

NINETEEN NEW SPECIES FROM THE SHIRAKAMI-SANCHI WORLD HERITAGE AREA, NIPPON (ACARI: ORIBATIDA)

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NIPPON
SHIRAKAMI
ACARI
ORIBATIDA
NEW SPECIES

SUMMARY: The following nineteen new species were described from beech forests in the Shirakami-sanchi World Heritage Area in Nippon: *Phthiracarus (A.) shirakamiensis* spec. nov., *Phthiracarus miyamaensis* spec. nov., *Neoxenillus scopulus* gen. nov. spec. nov., *Cepheus spinosus* spec. nov., *Carabodes silvorus* spec. nov., *Bunabodes truncatus* gen. nov., spec. nov., *Medioxyoppia hamata* spec. nov., *Coronoquadroppia trapezoidea* spec. nov., *Quadroppia minima* spec. nov., *Rhynchobelba planeta* spec. nov., *Suctobelbella silva* spec. nov., *Suctobelbella margarita* spec. nov., *Suctobelbella (F.) muronokiensis* spec. nov., *Suctobelbella angulata* spec. nov., *Suctobelbella shironeseta* spec. nov., *Unicobelba aomoriensis* spec. nov., *Unguizetes striatus* spec. nov., *Scheloribates bunaensis* spec. nov., *Eupelops miyamaensis* spec. nov.

ZUSAMMENFASSUNG : Neunzehn neue Oribatiden-Arten wurden aus Buchenwäldern des Welterbe-Gebietes Shirakami-sanchi in Nippon beschrieben: *Phthiracarus (A.) shirakamiensis* spec. nov., *Phthiracarus miyamaensis* spec. nov., *Neoxenillus scopulus* gen. nov. spec. nov., *Cepheus spinosus* spec. nov., *Carabodes silvorus* spec. nov., *Bunabodes truncatus* gen. nov., spec. nov., *Medioxyoppia hamata* spec. nov., *Coronoquadroppia trapezoidea* spec. nov., *Quadroppia minima* spec. nov., *Rhynchobelba planeta* spec. nov., *Suctobelbella silva* spec. nov., *Suctobelbella margarita* spec. nov., *Suctobelbella (F.) muronokiensis* spec. nov., *Suctobelbella angulata* spec. nov., *Suctobelbella shironeseta* spec. nov., *Unicobelba aomoriensis* spec. nov., *Unguizetes striatus* spec. nov., *Scheloribates bunaensis* spec. nov., *Eupelops miyamaensis* spec. nov.

Twenty-three new oribatid species have already been recorded from *Fagus crenata* Blume forests in the Shirakami-sanchi World Heritage Area in Aomori Prefecture, Nippon (FUJIKAWA, 2001, 2002a, b, c, 2003 and in preparation). In this work, nineteen new species were described from the same forests. The following marks are used for the sam-

pling localities (140°6'E, 40°30'N) in the present paper:

BSH-1: Surface layer (L, H, F and 0-15 cm) of forest floor (620 m above sea), Oct. 3, 1999, M. SATO, Y. NAKAMURA & T. FUJIKAWA,

BSH-2: The same as above, but 520 m above sea, Oct. 2, 1999, Y. NAKAMURA & T. FUJIKAWA,

* Aidai-Shukusha 1-115, Yokogawara 1375, Shigenobu-cho, Ehime Pref., J791-0203, NIPPON

BSH-3: Fallen dead twigs and cones, 620 m above sea, Oct. 3, 1999, T. FUJIKAWA,

BSH-4: Mosses and lichens on the trunks of living beech trees at about 1 m above the ground surface, 620 m above sea, Oct. 3, 1999, T. FUJIKAWA,

BSH-5: Mosses on rocks, 620 m above sea, Oct. 3, 1999, T. FUJIKAWA,

BSH-6: F and H layers of forest floor, 620 m above sea, Sept. 1, 2001, K. FURUNO, Y. HAGIWARA, R. ITO, O. NAKAMURA & H. SAKAYORI.

The holotype and paratypes with number are deposited in National Science Museum, Tokyo, and other types in World Heritage Conservation Center (Nishimeya), Aomori Prefecture.

The notations of descriptions and figures in the work are according to BALOGH & MAHUNKA (1983), HAMMEN (1989), MAHUNKA and MAHUNKA-PAPP (2001) and CHINONE (2003) as follows:

ro, le, in, ex: Rostral, lamellar, interlamellar and exobothridial setae; *ss*: Sensillus

da, dm dp, ds, la, lm, lp, c, c₁₋₃, ta, cp, d₁₋₂, e₁₋₂, f₁₋₂, h₁₋₃, p₁₋₃, ps₁₋₃; Dorsal setae;

Co. nl.: Lateral notogastral condyle; Co. nm.: Median notogastral condyle;

Aa, A₁₋₃: Area porosae; Sa, S₁, S₂, S₃: *Sacculi*; *ia, im, ip, ips, iad*: Lyrifissures;

1b, 4a, 4b: Epimeral setae; cav: cavity of ventrosejugal apodema,

g₁₋₉, g, ag, an₁₋₂, an, ad₁₋₃, ad: Genital, aggenital, anal and adanal setae;

a, m, h: Anterior, medial and posterior subcapitular setae;

ε: Famulus on tarsus of leg I; *ω₁₋₂, ψ₁₋₂, σ*: Solenidia on tarsi, tibiae and genua of legs;

ft': Setae of legs; *su*: Superior seta on tarsus of pedipalp.

Phthiracarus (Archiphthiracarus)

shirakamiensis spec. nov.

[Nipponese name: Shirakami-irekodani]

(FIG. 1)

*Phthiracarus (Archiphthiracarus) sp. SH-28**: FUJIKAWA, Report of soil animals from the Shirakami-sanchi World Heritage Area (in press).

Measurements and body aspect (n=11): Color light yellowish brown. Body surface densely punctuated. Average length: Aspis 321 μm ; Notogaster 571 μm . Notogastral height 500 μm .

Dorsal side. Rostrum rounded. Median field of aspis narrow, extending, for about half-way along length of prodorsum beyond insertions of setae *ro*. Lateral carina short, extending from above bothridium to almost the level of mid-distance between insertions of setae *ro* and *le*. All prodorsal and dorsal setae smooth. Setae *le, in* and *ex* terminating in fine tip. Sensilli composed of fusiform basal and bacilliform distal portion. Setae *ro* with sheath at the basal portion, and interlamellar apophysis present. Lengths, *in* > *ss* > *le* > *ex* > *ro*. Fifteen pairs of short dorsal setae present. Setae *c₃* situated on the posterior collar margin; setae *c₁* and *c₂* submarginally; *c₂* inserted appreciably nearer to collar than *c₁*. Setae *c₃* about one-half as long as *c₂*. Setae *c₁* < (*c₁-d₁*). Lyrifissures *ia* situated near setae *cp*. Vestigial *f₁* located almost mid-distance between setae *e₁* and *h₁*.

Ventral side. Genito-anal setae, 9-2-2-3; setae smooth. Setae *g₁* and *g₂* situated in progenital position; two pairs of aggenital setae located antiaxially. Two pairs of anal setae inserted on the paraxial margin and three pairs of adanal setae submarginally; setae *an₂* inserted at level of setae *ad₁*. Epimeral setae 1-0-1-1; setae smooth. Pedipalpal setae 0-2-2-8[1]; setae *sul* thin. Subcapitular setae *a* and *m*, thick and minutely barbed; setae *a* with basal sheath; setae *h* smooth. Lengths, *a* > *an* > *m* > *h* ≥ *ad* > *g* > *ag*. All legs monodactyl; claws bearing one large and one small dents ventrally; serrate dorsally. Leg chaetotaxy including famulus: I (1-3-2-4-17); II (1-3-2-3-12); III (2-2[3]-1-2-10); IV (2-1-1-1-10); setae on femur III variable in number. Solenidiotaxy: I (2-1-3); II (1-1-2); III (1-1-0); IV (0-1-0). Famulus spiniform. Dorsal seta on tibiae I-III and genu I coupled with solenidion.

Material examined: Holotype (NSMT-Ac 11561) : from BSH-1; 10 paratotypes: same data as holotype.

Remarks. The present species differs from other congeners by form of prodorsal, anal, adanal and subcapitular setae, situation setae *c₁-c₃* and number of aggenital setae.

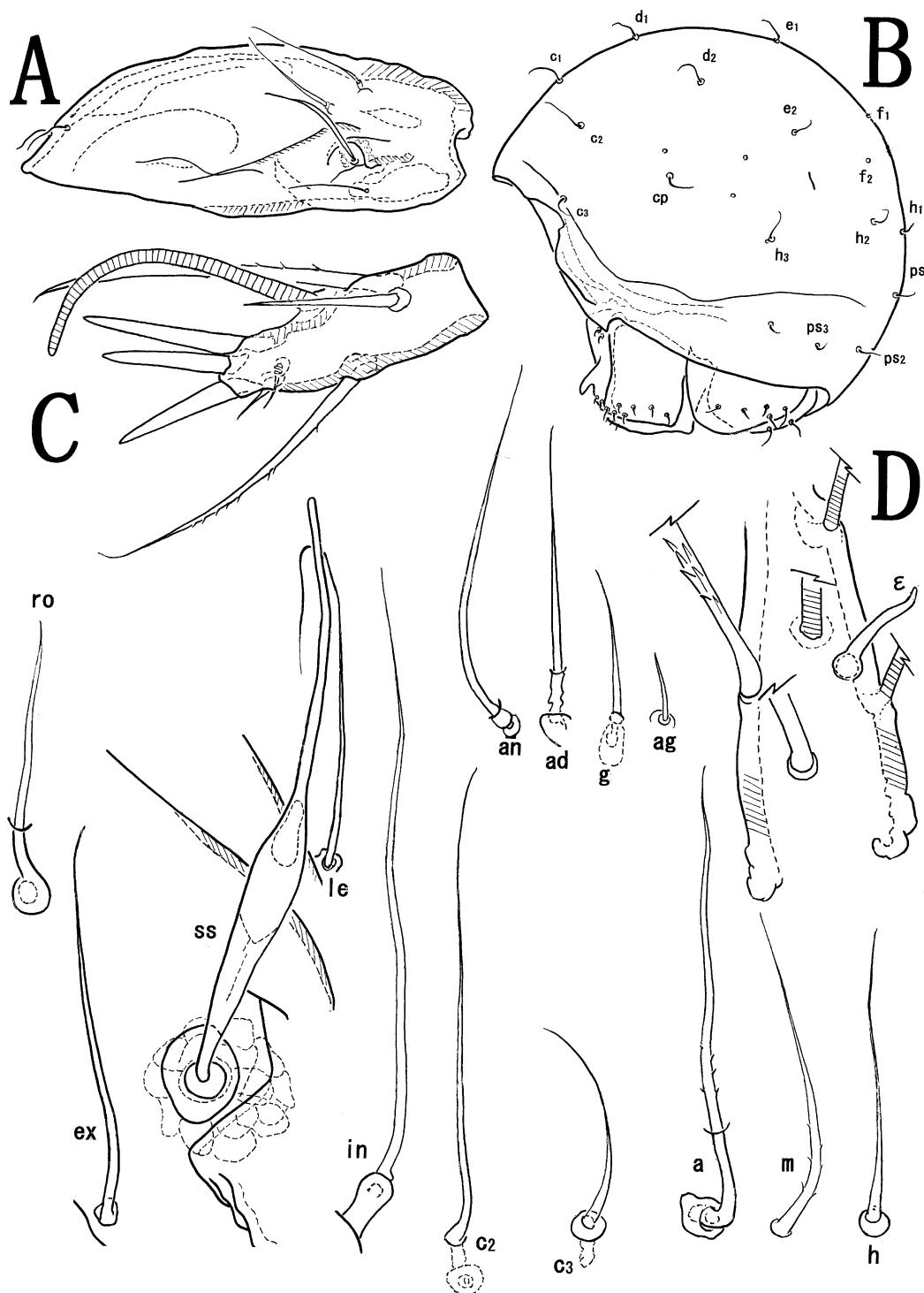


FIG. 1: *Phthiracarus (A.) shirakamiensis* spec. nov. A. — Prodorsum (X 300); B. — Apisthosoma (X 150); C. — Tarsus of palp (X 1,500); D. — Solenidial region on right tarsus I (X 1,500); Setae (X 1,500).

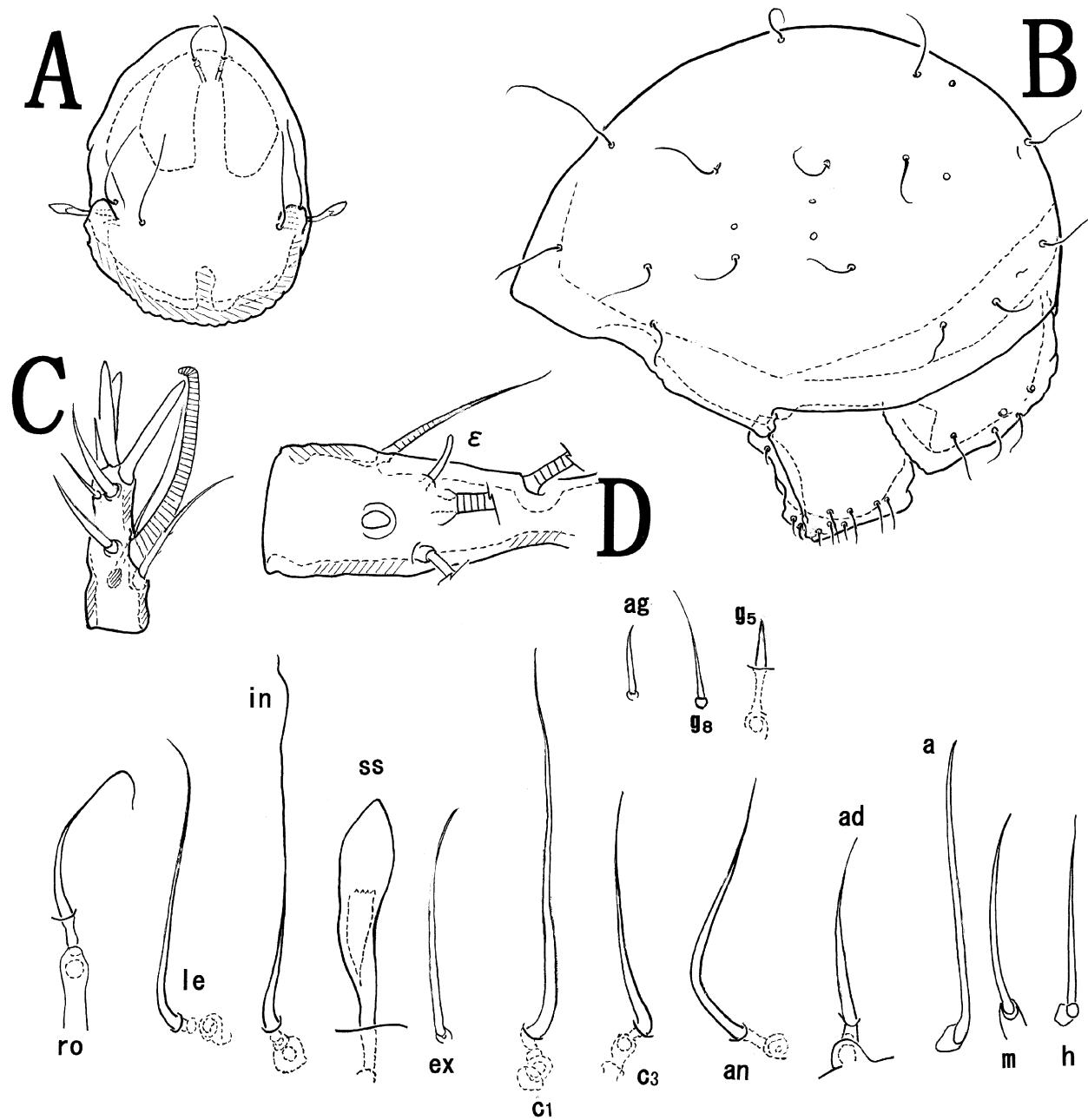


FIG. 2: *Phthiracarus miyamaensis* spec. nov. A. — Prodorsum (X 300); B. — Apisthosoma (X 300); C. — Tarsus of pedipalp (X 1,500); D. — Solenidial region of left tarsus I (X 1,500); Setae (X 1,500).

