. Translamella absent, interlamellar distance at base of cusps subequal to length of lamellar cusp. Small, scattered tubercles present between lamellar cusps. Interlamellar setae weakly barbed, reaching tip of rostrum; insertions covered by anterior margin of notogaster. Sensillus fairly long, as long as rostral seta, with a long, weakly barbed, clavate head; stalk smooth, directed anteriorly or anterolaterally. Bothridium partly concealed under anterior margin of notogaster; bothridial scale *svm* and *svl* relatively large. Exobothridial setae smooth, rather long, inserted close and lateral to each bothridium (Fig. 8).

Notogaster. Smooth, about 1.14 times as long as wide. Anterior margin strongly arched medially. Notogastral setae absent, only ten pairs of setal alveoli present. A number of muscle sigillae arranged anteromedially to area porosa *Aa*. Four pairs of areae porosae, round to elongate oval in shape, *Aa* largest and somewhat irregular in shape, *A₂* and *A₃* elongate-oval, somewhat smaller than *Aa* and *A₁*. Lyrifissure *im* short, located anterior to area porosa *A₁*. A few sigillae scattered on posterior part of notogaster (Fig. 9).

Epi-meral region. Surface smooth; apodemata *apo.2* and *apo.sj* well developed, rather long, aligned obliquely; *apo.3* short, aligned transversely. Epi-

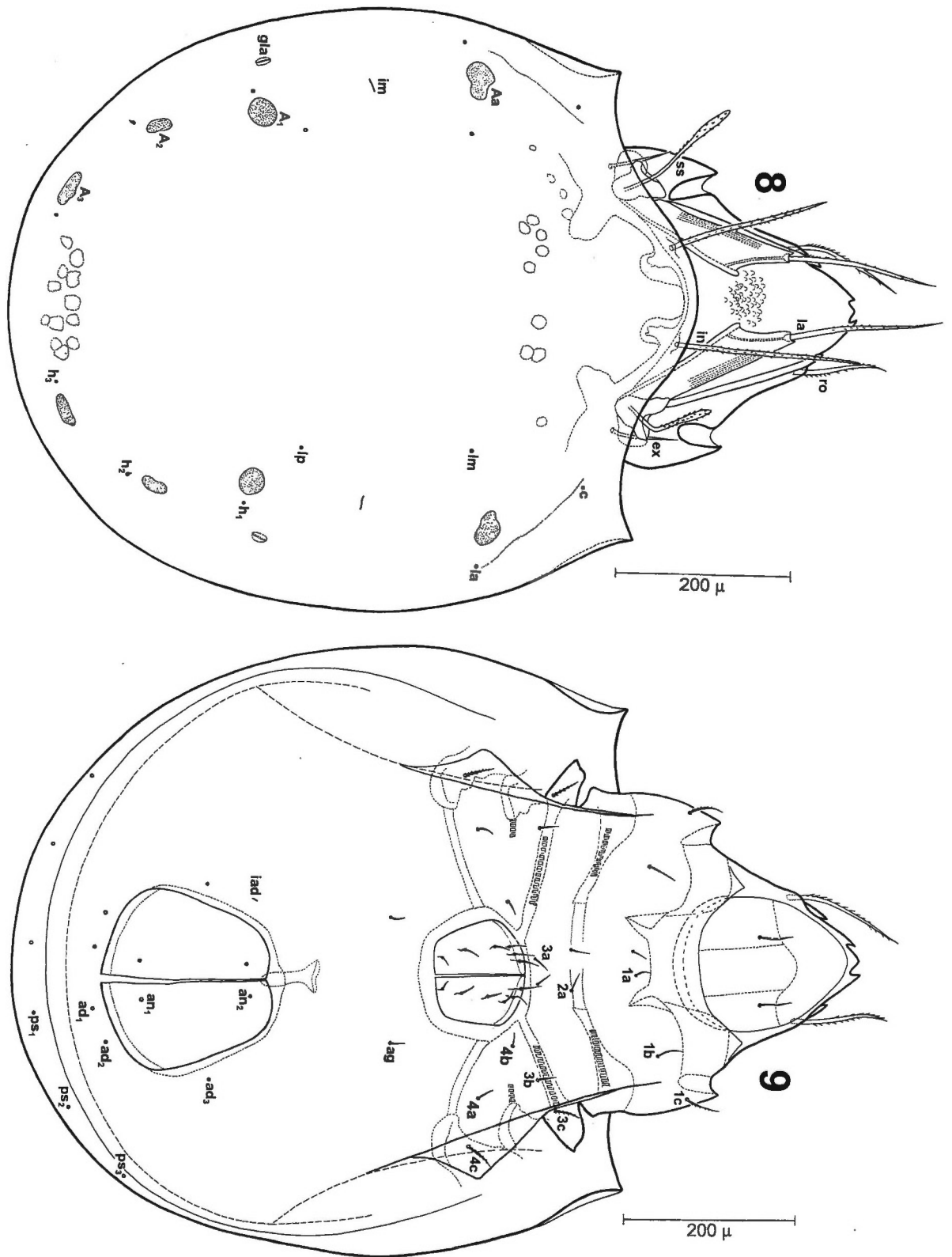
meral setae fairly long, setae *1c*, *3c* and *4c* thicker and distinctly roughened (Fig. 9). Setal formula 3-1-3-3.

