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A NEW SPECIES OF ZETOMOTRICHIDAE
FROM SHIKOKU ISLAND IN NIPPON (ACARI: ORIBATIDA)

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SUMMARY: A new species from the temple gardens on Shikoku Island, Nippon, belonging to the genus *Ghillarovus* of the family Zetomotrichidae (Acari) is described. The new species, *Ghillarovus sanukiensis* sp. nov. differs from any other congeners by its smaller body size (292 to 335 µm in body length); fewer rostral dents (12 to 15); the presence of lateral ridges on the prodorsum; the presence of barbs in all epimeral setae; the cilia of sensillus variable in number (15 to 16 long cilia, and 9 to 11 short ones), notogaster not separated at the posterior border; dorsal setae la as long as the lyrifissure im; the bacilliform solenidion ω1 and famulus; and setal formula on legs.

INTRODUCTION

The family Zetomotrichidae includes twenty-seven species and one subspecies, belonging to twelve genera, that have body lengths ranging in size between 258 and 510 µm. To date, two species, *Ghillarovus saxicola* Aoki et Hirauchi, 2000 and *Mabulatrix litoralis* Aoki et Hirauchi, 2000, have been found in Nippon. A third species was collected recently from Shikoku Island in Nippon, and is described below.

*Ghillarovus sanukiensis* sp. nov.

[Nipponese name: Sanuki-nokomesasaradani]

(Figs. 1-4)

*Measurements and body shape:* 3 females- length, 300 (321) 335 µm; width, 185 (197) 214 µm, 5 males- length, 292 (295) 300 µm; width, 171 (202) 228 µm. Body lozenge-shaped in outline (Figs. 1A & C) and yellowish brown. Body surface smooth, with numerous micro pores on notogaster and polygonate sculpture on epimeral region.
Prodorsum: Anterior rostral margin denticate; dentations small without deep incisions; number of dents varying from 12 to 15 (Fig. 2B). Lamellae ridge absent, however, a longitudinal ridge running from insertion of rostral seta (ro) to lateral side of bothridium. According to mounted condition (Fig. 2A), rostral setae (ro) originate far from anterior rostral margin, extending in front of rostrum for a distance equal to about two-third of their length; lamellar (le) and interlamellar (in) setae extending in front of rostral anterior margin in all specimens (Fig. 2A) except for one specimen (Fig. 1A). Setae ro, le and in setiform, thin, pilose; relative lengths and distances: \((in-in) > (ro-ro) = (le-le); (ro-le) \geq (le-in); le > in > ro\). Sensilli setiform, bilaterally ciliate, directed outwards and slightly longer than setae le; 15-16 cilia on one side and 9-11 cilia on the other (Fig. 2C). Exobothridial setae (ex) setiform, thin, smooth, shorter than half length of setae ro.

Notogaster: Dorsosejugal suture interrupted medially, directed forwards, reaching between insertions of lamellar and interlamellar setae. Humeral projections well developed, bearing setae c2; c2 thick setiform, barbed through the length. Humeral sac (hu) discernible. A total of ten dorsal setae including c2 and la present; with the exception of c2, all other notogastral setae thin, smooth, short, about half the length of c2. Four pairs of lyrifissures \((im, ih, ip\) and ips\) and one pair of ophiosomal glands present; im longest, aligned transversely, located antero-laterally to setae lm; ih aligned obliquely located laterally to im; ip aligned almost transversely, located between setae h2 and h3; ips behind setae h3. Relative lengths: \(la = im > ih > ip > ips\). Notogaster not separated, namely, without two lobes at the posterior border (Figs. 1B & D).

Ventral region: Diarthric subcapitulum; infracapiturnal setae: 1-1-1; setae a thin, unilaterally barbed; setae b and m thick, bilaterally barbed. Pedipalpal setae 0-2-1-3-9[1]; solenidion thick, long (Fig. 3D). Custodium sharp, long, extending anteriorly of setae 1c (Fig. 3B). Epimeral setal formula 3-1-3-3; setae 1b, 1c and 3b thick, pilose; the rest thin with sparse minute barbs (Fig. 3F), although barbs are hard visible under low magnifications (Fig. 1B). The relative lengths, \(1c > 1b > 3c > 1a > 2a \approx 3a \approx 3b > 4a \approx 4c > 4b\); \(h:1.7X1a\). Genito-anal setal formula, 4-1-2-2; all setae thin, glabrous; relative length, \(ge > ag > ad > an\); \(ge \approx 2Xan\). Both genital and anal openings almost as wide as long; anal opening larger than genital opening; about \(An \approx 2XGe\); distance between genital- and anal openings about 1.5X as long as genital opening. Genital setae \(g_3\) and \(g_4\) inserted away from \(g_1\) and \(g_2\). Aggenital setae (ag) inserted almost at level of posterior genital margin; distances, \((ag-ag) > 2X\) as wide as anal opening. Anal setae an1 inserted far from an2. Adanal setae (ad1) inserted at level of posterior anal margin. Setae ad2 inserted variably between midway along the anal aperture and anterior anal margin. Lyrifissures iad situated at level of anterior anal margin and aligned transversely or obliquely (Figs. 3A and C). Cheliceral setae cha setiform bearing some pectinations; chhb thick, forked (Fig. 3E).