***Phthiracarus miyamaensis* spec. nov.**

[Nipponese name: Miyama-irekodani]

(FIG. 2)

*Phthiracarus sp. SH-30**: FUJIKAWA, Report of soil animals from the Shirakami-sanchi World Heritage Area (in press).

Measurements and body aspect (n=13): Color light brown. Body surface densely punctuated. Length of aspis 186 (230) 279 μm ; length of notogaster 336 (379) 407 μm ; height of notogaster, 250 (305) 357 μm . All prodorsal, dorsal, genito-anal, epimeral and subcapitular setae thin and smooth.

Dorsal side. Rostrum rounded. Median field of aspis short and narrow. Lateral carina short. Setae *ro* with sheath at the base. Sensilli fusiform. Length, *in>le>ro>ex>ss*. Fifteen pairs of dorsal setae short. Setae *c₃* located on the posterior collar margin. Setae *c₁* and *c₂* submarginally; *c₁* nearer to collar than *c₂*; setae *c₁* about 1.5X longer than *c₃*. Setae, *c₁<(c₁-d₁)*.

Ventral side. Genito-anal setae 9-1-2-3. Setae *g₁-g₅* spiniform and short; *g₆-g₉* thin and long, about 2.5X longer than *g₁-g₅*. Setae *an₁* inserted at level of *ad₂*; *an₂* between *ad₂* and *ad₃*. Setae *ad* with small sheath and apophysis; *ad₁* and *ad₂* vestigial. Epimeral setae 1-1-0-1. Pedipalpal setae 0-2-2-8[1]; setae *sul* about one half as long as length of ultimal setae; solenidion bacilliform. Subcapitular setae *m* inserted on small apophyses. Lengths, *a>an>m≥ad>h>g₆-g₉>ag>g₁-g₅*. All legs monodactyl; claws bearing two small dents ventrally. Leg chaetotaxy including famulus: I (1-4[3]-2-5-16); II (1-3-2-3-12); III (2-2-1-2-10); IV (2-1-1-2-10); setae on femur I variable in number. Solenidiotaxy: I (2-1-3); II (1-1-2); III (1-1-0); IV (0-1-0). Famulus short, bacilliform. Solenidion of every tibia and genu I coupled with dorsal seta.

Material examined: Holotype (NSMT-Ac 11562): from BSH-2; 2 paratypes: same data as holotype; 6 paratypes; from BSH-1; 3 paratypes: from BSH-3; 1 paratype: from BSH-4.

Remarks. The present species is similar *Ph. laevigatus* (C. L. Koch, 1841), *Ph. nitens* (Nicolet, 1855) and *Ph. piger* (Scopoli, 1763) which were redescribed by FEIDER & SUCIU (1957), PARRY (1979) and NIEDBALA (2001). The new species is distinguished from them by smaller body size, dorsal setae *c₁* inserted anterior to

c₂, interlamellar setae about 1.2 times the length of lamellar setae, their mutual distance of interlamellar setae about 5 times of their mutual distance of rostral setae, rostral setae extending to the rostral anterior margin, lamellar setae inserted in front of bothridia, vestigial *f1* located near *h₁*, lyrifissures *ips* situated between setae *ps₂* and *ps₃*, and/or long genital setae.

***Neoxenillus* gen. nov.**

[Nipponese name: Iwaozaratamatagodani]

Diagnosis. Family Xenillidae. Color dark reddish brown. Body surface bearing foveolae, variable in shape and size. Lamellae long, slightly convergent anteriorly and connected by translamella. Cuspidis reaching anterior margin of rostrum, bearing lamellar setae. Translamella almost as long and as thick as the width of lamella, without mucro. Dorsosejugal suture straight. Notogaster bearing eleven pairs of setiform setae. Setae *c₁* and *c₂* smooth, short, inserted at humeral region; other dorsal setae barbed, long, variable in length. Setae *dp*, *h₂* and *h₃* inserted close together. Genito-anal setae 6-1-2-3. Epimeral setae 3-1-3-3. Pedipalpal setae 0-2-1-3-9[1]. Gnathosoma diarthric. Subcapitular setae 1-1-1. All legs tridactylous. Solenidiotaxy: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0).

Type species: *Neoxenillus scopulus* spec. nov.

Remarks: Lamellae of the new taxon somewhat resembles in shape of *Stonyxenillus* Woolley et Higgins, 1966. However, the new taxon characterized among other genera of the family by long translamella without mucro and setae *dp*, *h₂* and *h₃* aligning close together.

***Neoxenillus scopulus* spec. nov.**

[Nipponese name: Iwaozaratamatagodani]

(Figs. 3 & 4)

*Stonyxenillus sp. SH-40**: FUJIKAWA, Report of soil animals from the Shirakami-sanchi World Heritage Area (in press).

Measurements and body aspect (n=4): Length 1,179-1,393 μm ; width 857-986 μm . Whole body surface finely punctulate, with foveolae variable in size

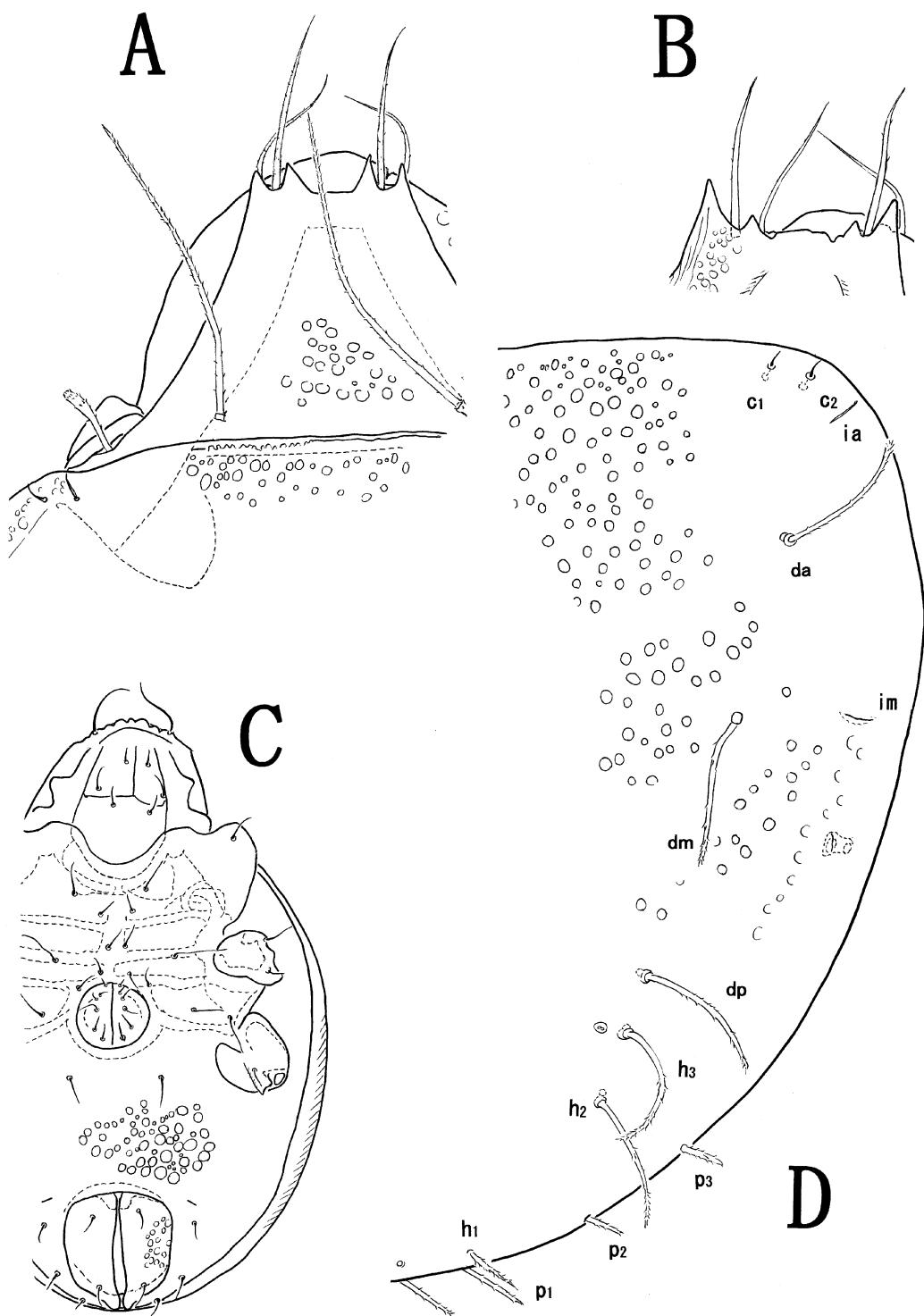


FIG. 3: *Neoxenillus scopulus* gen. nov. spec. nov. A. — Prodorsum (X 300); B. — Variation of cuspidis in shape (X 300); C. — Ventral view (X 150); D. — Notogaster (X 300).

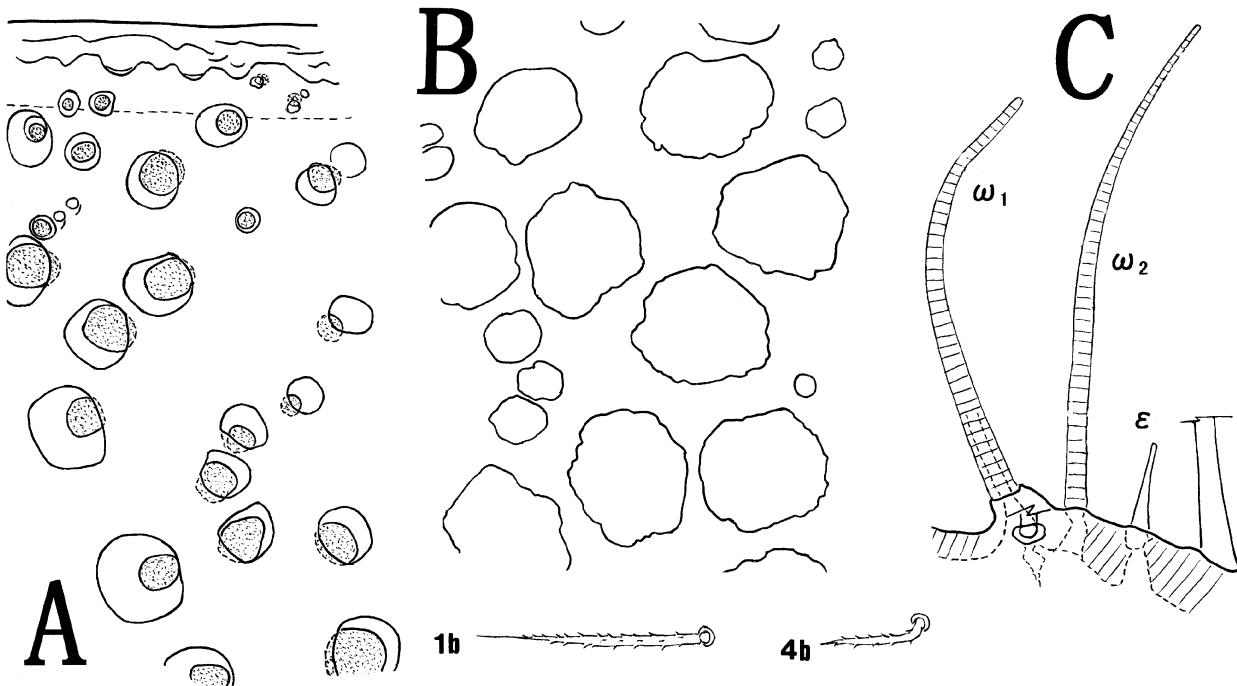


FIG. 4: *Neoxenillus scopulus* gen. nov. spec. nov. A. — Notogastral surface; B. — Epimeral surface; C. — Solenidial region of right tarsus I. A-C (X 1,500); Setae (X 600).

and shape. Foveolae on notogaster conical. Epimera maculate.

Dorsal side. Rostrum with two notches. Lamellar cuspidis bifurcate; inner dent variable in size. Lamellar seta arized antero-dorsally between dents of cuspis. Setae *ro*, *le* and *in* setiform, long and minutely barbed; setae *in* inserted on the inner and posterior ridges of lamellae, extending for a short distance in front of rostral margin. Bothridia directed antero-laterally. Sensilli clavate and setose; setae *ex* smooth. Lengths $in \div le \geq 2X le \geq ro$. Hysterosoma hemisphere in shape, broader anteriorly than posterior. Setae *c₁* and *c₂* short, smooth, aligning transversely. Other setae long, minutely bared. Lengths $da \div dm > dp \div h_2 \div h_3 > h_1 \div p_1 > p_2 \geq p_3$. Lyrifissures *ia* aligned obliquely and *im* transversely.

Ventral side. Genital aperture circular and anal aperture ovoid in shape; interspace between them about 2.2X and 1.3X as long as length of genital and

anal apertures, respectively. Genito-anal, epimeral and subcapitular setae setiform, short and minutely barbed. Setae *ad₁* postanal; *ad₂* and *ad₃* adanal. Lyrifissure *iad* inverse apoanal at level of anterior anal margin. Epimeral setae variable in length; *4b* the shortest and *1b* the longest. Leg chaetotaxy including famulus: I (1-5-3-4-20); II (1-4-3-4-16); III (2-2-1-3-16); IV (1-2-2-2-10). Femora and trochantera of legs II, III and IV bearing prominent wing-like expansions. Solenidia on tarsus I bacilliform. Famulus short, located behind the insertions of solenidia.

Material examined: Holotype (NSMT-Ac 11563): from BSH-5; 2 paratotypes (NSMT-Ac 11564): same data as holotype; 1 paratype: from BSH-6.

Remarks. The new species stands close to *Xenillus heterosetiger* Aoki, 1967, however, the new species is distinguished by length of lamellae and setae *in*, and arrangement of setae *c₁* and *c₂*.