Ano-genital region. Genital plate broadest in anterior half. Setae of genital region smooth, six pairs of genital and one pair of aggenital setae, fine and smooth. Distance between bases of aggenital setae nearly equal to that between *an₁*-*an₂*. Anal aperture trapezoid, broadest in the posterior half and about 1.7 times larger than genital aperture. Two pairs of anal and three pairs of adanal setal insertion pores present. Adanal lyrifissures *iad* very small, located at level of insertions of setae *an₂* (Fig. 9).

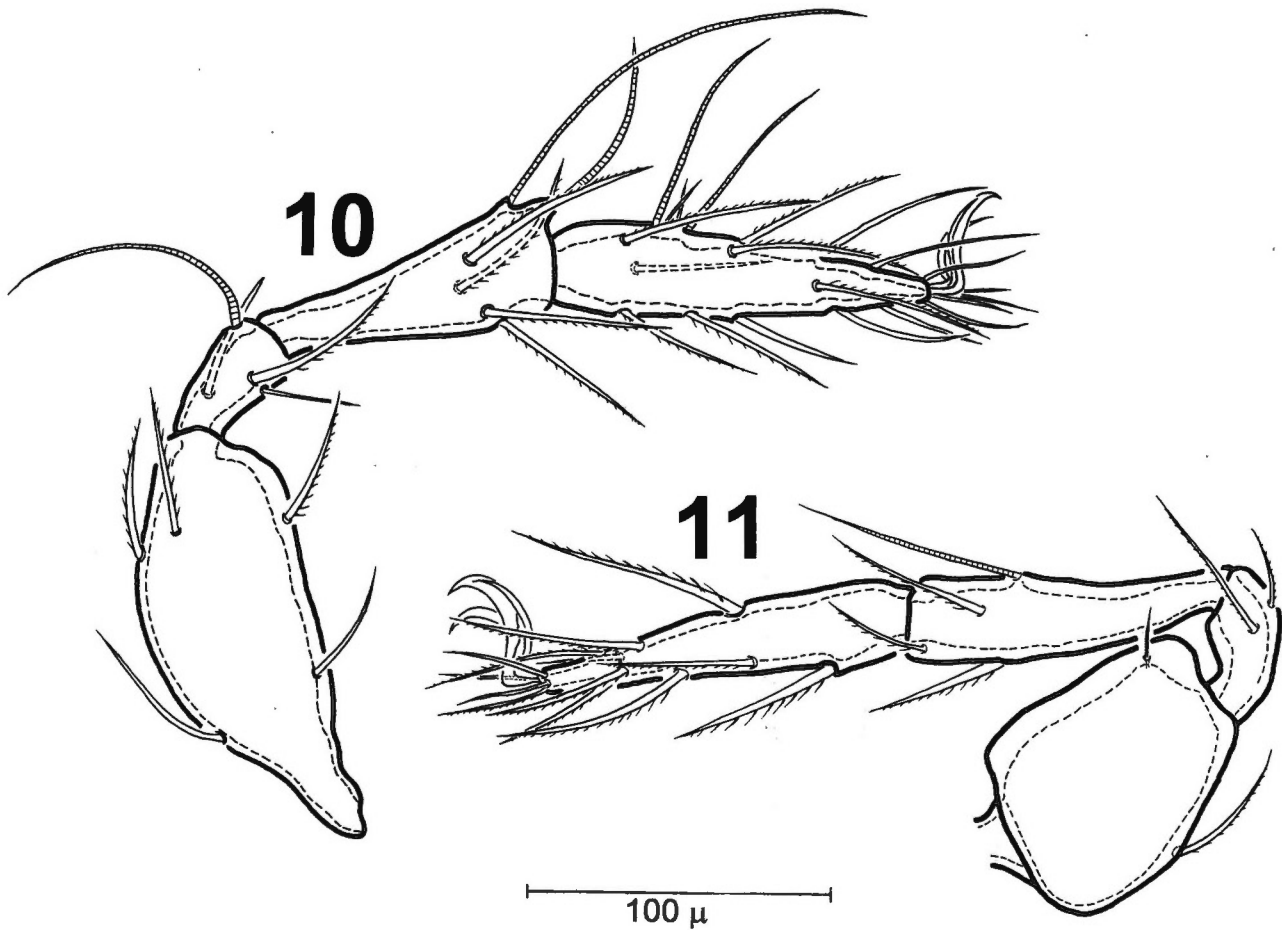
Legs. All tarsi heterotridactylous, with a strong median claw and slender lateral claws. Setation of legs I and IV as shown in figs. 10–11, features normal for the genus. Solenidia ω_1 and ω_2 of tarsus I slightly curved anteriorly, with slightly tapered tip. Solenidium ϕ_2 of tibia I much longer and thinner than ϕ_1 . Genu IV with small ventral carina.