Legs: All legs heterotridactylous: median claw thick, shorter than lateral ones. Leg chaetotaxy including famulus but excluding solenidia: I (1-5-2-4-21); II (1-5-2-4-16); III (2-4-1[2]-3-16); IV (1-2-2-3-14); setae on genu III variable in number. Soleniodiotype: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0). Dilated or modified setae absent on all legs (Fig. 4). On leg I, solenidion \(o_1\) bacilliform; other solenidia \(o_2, q_1, q_2\) and \(\sigma\) setiform. On tarsus I, \(o_2\) inserted on apophysis; famulus bacilliform inserted on apophysis between \(o_2\) and seta \(fi''\); \(o_1\) inserted posteriorly far from famulus, extending for a short distance in front of famulus. On genu I, solenidion \(\sigma\) adjacent to seta \(d\). Leg IV adapted for jumping, much enlarged.

Secondary sexual characters: Conspicuous feature of sexual dimorphism absent, except for genital organs (Figs. 2D & E), however males have smaller body size and shorter distance between genital and anal apertures.

Material examined: Holotype (Female) (NSMT-Ac 11801): from litter, humus and soil sample at the garden of the Jinne-in Temple (45 m above sea level) at Kanwonji City in Kagawa Pref., Feb.-8-2004, T. Fujikawa; 6 paratypes (2 females and 4 males) (NSMT-Ac 11802 to 11805): from litter, humus and soil sample at the garden of the Shushakajii Temple (90 m above sea level) at Zentsuji city in Kagawa Pref., Feb.-7-2004, T. Fujikawa; 1 paratype (male): from litter, humus and soil sample at the garden of the Daikoji Temple (60 m above sea level) at Yamamoto-chô in Kagawa Pref., Feb.-8-2004, T. Fujikawa.

Remarks. The new species has some characters in common with members of the genus Glyciphilus Kri Boulderly, 1966. However, the new species differs from any other congeners by: its smaller body size (292 to 335 \(\mu\)m in length); fewer rostral dents (12 to 15); the
Fig. 1: Ghilarovus sanukiensis sp. nov. (X 600; not depressed condition) A. — Dorsal view; B. — Ventral view; C. — Notogaster; D. — Genito-anal region. Abbreviations: ro, le, in, ex: Rostral, lamellar, interlamellar and exobothridial setae; ss: Sensillus; la, lm, lp, c1, h1, p1-2; Dorsal setae: im, ip, ips, iad: Lyri fissures; 1a-c, 2a, 3a-c, 4a-c: Epimeral setae; g1, ag, an1-2, ad1-2: Genital, aggenital, anal and adanal setae; a, m, h: Anterior, medial and posterior subcapitular setae; or3: adoral seta; hu: Humeral sac; cus: Custodia.
Fig. 2: *Ghielarvarus sanukiensis* sp. nov. (X 1,500; depressed condition) A. — Anterior region of prodorsum; B. — Variation of rostral dents; C. — Bothridial and humeral region; D. — Genital organ of male; E. — Genital organ of female. **Abbreviations**: ro, le, in, ex: Rostral, lamellar, interlamellar and exobothridial setae; ss: Sensillus. c2: Dorsal seta ψ2; 1: Eugenital setae.
Fig. 3: *Ghilarovus sanukiensis* sp. nov. (X 1,500; depressed condition) A. — Variation of lyrifissure *iad* of females; B. — Custodium; C. — Variation of lyrifissure *iad* of males; D. — Tarsus of pedipalp; E. — Chelicera; F. — Setae and lyrifissures. Abbreviations: *la*, *lp*: Dorsal setae; *im*: Lyrifissure; *1a-c, 2a, 3a-c, 4a-c*: Epimeral setae; *g, ag, an, ad*: Genital, aggenital, anal and adanal setae; *a, m, h*: Anterior, medial and posterior subcapitular setae; *cha, chb*: Posterior and anterior setae of chelicera.
Fig. 4: *Ghilarovus sanukiensis* sp. nov. (X 1,500; depressed condition) A. — Left leg I; B. — Tarsus of left leg IV; C. — Tibia to trochanter of left leg IV. Abbreviations: *d*: Dorsal setae; *Famulus on tarsus of leg I; ω1-2, φ1-2, ′′σ1: Solenidia on tarsi, tibiae and genua of leg I.
presence of lateral ridges on the prodorsum; the presence of barbs in all epimeral setae; the cilia of sensillus variable in number (15 to 16 long cilia, and 9 to 11 short ones); notogaster not separated at the posterior border; dorsal setae la that are as long as the lyrifissure im; the baciliform solenidion ω1 and famulus; and setal formula on legs. Specimens of the new species were collected from horticultural gardens near the seashore and showed a high proportion of males, as is seen in Anoplozetes jamiesoni Lee et Pajak, 1987, collected from arid grasslands. Although both these species are found in arid habitats, it is not clear whether having a high proportion of males is an adaptation to the environment.

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