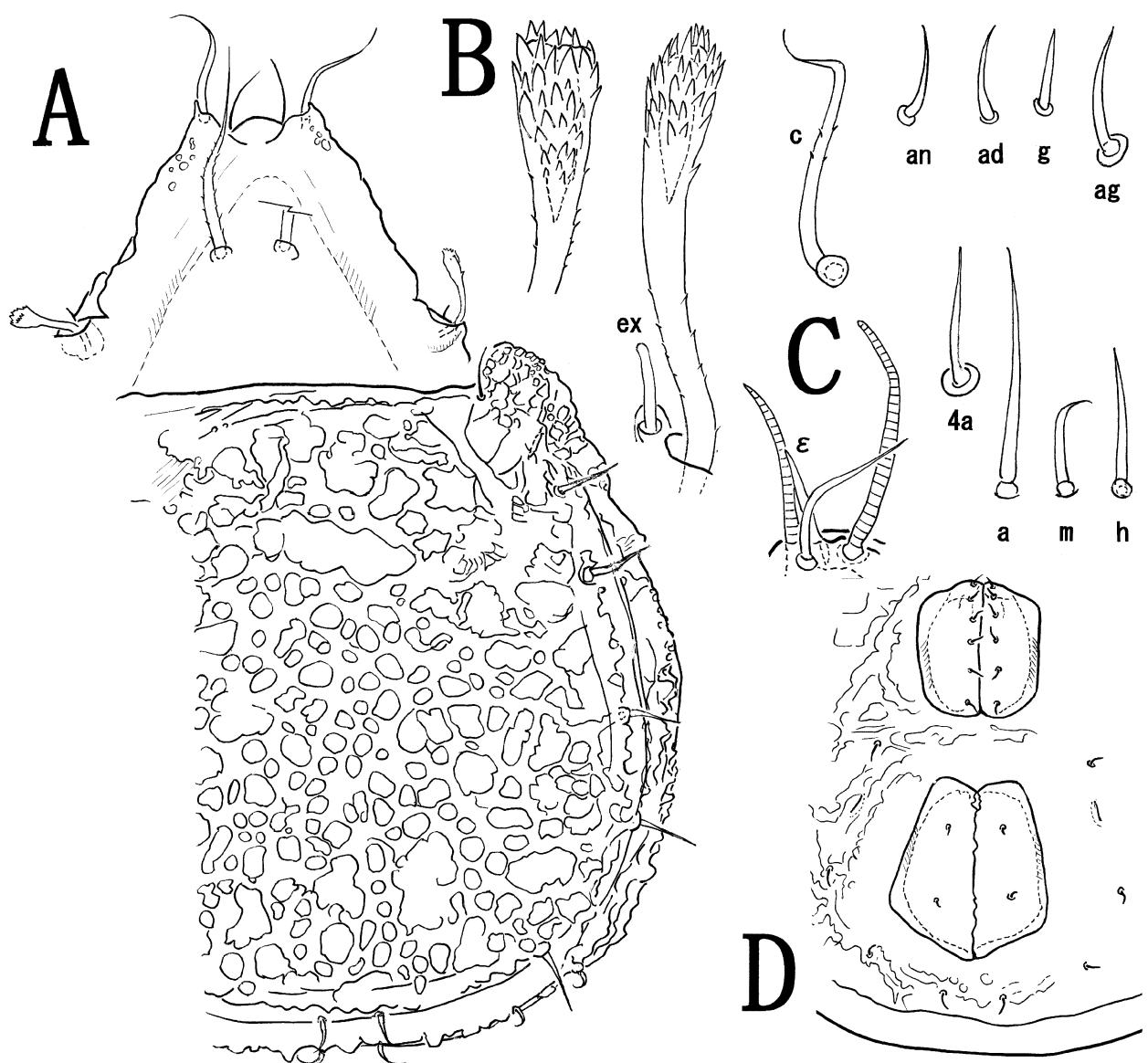


FIG. 5: *Cepheus spinosus* spec. nov. A. — Dorsal view (X 300); B. — Variation of sensillus in shape (X 1,500); C. — Solenidial region of tarsus I (X 1,500); D. — Genito-anal region (X 300); Setae (X 1,500).

***Neoxenillus heterosetiger* (Aoki, 1967) comb. nov.**

Xenillus heterosetiger Aoki, 1967, *Misc. Rep. Res. Inst. Nat. Resourc.*, (69), p.128, figs. 9-17.

Type-locality: Nippon..

Remarks. The present species placed provisionally in the genus *Xenillus* has characteristic features which are those of the new genus *Neoxenillus*.

***Cepheus spinosus* spec. nov.**

[Nipponese name: Toge-manjudani]

(FIG. 5)

Cepheus sp. SH-8*: FUJIKAWA, *Report of soil animals from the Shirakami-sanchi World Heritage Area (in press)*.

Measurements and body aspect (n=2): Length 786 μ m; width 593 μ m. Color dark brown. Surface foveolate on prodorsum, maculate on notogaster, and rugose on ventral plate; other body surface alveolate; sculpture variable in size and shape.

Dorsal side. Rostrum rounded. Lamellae converging and extending in front of rostral margin; cuspidis with a small outer dent, without inner dent. Translamella absent. Setae *ro*, *le* and *in* setiform and minutely barbed: setae *le* about twice as long as setae *ro*. Setae *in* inserted almost mid-distance along the prodorsum within interlamellar region, about 1.5X as long as setae *le*, extending forwards from rostral margin. Distances, $(ro-ro) \div (in-in)$. Sensilli composed of a barbed thin stem and a swollen spinose head. Setae *ex* thick, short, bacilliform and roughened. Dorsosejugal suture straight with humeral projections. Ten pairs of dorsal setae thick, minutely barbed. Lyrifissures *ia* aligned obliquely.

Ventral side. Genital aperture about twice as long as length of interspace between genital and anal apertures. Genito-anal setae 6-1-2-3; setae smooth, short; setae *ad₁* and *ad₂* postanal; *ad₃* at level of *an₁*; setae *g* the shortest and *ag* the longest. Epimeral setae 3-1-3-3; setae smooth, short. Subcapitular setae smooth; length $a > h > m$; $a \geq 2X m$. Lyrifissure *iad* located paraanal at level of setae *an₂*. All legs monodactyl; claws smooth. Legs chaetotaxy including famulus: I (1-5-3-4-20); II (1-5-3-4-16); III (2-4[3]-1-3-14); IV

(1-2-2-2-12); setae on femur III variable in number. Solenidiotaxy, I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0).

Material examined: Holotype (NSMT-Ac 11565); from BSH-2; 1 paratype: BSH-1.

Remarks. The present species is similar to *C. hokkaiensis* Fujikawa, 1992 and *C. kurosawai* Aoki, 1986, however, the new species is distinguished by length of setae *in*, form of cuspidis and dorsal setae, situation of setae *ad₃*, and leg chaetotaxy.

***Carabodes silvorus* spec. nov.**

[Nipponese name: Miyama-ibushidani]

(FIG. 6)

Carabodes sp. SH-4*: FUJIKAWA, *Report of soil animals from the Shirakami-sanchi World Heritage Area (in press)*.

Measurements and body aspect (n=20): Length 521 (583) 700 μ m; width 300 (317) 343 μ m. Color reddish brown. Whole body surface minutely punctuate.

Dorsal side. Rostrum with undulate margin. Lamellar cuspidis round angular. Setae *ro* and *le* bacilliform, minutely barbed, almost equal in length. Setae *le* arising dorsal surface of lamellae. Setae *in* and *ex* smooth, setiform. Bothridia opening almost laterally. Sensilli with smooth stem and cuneiform head; head verrucose anteriorly. Notogastral surface with structure consisting of large protuberances and longitudinally long ornaments; seven pairs of protuberances bearing one seta at the central portion; long ornaments like brain in shape, occupying dorsal surface among protuberances. Other body surface with alveoli variable in size. Dorsosejugal suture almost straight. Ten pairs of dorsal setae short penicillate.

Ventral side. Genital and anal apertures almost trapezoid; interspace between them about 1.6X and 1.3X as long as genital and anal apertures, respectively. Genito-anal setae 4-1-2-3; setae *an* smooth; *ad* barbed bilaterally; *g* and *ag* barbed unilaterally. Setae *ad₁* and *ad₂* postanal; *ad₃* preanal in front of lyrifissures *iad*; *iad* inverse apoanal at level of anal anterior margin. Distances $(ad_3-ad_3) \div (ag-ag)$. Gnathosoma diathric; subcapitular setae *a* and *m* smooth; *h* minu-

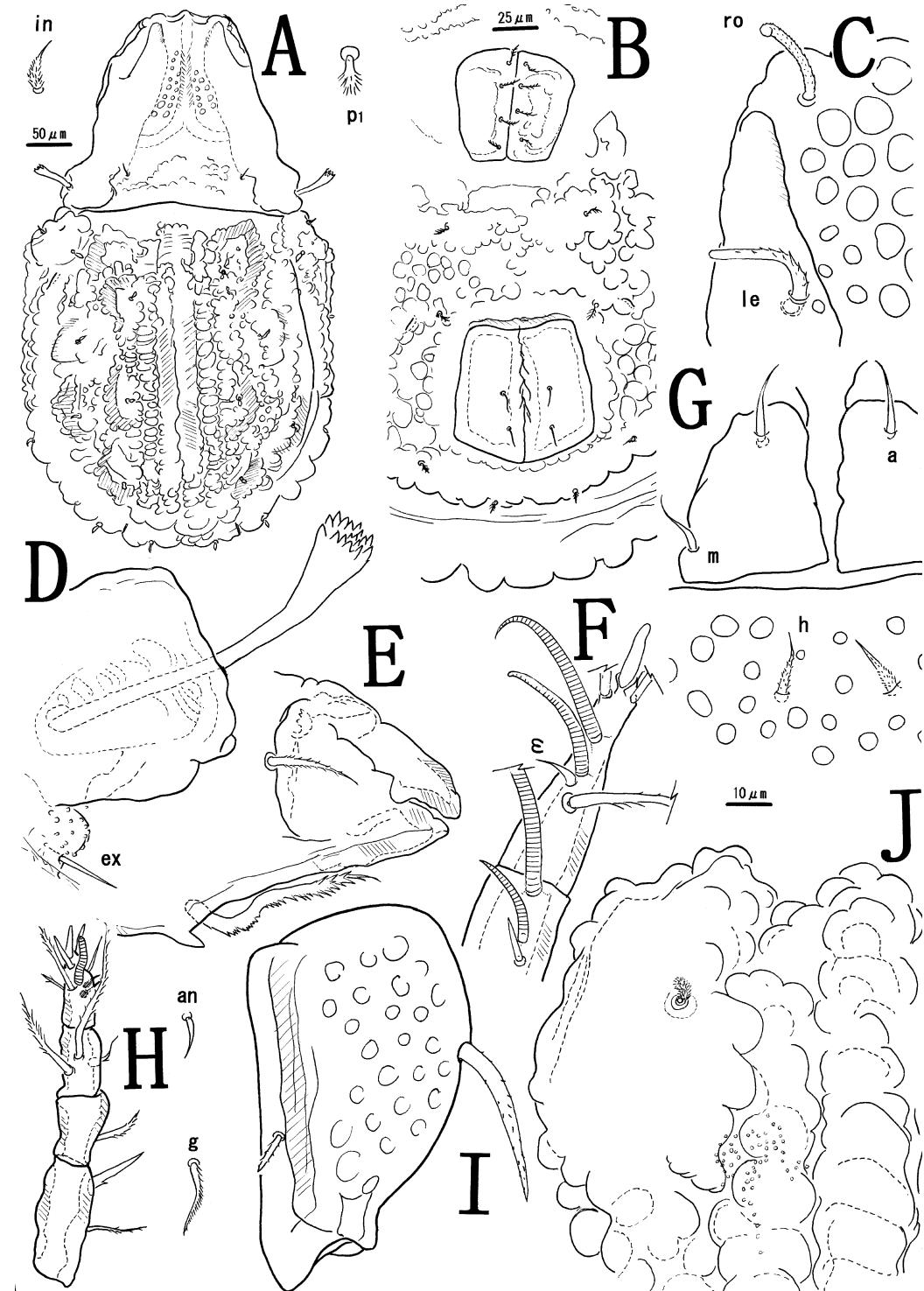


FIG. 6: *Carabodes silvorus* spec. nov. A. — Dorsal view (X 300); B. — Genito-anal region (X 600); C. — Left rostral region; D. — Right bothridial region; E. — Chelicera; F. — Solenidial region on left tarsus and tibia of leg I; G. — Subcapitulum; H. — Pedipalp; I. — Left femur III; J. — Central region of notogaster. C-J & setae (X 1,500).

tely barbed. Epimeral setae 3-1-3-3. Pedipalpal setae 0-2-1-3-9[1]. All legs monodactyle. Leg chaetotaxy including famulus: I (1-5-3-4-17); II (1-5-3[2]-3-15); III (2-3-1-2-15); IV (1-2-2-2-12). Setae on genu II variable in number. Femora and trochantera on legs III and IV bearing carina. Solenidiotaxy: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0).

Material examined: Holotype (NSMT-Ac11566): from BSH-2; 17 paratotypes (NSMT-Ac 11567 & 11568): same data as holotype; 2 paratypes: from BSH-1.

Remarks. Structure of body surface of the present species is very similar in appearance to those of *C. cerebrum* Fujikawa, 1993, however, the new species is distinguished from the latter by (1) the shape of setae *ro*, *le*, *ss*, dorsal setae, *ad* and *h*, (2) situation of *ad*₂ and *ad*₃, (3) length of interspace between genital and anal apertures, and (4) leg chaetotaxy. The new species is, also, close to *C. rugosior* Berlese, 1916 which were restudied by BERNINI, 1970, MAHUNKA & MAHUNKA-PAPP, 1995 and REEVES & BEHAN-PELLETIER, 1998. However, the former differs from the latter by bacilliform setae of rostrum and lamellar, penicilliate-form dorsal setae, large convex protuberances on notogastral surface.

Bunabodes gen. nov.

Diagnosis: Family Carabodidae (uncertain). Body surface tuberculate. Rostrum with truncate tip. Lamellae wide but short, without cusps. One pair of triangular projection present at the lateral sides of prodorsum. Setae *ro* and *le* inserted near the projection. Setae *in* minute, inserted just anterior to the dorsosejugal suture inner side of lamellae. Bothridium directed anteriorly. Sensilli bacilliform with spinose head. Dorsosejugal suture straight with small and round protruding at the humeral region. Notogaster semicircular, bearing ten pairs of setae. Genito-anal setae, 6-1-2-3, epimeral setae, 3-1-3-3, and pedipalpal setae, 0-2-1-3-9 with one solenidion. All legs monodactylous. Solenidiotaxy: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0).

Type species: *Bunabodes truncatus* spec. nov.

Remarks: The new genus has some characteristic features of rostrum, bothridia, lamellae and humeral region, which are different from other genera.

Etymology: After the Nipponese name of *Fagus crenata* Blume.

Bunabodes truncatus gen. nov., spec. nov.

[Nipponese name: Taira-ibushidani]

(FIG. 7)

Carabodes sp. SH-5*: FUJIKAWA, Report of soil animals from the Shirakami-sanchi World Heritage Area (in press).

Measurements and body aspect (n=1): Length 943 μm ; width 671 μm . Color light brown. Body surface tuberculate; tubercles variable in size; tubercles polygonal in form at interlamellar region, and round at other surface.

Dorsal side. Rostrum slightly protruding, with truncate tip. Lamellae wide, their cuspidis ending far from rostrum. Setae *ro* minutely barbed unilaterally, inserted on lateral margins of rostrum, and immediately anterior to lamellar cuspidis. Setae *le* smooth, arising on the inner surface of lamellae. Setae *in* smooth, very short, arising on the interlamellar surface near to notogastral anterior margin. Interlamellar region convex longitudinally at medial portion. Bothridium directed anteriorly. Sensilli consisting of smooth long stem and spinose head without expanded portion. Lengths *ss*>*ro*>*le*>*in*. Notogaster semicircular in shape, with straight anterior margin and humeral projections. Ten pairs of dorsal setae setiform, glabrous and short, as long as setae *le*. One pair arising on the humeral projection. Lyrifissures *ia* aligned obliquely behind humeral projection.