Type series. Holotype and ten paratypes: Mt. "Bogd Khan", Sergelen District, Central Province, 8 km south of Ulaanbaatar, Mongolia, litter of larch forest (*Larix sibiricus*), 47°55'N., 106°30'E., 28 Sept. 1991, leg. B. BAYARTOGTOKH. Holotype and eight paratypes preserved in the Acarology Collection of the Department of Zoology, National University of Mongolia; two paratypes deposited in the National Science Museum, Tokyo, Japan.

Remarks. In having distinct lateral teeth of lamellar cusps and lacking of notogastral setae, this new species resembles *C. cisalpinus* (Berlese, 1908), *C. maximus* (Berlese, 1908) and *C. imperatorius* (Aoki, 1963). *Ceratozetoides aokii* sp. nov. is distinguishable from *C. cisalpinus* by 1) the well developed and slightly wider head of sensillus, 2) the alveoli of interlamellar setae, which are located under the anterior margin of notogaster, 3) the absence of a transverse furrow of desclerotization on pteromorphae, 4) the different shape of area porosa *Aa*, and 5) the relatively narrow lamellae. *C. maximus*, redescribed by BERNINI (1971), differs from the new species by the short interlamellar setae, the broadly rounded shape of the rostrum, the presence of a translamellar line, the elongate oval shape of area porosa *Aa* and the much larger body size. *Ceratozetoides imperatorius* is distinguished from the new species by the different



FIGS. 8-9: *Ceratozetoides aokii* sp. nov. 8. — Dorsal aspect. 9. — Ventral aspect.



FIGS. 10–11: *Ceratozetoides aokii* sp. nov.

10. — Leg I (antiaxial view, trochanter removed). 11. — Leg IV (antiaxial view, trochanter removed).

shape of the rostrum, which has a sharply pointed indentation, and the sharply-pointed shape of the sensilli.

Etymology. This species is named in honour of Dr Jun-ichi AOKI, professor of Yokohama National University, Yokohama, Japan, who made a major contribution to my knowledge of the taxonomy of oribatid mites.

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