Ventral side. Genital and anal apertures pentagonal and rectangular in outline, respectively; genital and anal apertures about twice and three times as long as interspace between them, respectively. Genito-anal setae 6-1-2-3; setae smooth. Setae *an*₁ postanal; *an*₂ and *an*₃ adanal; *ad*₂ inserted at level of *an*₁ and *ad*₃ behind the level of *an*₂. Lyrifissures *iad* inverse apoanal at level of anterior margin of anal aperture. Epimeral setae 3-1-3-3; setae smooth. Subcapitular setae 1-1-1; setae *a* roughened; *m* and *h* smooth. Pedipalpal setae, 0-2-1-3-9[1]. Lengths *g*≥
4a>*a*>*m*>*ag*>*ad*>*h*>*an*. All legs monodactyl: claws serrate. Leg chaetotaxy including famulus: I (1-5-3-4-

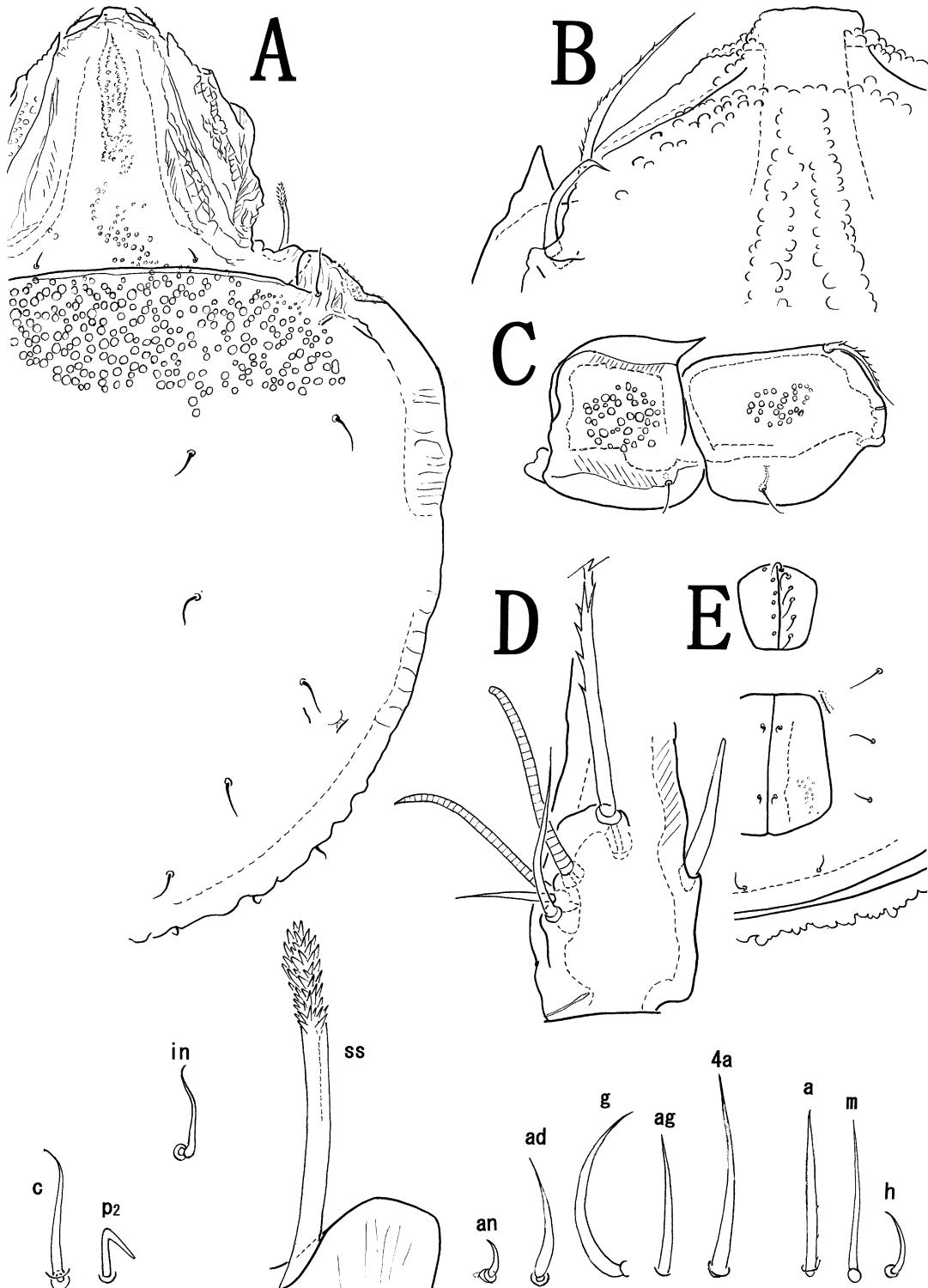


FIG. 7: *Bunabodes truncatus* gen. nov., spec. nov. (X 600). A. — Dorsal view (X 300); B. — Rostral region (X 1,500); C. — Femur and trochanter of left leg IV (X 600); D. — Solenidial region of left tarsus I (X 1,500); E. — Genito-anal region (X 300); Setae (X 1,500).

19); II (1-5-3-4-16); III (2-3-2-3-15); IV (1-2-2-3-12). Femora and trochantera of legs III and IV with carina. Solenidiotaxy: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0). Famulus inserted immediately behind solenidia and anterior to ft'' .

Material examined: Holotype (NSMT-Ac 11569): from BSH-4.

Remarks. The new species bears some characteristic features like shape of rostral region, interlamellar region, humeral region and setae *in*, *ss* and dorsal setae, and direction of bothridia.

***Medioxyoppia hamata* spec. nov.**

[Nipponese name: Hosoge-tsubudani]

(FIG. 8)

Medioxyoppia sp. SH-47*: FUJIKAWA, Report of soil animals from the Shirakami-sanchi World Heritage Area (in press).

Measurements and body aspect (n=1): Length 371 μm ; width 214 μm . Color light yellow brown. Body surface almost smooth, but granulate in pedo-tectal region.

Dorsal side. Anterior half of prodorsum triangular in shape. A small costulae present behind the insertions of setae *in*. Setae *ro* sparsely and minutely barbed. Setae *le* and *in* glabrous. Bothridia opened antero-laterally. Sensilli thick setiform, tapering to a fine tip and not expanded medially; sensilli spinose throughout the length unilaterally, and curved inward. Setae *ex* minutely barbed. Lengths $ro \div in = 2Xle$; $in > ex > le$. Notogaster oval in shape with an small and weak angulation on humeral region. Lyrifissures *ia* aligned longitudinally and located lateral to the angulations. Ten pairs of dorsal setae glabrous and short; *c*₂ about one half as long as the distance *c*₂ and *la*; *c*₂ inserted lateral to *ia*. Lyrifissures *im* aligned somewhat obliquely and located lateral to *lp* and antero-laterally to *h*₃.

Ventral side. Genito-anal setae 5-1-2-3, epimeral setae 3-1-2-3, subcapitular setae 1-1-1; setae smooth. Setae *ad*₁ postanal, *ad*₂ adanal, and *ad*₃ preanal. Lyrifissures *iad* paraanal at level between *an*₁ and *an*₂. Setae *ad*₂ inserted lateral or postero-laterally to *iad*. Distances, $(ad_3-ad_3) > (ad_2-ad_2) > (ad_1-ad_1)$; $(ad_3-ad_3) \geq 4X(ad_1-ad_1)$; $(ad_3-ad_3) > (ad_2-ad_3) > (ad_1-ad_2)$; $2X(ag-ag) \geq (ad_3-ad_3)$. Setae *g*₃ and *g*₄ situated at the same level. Lengths, $m \div h > an \geq ad \geq ag \div a > g$. All legs monodactyle. Leg chaetotaxy including famulus: I (1-5-2-4-19); II (1-5-2-4-16); III (2-3-1-3-16); IV (1-2-2-3-12). Solenidiotaxy: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0); famulus inserted posterior to solenidion *o*₂ and lateral to seta *ft*₂.

Material examined: Holotype (NSMT-Ac 11570): from BSH-1.

Remarks. The present species is similar to *M. yuwana* (Aoki, 1983), however, the new species is distinguished from the latter by shape of sensilli, length of prodorsal setae, *ro*, *le*, *in* and *ex*, and insertion of setae *ad*₃.

***Coronoquadroppia trapezoidea* spec. nov.**

[Nipponese name: Daikei-yosujitsubudani]

(FIG. 9)

Coronoquadroppia sp. SH-9*: FUJIKAWA, Report of soil animals from the Shirakami-sanchi World Heritage Area (in press).

Measurements and body aspect (n=1): Length 157 μm ; width 100 μm . Color light yellow.

Dorsal side. Rostrum broadly rounded. Frontal appendage trapezoid being wider anteriorally than posteriorally; borders strongly edged. Translamella slightly convex. Lamellae well developed at tips. Setae *ro*, *le*, *in* and *ex* glabrous. Lengths $ro > le > in = ex$. Setae *ro* inserted on lateral margins of rostrum, about 0.6X as long as their mutual distance. Distances $(ro-ro) > (le-le) \div (in-in)$. Bothridia directed laterally. Sensilli consisting of spinose expanded head and thin smooth stem. Notogastral anterior margin straight with large cristae. Interior edges of groove short, extending for a distance equal to half length of notogastral. Notogastral groove about one half as long as the interior edges of groove. Nine pairs of dorsal setae glabrous, short.

Ventral side. Sternal grooves I and III trapezoid in shape; the former wider posteriorally and the latter anteriorally than anteriorally and posteriorally, respectively. Genital aperture almost equal in length to anal one; interspace between them about one half as

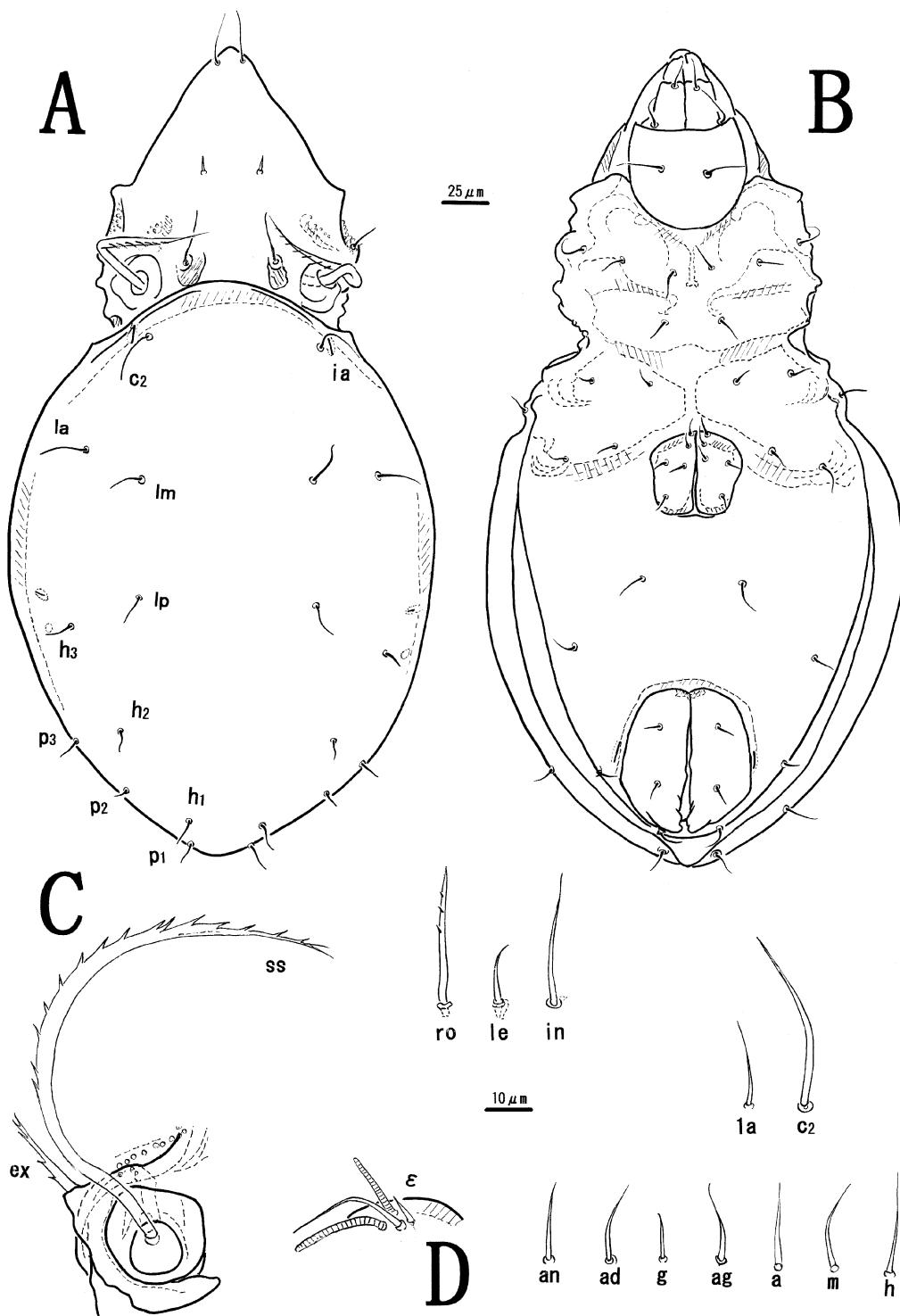


FIG. 8: *Medioxyoppia hamata* spec. nov. A. — Dorsal view; B. — Ventral view; C. — Bothridial view; D. — Solenidial region on right tarsus I; A & B (X 600); C, D & setae (X 1,500).

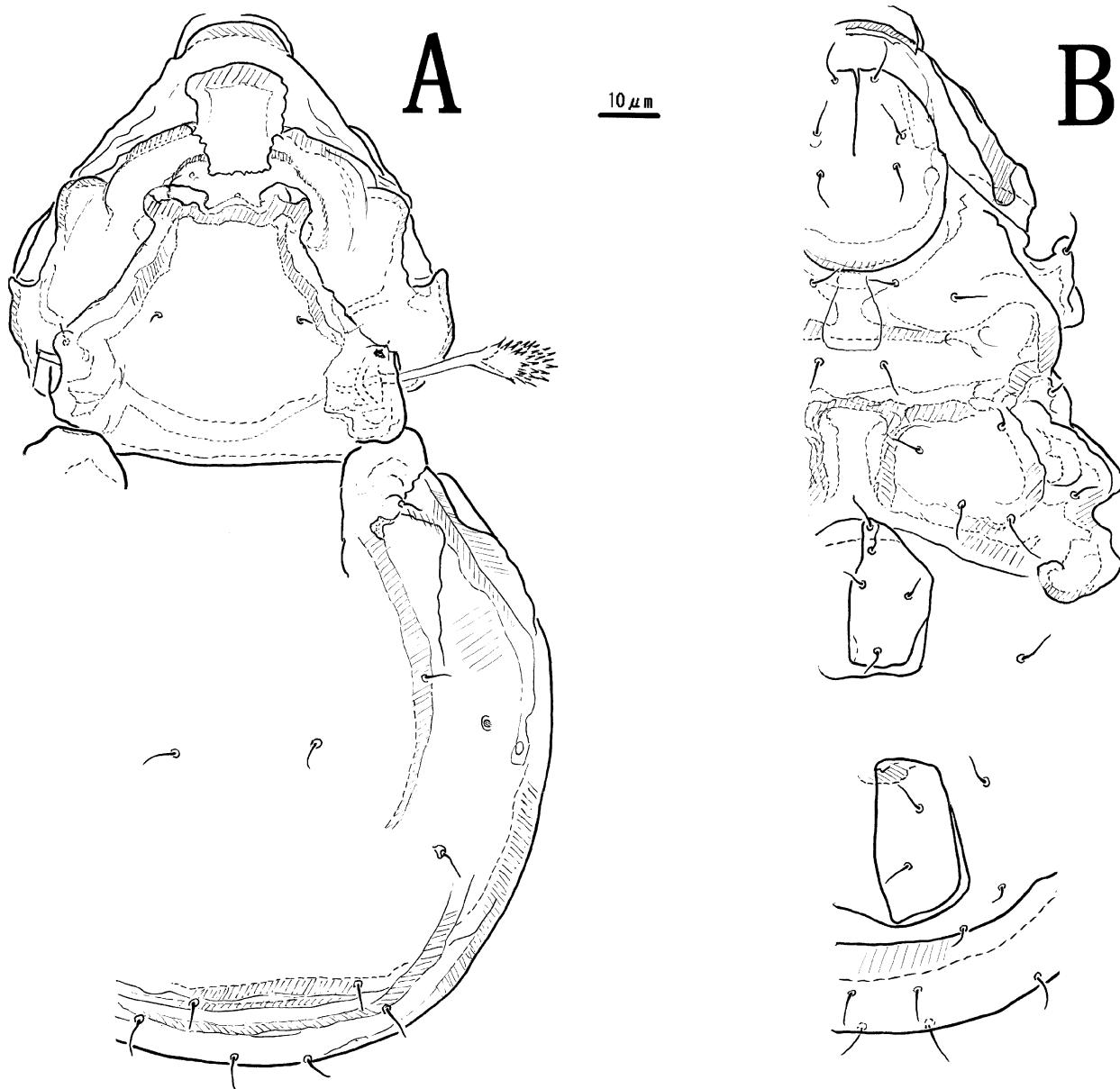


FIG. 9: *Coronoquadroppia trapezoidea* spec. nov. (X 1,500). A. — Dorsal view; B. — Ventral view.

long as the apertures. Genito-anal setae 5-1-2-3; setae smooth. Setae ad_1 postanal; ad_2 and ad_3 adanal; distances $(ad_2-ad_3) > (an_1-an_2)$; $(ad_2-ad_2) > (ad_3-ad_3) > (ad_1-ad_1)$. Setae g_3 and g_4 located at same level. Lyrifissures iad absent. Epimeral setae 3-1-3-3; setae smooth. Subcapitular setae 1-1-1; setae smooth. Gnathosoma anarthric. All legs monodactyl. Leg chaetotaxy including famulus: I (1-4-2-4-16); II (1-4-2-4-13); III (2-3-1-3-13); IV (1-2-1-2-10). Solenidiotaxy: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0).

Material examined: Holotype (NSMT-Ac 11571); from BSH-2.

Remarks. The new species is similar to *C. expansa* Ohkubo, 1995 and *C. parallela* Ohkubo, 1995. However, the present species is distinguished from them by frontal appendage with distinct anterior margin, interior edge of groove not continued as a U-shaped line, and setae ad_2 adanal.

***Quadroppia minima* spec. nov.**

[Nipponese name: Ko-yosujitsubudani]

(FIG. 10)

Quadroppia sp. SH-33*: FUJIKAWA, Report of soil animals from the Shirakami-sanchi World Heritage Area (in press).

Measurements and body aspect (n=10): Length 143 (152) 164 μm ; width 79 (88) 100 μm . Color light yellow.

Dorsal side. Rostrum rounded bearing setae ro inserted near lateral margins of rostrum. Prodorsum with five kinds of ridges bearing scattered granulations; lamellae convergent proximally and parallel to each other for a distance equal to half their length; translamella more faint at the middle portion; anterior lamellar ridges reaching forward half way to insertion of setae ro ; interspace between anterior ridges wider anteriorly than posteriorly, without transversal ridge; two pairs of rostral ridges; one pair of longitudinal ridges from rostral ridges to bothridia. Prodorsal setae ro , le , in and ex glabrous, shorter than every mutual distance. Sensilli consisting of thin, glabrous stem and expanded spicuous head. Lengths $ss > ro > le > in > ex$; $ro > 2X le$. Distances $(in-in) > (le-le) > (ro-ro)$. Nine pairs of dorsal setae glabrous. Cristae granulate anteriorly.

Ventral side. Genital and anal apertures almost same length; interspace between them about one half as long as genital aperture. Genito-anal setae 5-1-2-3; setae smooth, short; setae g_4 inserted near lateral margins of plates; ad_1 and ad_2 postanal; ad_3 adanal at level of almost mid-distance between an_1 and an_2 . Lyrifissures iad absent. Sternal grooves I and III rectangular; sternal groove I wider posteriorly than anteriorly; groove III wider anteriorly than posteriorly. Epimeral setae 3-1-3-3, subcapitular setae 1-1-1; setae smooth, short. All legs monodactyl. Leg chaetotaxy including famulus: I (1-4-2-4-17); II (1-4-2-4-14); III (2-3-1-3-12); IV (1-2-1-2-10). Solenidiotaxy: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0). Solenidia φ_1 on tibia I and σ on genu I very long. Solenidia φ_2 on tibia I bacilliform, short. Famulus on tarsus I inserted lateral to solenidion ω_1 .

Material examined: Holotype (NSMT-Ac 11572); from BSH-2; 9 paratotypes (NSMT-Ac 11573); same data as holotype.

Remarks. The new species is similar to *Q. hammerae* Mínguez, Ruiz et Subias, 1985, however, it is distinguished from the original and HAMMER's (1968) descriptions by smaller body size, dorsal setae la inserted near to lm , smooth interlamellar region and tarapezoid sternal groove I.

***Rhynchobelba planeta* spec. nov.**

[Nipponese name: Amano-tairamadodani]

(FIG. 11)

Rhynchobelba sp. SH-37: FUJIKAWA, Report of soil animals from the Shirakami-sanchi World Heritage Area (in press).

Measurements and body aspect (n=5): Length 207 (223) 229 μm ; width 121 (127) 136 μm . Color light yellow. Surface tuberculate on rostrum and posterior region of prodorsum, smooth on hysterosoma.

Dorsal side. Rostral tip rounded without tooth, nor incision. Setae ro geniculate, inserted medially on rostrum. Tectopodial field absent. Three pairs of light spots present beside lamellar knob. Lamellar knob circular, bearing setae le dorsally. One pair of costulae present longitudinally in the interbothridial region. Lengths $ss > ro > le > ex > in$. Distances $(in-in) > (ro-ro) \div (le-le)$. Bothridia directed antero-

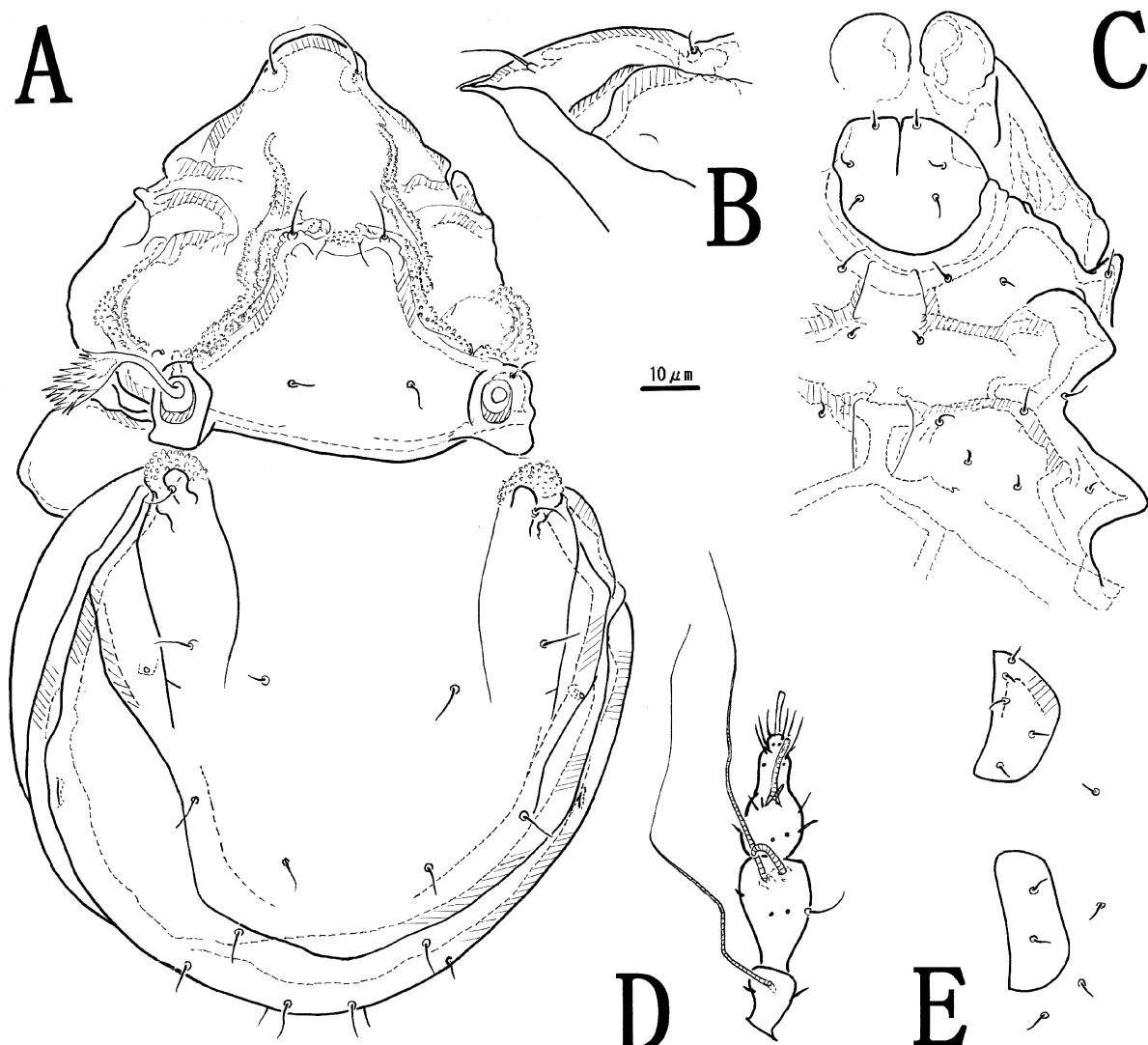


FIG. 10: *Quadroppia minima* spec. nov. (X 1,500). A. — Dorsal view; B. — Lateral view of rostrum; C. — Podosomal region; D. — Solenidial region of left leg I; E. — Genito-anal region.

laterally. Sensilli consisting of a thin, long stem and lanceolate head bearing barbs unilaterally, terminating in fine tips. Dorsosejugal margin without condyle slightly concave medially and laterally. Ten pairs of dorsal setae smooth, shorter than distance between c_2 and la . Lyrifissures im located transversely.

Ventral side. Genital and anal apertures pentagonal and rectangular in shape, respectively. Genital aperture smaller than anal aperture; interspace between them about twice as long as genital aperture.

Genito-anal setae 6-1-2-3; setae smooth. Setae g_1 to g_4 long, remote from g_5 and g_6 . Setae ad_1 postanal, ad_2 adanal at level of setae an_2 and lyrifissures iad , ad_3 preanal. Lyrifissures iad paraanal. Distances $(ag-ag) > (ad_2-ad_2) > (ad_3-ad_3) > (ad_1-ad_1)$. Three pairs of subcapitular setae smooth; $a > h > m$; a longer than genito-anal and epimeral setae. Sternal field narrow; cavities indistinct. Epimeral setae 3-1-3[4]-3[4]; setae smooth, variable in number. Legs monodactyl; claws smooth. Leg chaetotaxy including famulus: I (1-5-2-4-19); II (1-5-2-4-14); III (2-3-1-3-12); IV (1-2-2-2-

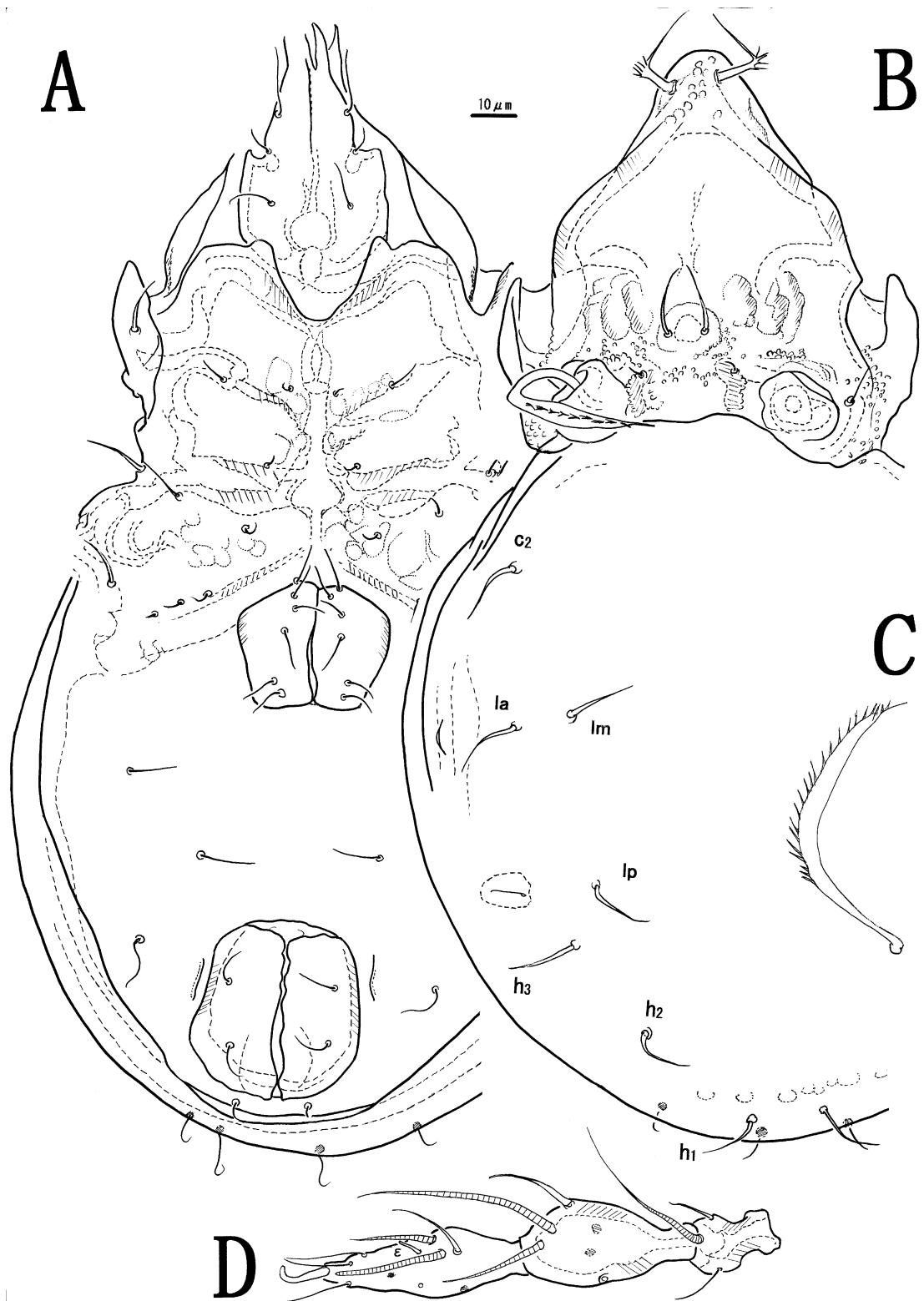


FIG. 11: *Rhynchobelba planeta* spec. nov. (X 1,500). A. — Ventral view; B. — Dorsal view; C. — Left sensillus; D. — Solenidial region of right leg I.

10). Solenidiotaxy: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0). Famulus situated anteriorly between solenidia. Solenidia on tibiae and genua without coupled seta.

Material examined: Holotype (NSMT-Ac 11577): from BSH-1; 4 paratotypes (NSMT-Ac 11578): same data as holotype.

Remarks. The new species is distinguished from other congeners by shape of prodorsal structure and dorsosejugal suture.

***Suctobelbelia silva* spec. nov.**

[Nipponese name: Morino-madodani]

(FIG. 12)

Discosuctobelba sp. SH-13*: FUJIKAWA, Report of soil animals from the Shirakami-sanchi World Heritage Area (in press).

Measurements and body aspect (n=7): Length 179 (195) 214 μm ; width 107 (114) 121 μm . Color light brown.

Dorsal side. Rostrum rounded at tip bearing setae *ro* at lateral margin, with one pair of sharp rostral teeth and three pairs of incisions; *ro* geniculate. Rostral surface tuberculate. Tectopodial field indistinct short longitudinally. Lamellar knob developed, angular anteriorly. Interbothridial transversely costulae distinct, longitudinally indistinct. Setae *le*, *in* and *ex* smooth, short. Lengths *ss*>*ro*>*le*>*in*>*ex*. Distances (*in-in*)>(*ro-ro*) \div (*le-le*). Bothridia directed antero-laterally. Sensilli consisting of a long, thin stem and a clavate spinose head. Two pairs of dorsal condyles developed. Dorsosejugal margin straight between median condyles. Nine pairs of dorsal setae smooth, long, flagellate; setae except for *p*-series longer than distance *c*₂ and *la*. Lyrifissures *im* aligned obliquely.

Ventral side. Pentagonal genital aperture as long as rectangular anal one; their interspace about 1.6X as long as genital aperture. Genito-anal setae 6-1-2-3; setae smooth. Setae *ad*₁ and *ad*₂ adanal, *ad*₃ preanal; *ad*₁ at level between *an*₁ and *an*₂. Setae *ad*₂ and lyrifissures *iad* located near anterior anal margin; *iad* paraanal. Mutual distances (*ag-ag*)>(*ad*₂-*ad*₁)>(*ad*₁-*ad*₁) \div (*ad*₃-*ad*₃). Lengths *ag*>*ad* \div *g*>*an*. Epimeral setae 3-1-3-3; setae smooth; *4a*, *4b*, *4c* longer than other setae. Sternal field wide, more than half as

wide as genital aperture at the widest portion; cavities of ventro-sejugal apodema developed. Subcapitular setae 1-1-1; setae smooth; *h*>*a* \div *m*; *h* shorter than genito-anal setae. Legs monodactyl; claws smooth. Leg chaetotaxy including famulus: I (1-5-2-4-19); II (1-5-2-4-14); III (2-3-1-3-14); IV (1-2-1-3-10). Solenidiotaxy: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0). Famulus inserted antero-laterally to solenidion *w1*. Solenidia on tibiae and genua without coupled seta.

Material examined: Holotype (NSMT-Ac 11574): from BSH-1; 5 paratotypes: same data as holotype; 1 paratype: from BSH-2.

Remarks. The present species is distinguished from other congeners by shape of prodorsal structure.

***Suctobelbelia margarita* spec. nov.**

[Nipponese name: Shiratama-madodani]

(FIG. 13)

Discosuctobelba sp. SH-14*: FUJIKAWA, Report of soil animals from the Shirakami-sanchi World Heritage Area (in press).

Measurements and body aspect (n=2): Length 243 μm ; width 143-150 μm . Color light brown.

Dorsal side. Rostrum rounded at tip with one pair of incisions. Prodorsal surface tuberculate in rostral and lamellar regions, granulate in exobothridial region. Rostral elevation tectopodial field, lamellar knob, and interbothridial field clearly developed. Inner border of lamellar knob circular. Bothridia directed antero-laterally. Setae *ro* geniculate, inserted on lateral margins of rostrum. Setae *ro*, *le*, *in*, *ss* and *ex* smooth. Sensilli long, consisting of a long thin stem and capitate head. Lengths *ss*>*ro*>*ex*>*le*>*in*. Distances (*in-in*)>(*ro-ro*)>(*le-le*). Notogaster semi-circular in shape. Lateral and median notogastral condyles contiguous together. Dorsosejugal margin narrow, straight between condyles. Nine pairs of dorsal setae smooth, thick except for *p*-series; setae shorter than distance *c*₂ and *la*. Lyrifissures *im* almost located longitudinally.

Ventral side. Pentagonal genital aperture slightly shorter than anal one; their interspace about twice as long as genital aperture. Genito-anal setae 4-1-2-3; setae smooth, long. Setae *g*₁ and *g*₂ remote from *g*₃ and *g*₄. Setae *ad*₁ situated at level between setae *an*₁

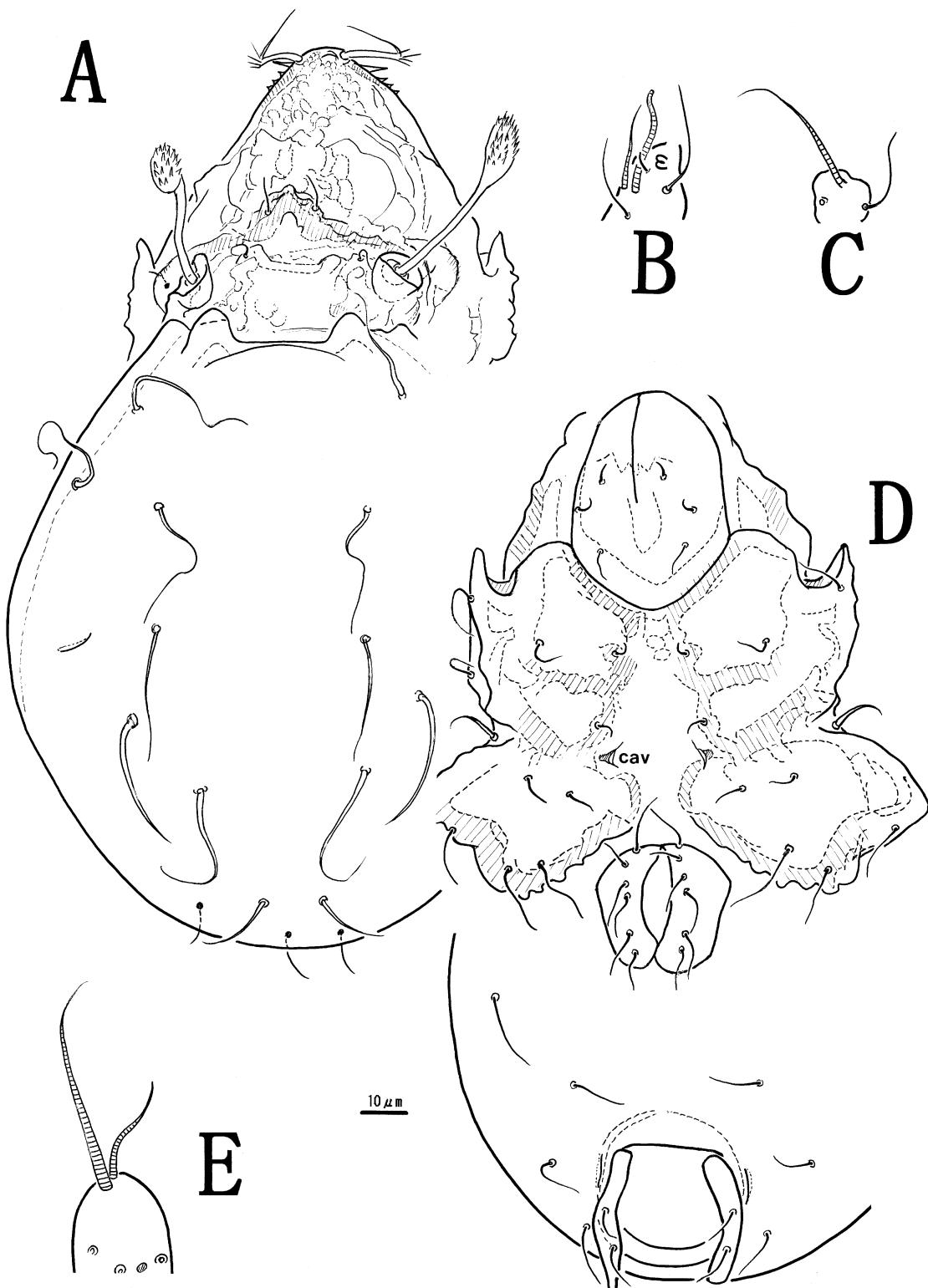


FIG. 12: *Suctobelbella silva* spec. nov. (X 1,500). A. — Dorsal view; B. — Solenidial region of left tarsus I; C. — Solenidial region of left genu I; D. — Ventral view; E. — Solenidial region of left tibia I.

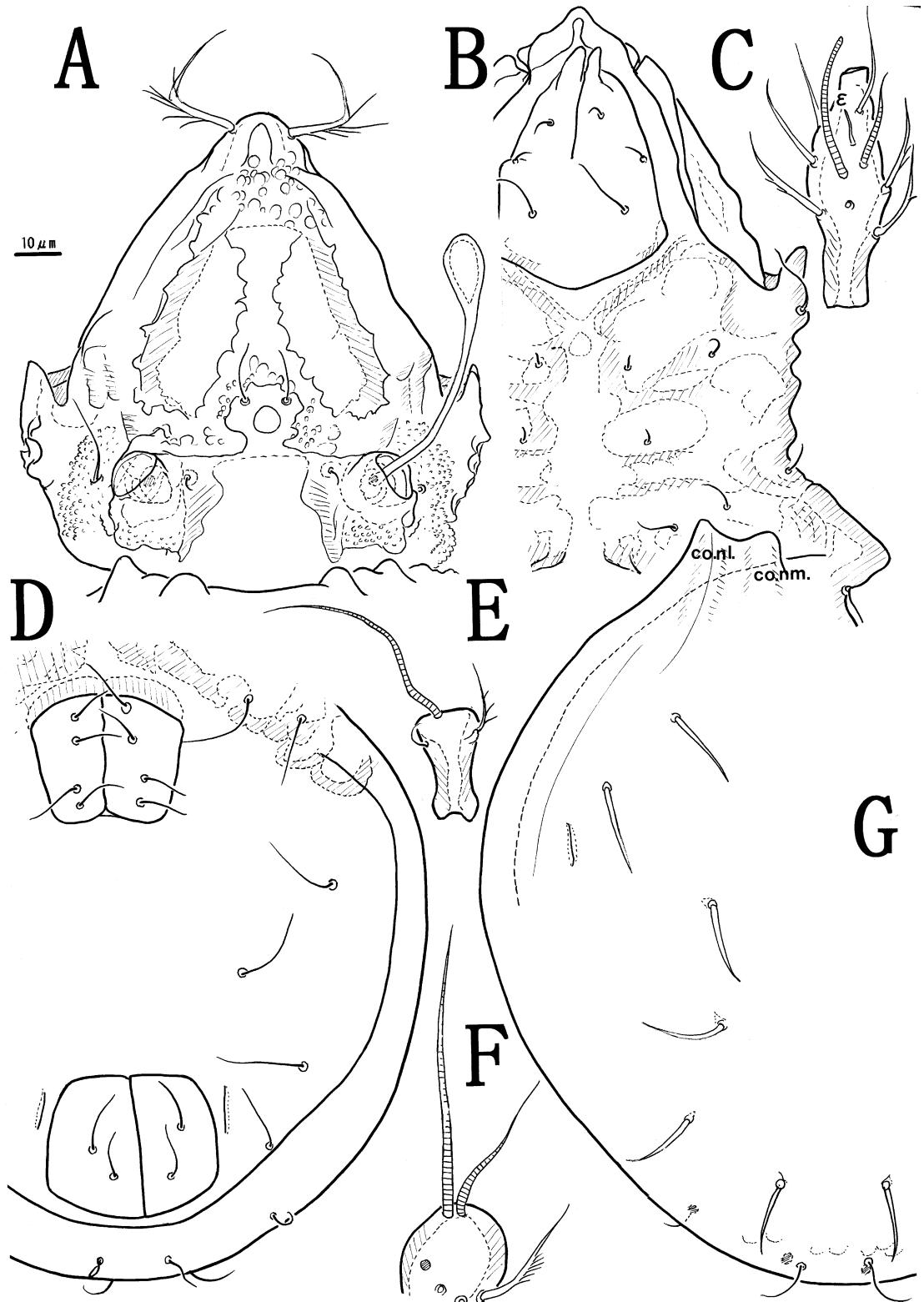


FIG. 13: *Suctobelbella margarita* spec. nov. (X 1,500). A. — Prodorsum; B. — Podosomal region; C. — Solenidial region of right tarsus I; D. — Genito-anal region; E. — Left genu I; F. — Left tibia I; G. — Notogaster.

and an_2 ; ad_2 at level of anal anterior margin; ad_3 preanal. Lyrifissures iad paraanal near anal anterior margin. Distances $(ag-ag) > (ad_2-ad_2) > (ad_1-ad_1) > (ad_3-ad_3)$. Epimeral setae 3-1-3-3; setae smooth; $4a$ and $4b$ longer than others. Sternal field elongate about as wide as genital plate; cavities indistinct. Subcapitular setae 1-1-1; setae smooth; setae h about three times longer than a and m ; h longer than an and g , shorter ad . Legs monodactyl; claws smooth. Leg chaetotaxy including famulus: I (1-5-2-4-19); II (1-5-2-4-16); III (2-4-1-3-14); IV (1-2-2-3-10). Solenidiotaxy: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0). Famulus inserted anteriorly between solenidia. Solenidia on tibiae and genua without coupled seta.

Material examined: Holotype (NSMT-Ac 11575): from BSH-1; 1 paratotype: same data as holotype.

Remarks. The new species is similar to the original description and redescription by STRENZKE (1951) of *S. longirostris* (Forsslund, 1941). However, the present species is distinguished from the latter by sensilli with round head, their mutual distance of dorsal setae h_3 larger than that of lp , and their mutual distance of adanal setae ad_3 larger than width of anal aperture.

Suctobelbella

(Flagrosuctobelba) muronokiensis spec. nov.

[Nipponese name: Muronoha-madodani]

(FIG. 14)

Flagrosuctobelba sp. SH-17*: FUJIKAWA, Report of soil animals from the Shirakami-sanchi World Heritage Area (in press).

Measurements and body aspect (n=15): Length 164 (179) 186 μm ; width 86 (95) 100 μm . Color light brown.

Dorsal side. Rostrum with rostral tooth and five pairs of accessory teeth. Prodorsal surface sparsely tuberculate on anterior region between tectopodial fields, and granulate on exobothridial region. Tectopodial field, lamellar knob and interbothridial field developed. Inner border of lamellar knob indistinct. Setae ro geniculate. Sensilli long flagellate, strongly curved and distal half conspicuously pilose unilaterally. Setae le , in and ex smooth. Lengths $ss > ro > le > ex > in$. Distances $(in-in) > (ro-ro) > (le-le)$. Notogaster

bearing seven pairs of bilaterally feathered setae and two pairs of smooth p -series setae. Dorsal setae shorter than distance between c_2 and la . Setae c_2 inserted behind notogastral median condyles. Notogaster semicircular with two pairs of small condyles and straight anterior margin between them; Lateral condyles angular at tip, and median ones broadly rounded in shape. Lyrifissures im located transversely.

Ventral side. Rectangular genital and pentagonal anal apertures same length, slightly shorter than their interspace. Genito-anal setae 5-1-2-3; setae smooth. Setae ad_1 adanal, ad_2 at level of anterior anal margin, and ad_3 preanal. Lyrifissures iad paraanal, near to anterior margin. Distances $(ag-ag) > (ad_2-ad_2) > (ad_1-ad_1) > (ad_3-ad_3)$. Epimeral setae 3-1-3-3; setae smooth. Sternal field wide, as wide as genital plate; cavities indistinct. Subcapitular setae 1-1-1; setae smooth, longer than genito-anal and epimeral setae. Legs monodactyle; claws smooth. Leg chaetotaxy including famulus: I (1-5-2-4-19); II (1-5-2-4-14); III (2-3-1-3-12); IV (1-2-2-3-10). Solenidiotaxy: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0).

Material examined: Holotype (NSMT-Ac 11576): from BSH-2; 5 paratotypes: same data as holotype; 9 paratypes: from BSH-1.

Remarks. The new species is very similar to *F. meridionalis* Kahwash, Subías et Ruiz, 1991, however it is distinguished from the latter by number of rostral accessory tooth, insertion of setae $g1$ and $1b$, and from other species treated as members of the subgenus *Flagrosuctobelba* (Subías & Arillo, 2001) by number of rostral accessory tooth, shape of lamellar knob, sensilli, dorsal setae and notogastral condyles.

Suctobelbella angulata spec. nov.

[Nipponese name: Tsuno-madodani]

(FIG. 15)

Suctobelbella sp. SH-41*: FUJIKAWA, Report of soil animals from the Shirakami-sanchi World Heritage Area (in press).

Measurements and body aspect (n=15): Length 229 (237) 243 μm ; width 121 (129) 136 μm . Color light brown.

Dorsal side. Rostrum with rostral tooth and three pairs of accessory teeth. Prodorsal surface tubercu-

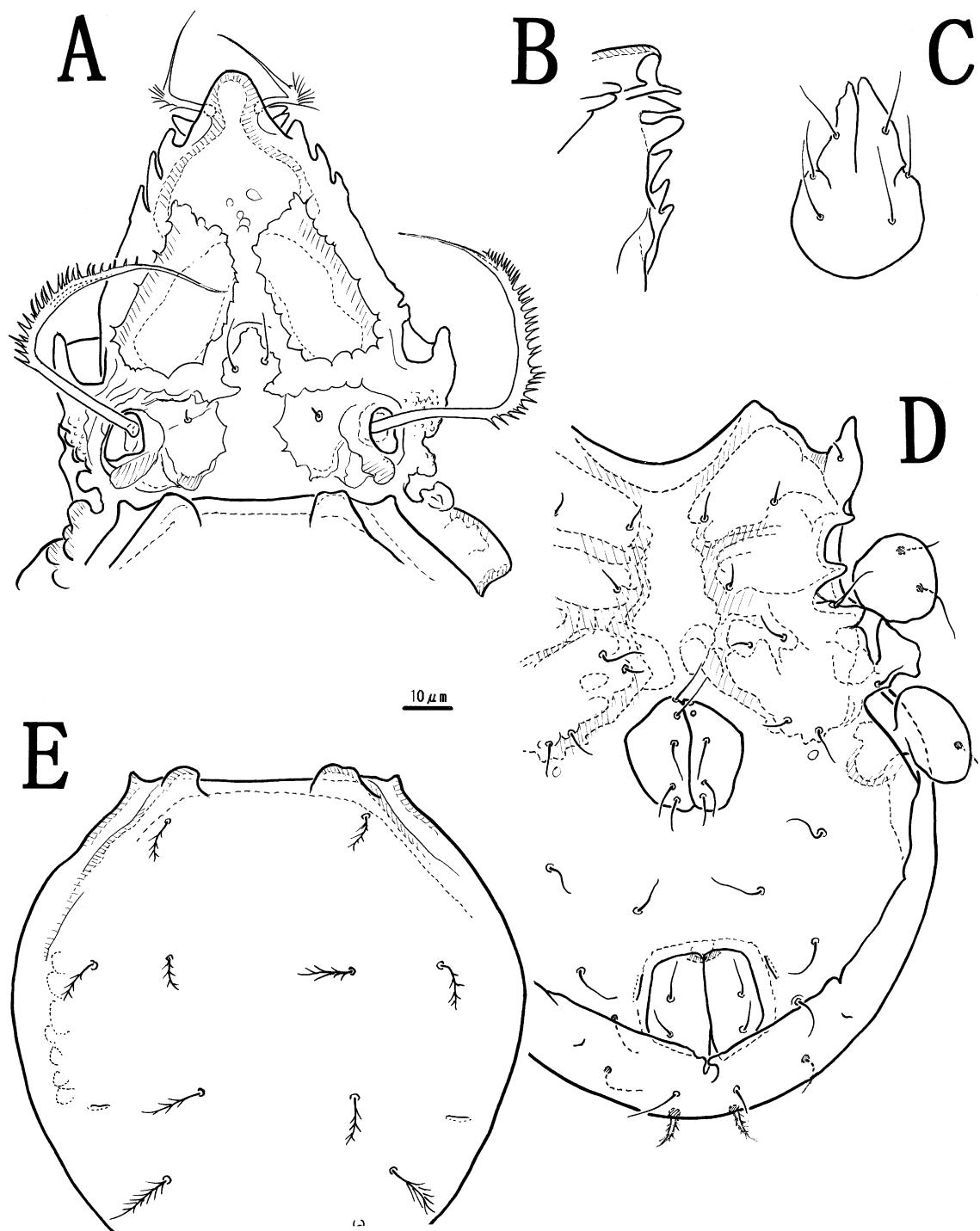


FIG. 14: *Suctobelbella (F.) muronokiensis* spec. nov. (X 1,500). A. — Prodorsum; B. — Rostrum in lateral view; C. — Gnathosoma; D. — Ventral region; E. — Notogaster.



FIG. 15: *Suctobelbella angulata* spec. nov. (X 1,500). A. — Dorsal view; B. — Ventral view; C. — Solenidial region of right tibia I; D. — Solenidial region of left tarsus I; E. — Solenidial region of right genu I.

late on rostral and lamellar region. Tectopodial field, lamellar knob and interbothridial field well developed. Lamellar knob dark color. Setae *ro* geniculate, other prodorsal setae smooth. Sensilli consisting of a long thin stem and fusiform head. Lengths *ss*>*ro*>*le*>*ex*>*in*. Distances (*in-in*)>(*ro-ro*)>(*le-le*). Notogaster semicircular with straight anterior margin and two pairs of condyles; condyles angular in shape. Nine pairs of smooth, thick dorsal setae present; seven pairs of them longer than distance between *c₂* and *la*; *p*-series short. Lyrifissures *im* located obliquely.

Ventral side. Pentagonal genital aperture as long as rectangular anal aperture; their interspace about twice as long as aperture. Genito-anal setae 6-1-2-3; setae smooth. Setae *g* thin, other setae thick. Setae *g₃* and *g₄* about one half as long as other genital setae. Lengths *g₁*÷*g₂*≈*g₅*÷*g₆*>*ad₃*>*g₃*÷*g₄*>*ad₁*÷*ad₂*>*an*÷*ag*. Distances (*ag-ag*)>(*ad₂-ad₂*)>(*ad₁-ad₁*)÷(*ad₃-ad₃*). Setae *ad₁* and *ad₂* at level of posterior and anterior margin of anal aperture, respectively; *ad₃* preanal. Lyrifissures *iad* slightly inverse apoanal at level of setae *an₂*. Epimeral setae 3-1-3-3; setae smooth. Sternal field as wide as genital aperture. Cavities indistinct. Subcapitular setae 1-1-1; setae smooth; length *a*>*m*÷*h*; *a* as long as *g₃*. All legs monodactyl; claws smooth. Leg chaetotaxy including famulus: I (1-5-2-4-19); II (1-5-2-4-14); III (2-3-1-3-12); IV (1-2-2-2-10). Solenidiotaxy: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0). Famulus inserted anterior to solenidion *ω₁* and lateral to *ω₂*. Solenidia on tibiae and genua without coupled seta.

Material examined: Holotype (NSMT-Ac 11579): from BSH-2; 14 paratotypes: same data as holotype.

Remarks. The new species is distinguished from other congeners by shape of rostral teeth, lamellar knob, notogastral condyles, and setae *g*, *an* and dorsal setae.

***Suctobelbella shironeseta* spec. nov.**
[Nipponese name: Shirone-madodani]

(FIG. 16)

Suctobelbella sp. SH-42*: FUJIKAWA, Report of soil animals from the Shirakami-sanchi World Heritage Area (in press).

Measurements and body aspect (n=32): Length 179 (206) 221 µm; width 100 (115) 143 µm. Color light brown.

Dorsal side. Prodorsal surface tuberculate. Rosstrum rounded at tip, with one pair of deep incisions and one pair of round accessory teeth, without rostral tooth. Tectopodial field, lamellar knob and interbothridial field developed. Setae *ro* geniculate; *le*, *in* and *ex* smooth; sensilli consisting of a long thin stem and dentate fusiform head. Bothridia directed anterior laterally. Lengths *ss*>*ro*>*le*>*in*÷*ex*. Distances (*in-in*)>(*ro-ro*)>(*le-le*). Notogaster elongate with two pairs of condyles and straight anterior margin between condyles; condyles angular in shape. Nine pairs of smooth dorsal setae present, shorter than distance between *c₂* and *la*. Lyrifissures *im* located slightly obliquely.

Ventral side. Pentagonal genital aperture slightly shorter than circular anal aperture; interspace between them about 1.5X as long as anal aperture. Genito-anal setae 5-1-2-3; setae smooth; *g₁* longer than twice length of other setae. Lengths *g₁*>*g₂*÷*g₃*÷*g₄*÷*g₅*÷*ag*÷*ad*>*an*. Setae *an₁* inserted near midventral, and *an₂* near lateral margins of plates; *an₁* inserted mid-distance along the plate. Setae *ad₁* and *ad₂* adanal, *ad₃* preanal. Lyrifissures *iad* large, paraanal at level of anterior half of anal plate. Distances (*ag-ag*)>(*ad₂-ad₂*)>(*ad₃-ad₃*) ≥ (*ad₁-ad₁*). Epimeral setae 3-1-3-3; setae smooth, short. Sternal field narrower than half width of genital aperture. Subcapitular setae 1-1-1; setae smooth, short. Lengths *a*≥*h*>*m*. All legs monodactyl; claws smooth. Leg chaetotaxy including famulus: I (1-5-2-4-19); II (1-5-2-4-16); III (2-3-1-3-14); IV (1-2-2-3-10). Solenidiotaxy: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0). Famulus and solenidion *ω₁* on tarsus I dull at tip; famulus inserted in front of solenidia. Solenidia on tibiae and genua without coupled seta.

Material examined: Holotype (NSMT-Ac 11580): from BSH-2; 25 paratotypes: same data as holotype; 6 paratypes: from BSH-1.

Remarks. The new species is distinguished from other congeners by shape of rostral lateral margin, sensilli and different length of genital-anal setae.

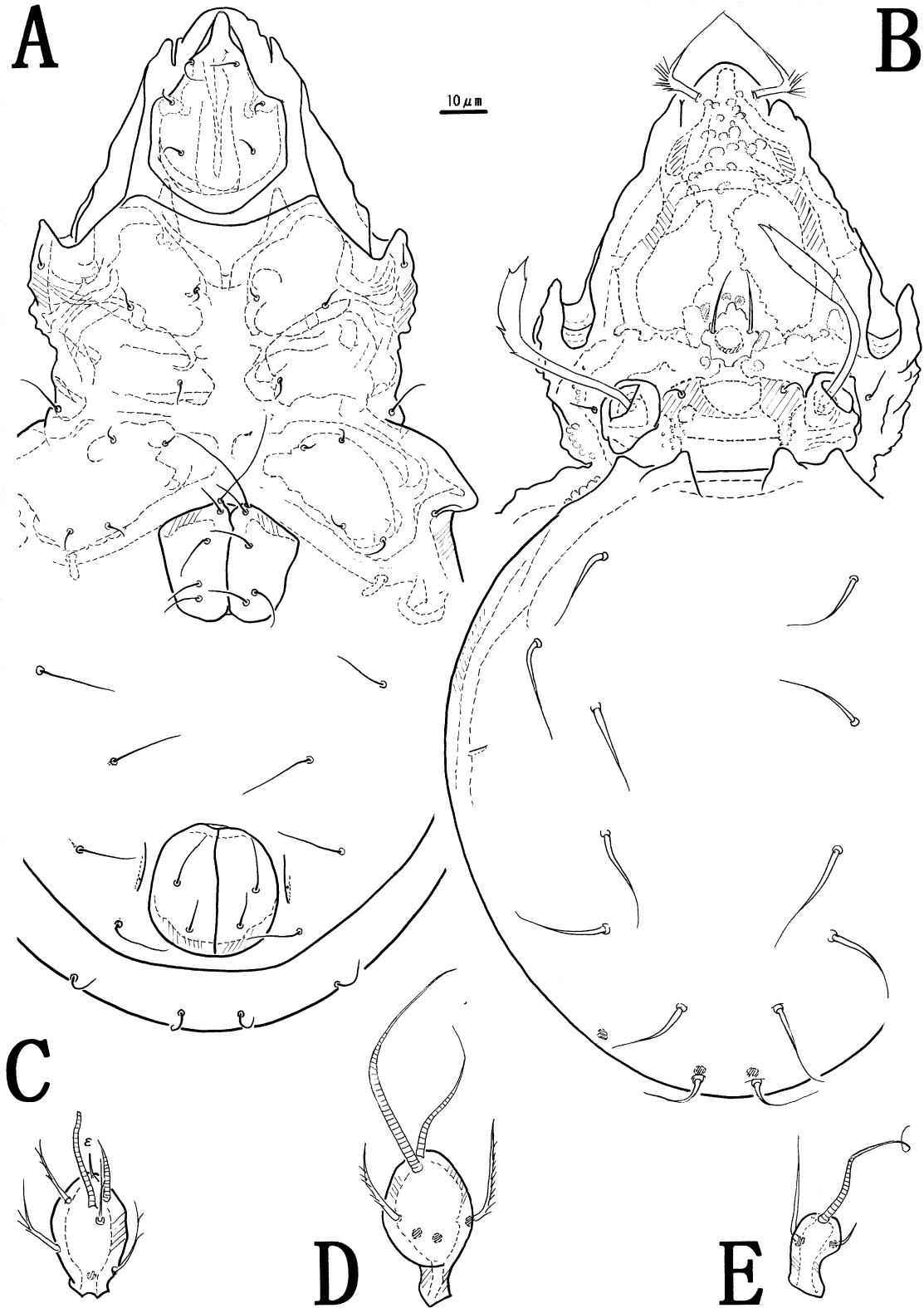


FIG. 16: *Suctobelbella shironeseta* spec. nov. (X 1,500). A. — Ventral view; B. — Dorsal view; C. — Solenidial region of right tarsus I; D. — Left tibia I; E. — Right genu I.

***Unicobelba aomoriensis* spec. nov.**

[Nipponese name: Aomori-madodani]

(FIG. 17)

*Unicobelba sp. SH-45**: FUJIKAWA, Report of soil animals from the Shirakami-sanchi World Heritage Area (in press).

Measurements and body aspect (n=10): Length 250 (270) 279 μm ; width 136 (148) 157 μm . Color light brown.

Dorsal side. Rostrum rounded at tip without teeth nor incisions. Prodorsal surface tuberculate. Tectopodial field, lamellar knob and interbothridial field developed, occupying posterior half of prodorsum. Setae *ro* setiform, minutely barbed unilaterally, inserted on lateral margins of rostrum. Setae *le*, *in* and *ex* smooth. Sensilli consisting of a thin, smooth long stem and minutely barbed, lanceolate head terminating in a fine point. Lengths *ss*>*ro*=*le*>*in*=*ex*. Distances (*in-in*)>(*ro-ro*)>(*le-le*). Notogaster elliptical with two pairs of small condyles, and straight margin between condyles. Ten pairs of dorsal setae smooth, shorter than distance *c*₂ and *la*. Lyrifissures *iad* located almost transversely.

Ventral side. Genital aperture pentagonal and anal one rectangular; anal aperture slightly longer than genital one; interspace between them about 1.5X as long as anal aperture. Genito-anal setae 6-1-2-3; setae smooth. Setae *g*₁ to *g*₄ remote from *g*₅ and *g*₆. Setae *ad*₁ adanal, *ad*₂ and *ad*₃ preanal. Distances (*ag-ag*)>(*ad*₂-*ad*₁)>(*ad*₃-*ad*₁) ≥ (*ad*₃-*ad*₂). Lyrifissures *iad* paraanal at level of setae *an*₂. Epimeral setae 3-1-3-3; setae smooth, short. Subcapitular setae 1-1-1; setae smooth. Pedipalpal setae 0-2-1-3-8[1]. Lengths *g*=*ad*>*a*>*h*>*ag*>*m*>4*a*≥*an*. Legs monodactyl. Leg chaetotaxy including famulus: I (1-4-2-4-19); II (1-4-2-4-14); III (2-3-1-3-14); IV (1-2-2-3-10). Solenidiotaxy: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0). Famulus terminating in a fine point, inserted between solenidia on tarsus I. Solenidion ω ₁ bacilliform; other solenidia terminating in a fine point. Solenidia on tibiae and genua without coupled seta.

Material examined: Holotype (NSMT-Ac 11581): from BSH-3; 2 paratotypes: same data as holotype; 3 paratypes: from BSH-1; 4 paratypes: from BSH-2.

Remarks. The present species is the third representative of the genus. The new species is distinguished from *U. ypsilonignata* Mahunka et Mahunka-Papp, 1999 by shape between tectopodial fields, direction of lyrifissures *im*, situation of lyrifissures *iad*, setae *ad*₁ and *ad*₂, and from *U. truncicola* (Forsslund, 1941) by shape of setae *ro* and insertion of dorsal setae, *ad*₁ and *ad*₂. The present species was recorded previously by mistake as *S. truncicola*, and should be removed from previous list of oribatid mites (FUJIKAWA et al., 1993). The genus *Unicobelba* Mahunka et Mahunka-Papp, 1999 is very similar to the genus *Suctobelbata* Gordeeva, 1991 which differs, however, from the former by epimeral setae (2-1-3-3), setae *ad*₁ postanal and *ad*₂ adanal.

***Unguizetes striatus* spec. nov.**

[Nipponese name: Sujibane-ebisudani]

(FIG. 18)

Measurements and body aspect (n=3): Length 907 μm ; width 693 μm . Color light yellow. Whole body surface granulate.

Dorsal side. Rostrum rounded. Lamellae conspicuous, with a narrow pointed apex extending for a distance equal to 0.8X length of prodorsum, and situated along lateral margins. Setae *ro*, *le*, *in* and *ex* minutely spinose. Setae *ro* and *le* extending in front of rostrum for a distance equal to half and two-third of their length, respectively. Setae *in* inserted inner posterior end of lamellae, extending anterior to rostral margin. Sensilli short, consisting of a thin smooth stem and spinose clavate head. Lengths *in*>*le*>*ro*>*ex*>*ss*. Distances (*in-in*)>(*ro-ro*)>(*le-le*). Notogaster semicircular in shape; dorsosejugal suture interrupted. Pteromorphae immovable; inner margin hemmed in by striate ornament. Ten pairs of dorsal setae smooth, minute, hard discernible. Four pairs of area porosae present; *Aa* the largest, *A*₁ the smallest. Distances (*A*₂-*A*₂)>(*Aa-Aa*)>(*A*₁-*A*₁)>(*A*₃-*A*₃).

Ventral side. Genital and anal apertures pentagonal in shape; genital aperture about half length of anal one; their interspace slightly longer than anal aperture. Genito-anal setae 6-1-2-3. Setae *g*₁ to *g*₃ aligned inner anterior margin of plates; *g*₅ and *g*₆ remote from other setae. Setae *ad*₁ postanal; *ad*₂ and

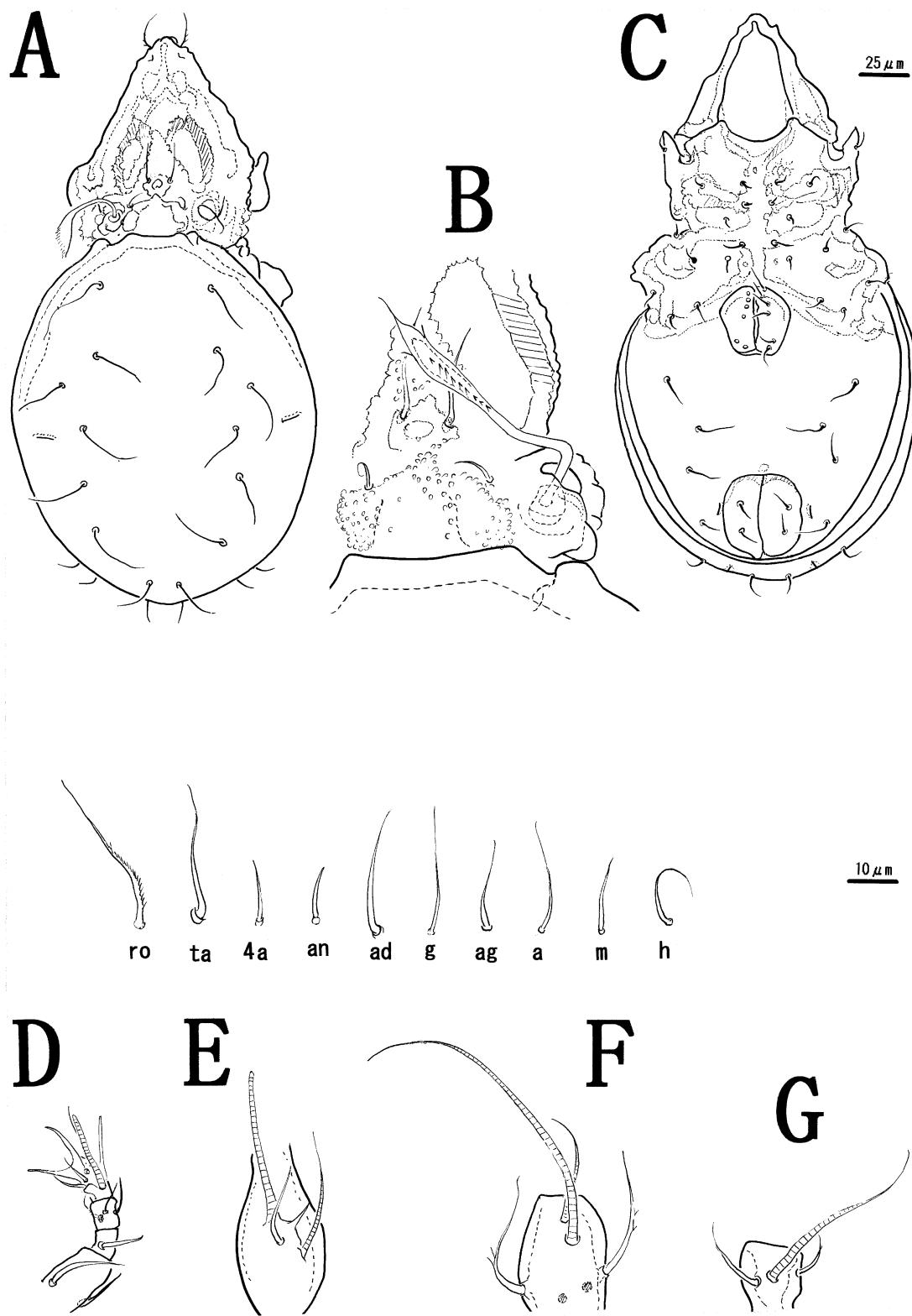


FIG. 17: *Unicobela aomoriensis* spec. nov. A. — Dorsal view; B. — Lamellar region; C. — Ventral region; D. — Pedipalp; E. — Solenidial region of right tarsus I; F. — Right tibia I; G. — Right genu I; A & C (X 600); B, D-G & setae (X 1,500).

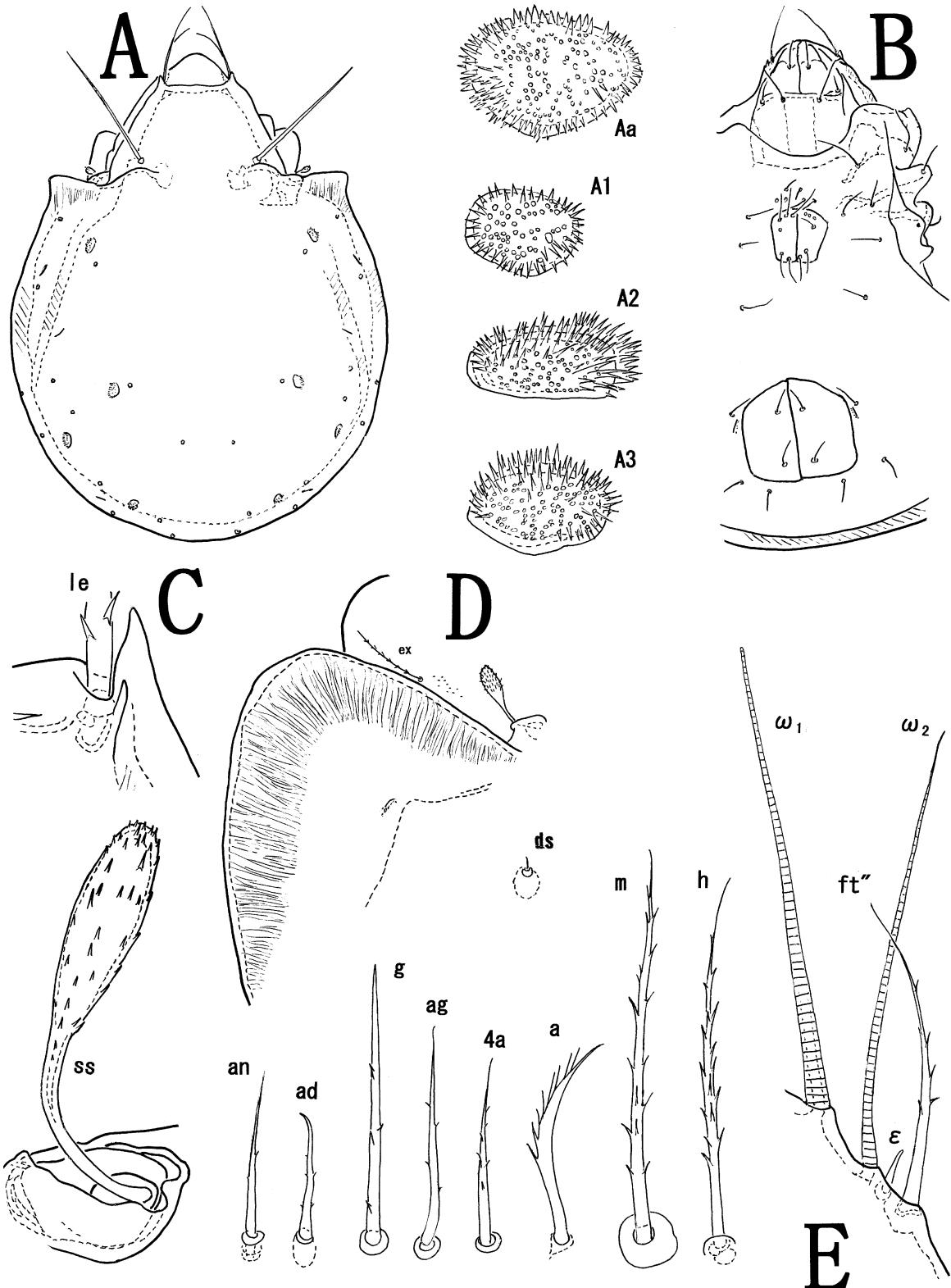


FIG. 18: *Unguizetes striatus* spec. nov. A. — Dorsal view; B. — Ventral view; C. — Tip of right lamella; D. — Left pteromorpha (X 300); E. — Solenidial region of right tarsus I. A & B (X 150); C, E, area porosae & setae (X 1,500).

ad_3 at level of posterior and anterior margin, respectively; ad_3 at level of an_2 . Lyrifissures iad inverse apoanal immediately postero-laterally to ad_3 . Distances $(ad_2-ad_2) > (ag-ag) \neq (ad_3-ad_3) > (ad_1-ad_1)$. Epimeral setae 3-1-3-3. Subcapitular setae 1-1-1. Genito-anal, epimeral and subcapitular setae barbed; setae a unilaterally, other setae throughout the length. Lengths $m \neq h > g > ag \neq a > 4a > an > ad$. Pedipalpal chaetotaxy 0-2-1-3-9[1]. Gnathosoma diarthric. All legs tridactylous; claws serrate. Leg chaetotaxy including famulus: I (1-5-3-4-19); II (1-5-2-4-15); III (2-3-1-3-15); IV (1-2-2-3-12). Solenidiotaxy: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0). Trochantera and femora of legs II-IV bearing carina. Famulus minute, dull at tip, inserted between solenidion ω_2 and seta ft'' .

Material examined: Holotype (NSMT-Ac 11582): from BSH-6; 1 paratopotype (NSMT-Ac 11583): same data as holotype.

Remarks. The new species is similar to *U. clavatus* Aoki, 1967, however, the new species is distinguished from the latter by (1) shape of rostrum, translamella and pteromorphal surface, (2) insertion of genital and epimeral setae, and (3) length of subcapitular setae.

***Scheloribates bunaensis* spec. nov.**

[Nipponese name: Buna-otohimedani]

(FIG. 19)

Scheloribates sp. SH-39*: FUJIKAWA, Report of soil animals from the Shirakami-sanchi World Heritage Area (in press).

Measurements and body aspect (n=11): Length 393 (428) 464 μ m; width 200 (218) 243 μ m. Color light yellowish brown.

Dorsal side. Rostrum rounded bearing setae ro on lateral margins. Lamellae ending abruptly anterio-rally, slightly constricted posterior to tip, extending for about 0.75X as long as prodorsum; setae le arising dorsally at the tip of lamellae. Setae in inserted near anterior margin of notogaster. Setae ro , le and in minutely barbed sparsely; ro extending in front of rostrum for a distance equal to half their length, and le two third of their length; in extending for a short distance in front of lamellae. Lengths $le > in > ro$. Distances $(le-le) \div (in-in) > (ro-ro)$. Bothridia opened

anteriorly. Sensilli capitate, sparsely spinose. Setae ex short glabrous. Notogaster elliptical in shape with convex anterior margin, small immovable pteromorphae, ten pairs of short glabrous dorsal setae, and four pairs of sacculi. Sacculi S_1 located antero-laterally to lm , S_1 lateral to lp , S_2 between h_2 and h_3 , S_3 antero-laterally to p_1 . Lyrifissures ia and im obliquely. Distances $(lm-lm) \neq (lp-lp)$.

Ventral side. Genital aperture elliptical, smaller than anal aperture; anal aperture almost square; their interspace about twice as long as length of genital aperture. Genito-anal setae 4-1-2-3; setae glabrous, short. Setae ad_1 postanal; ad_2 adanal at level of an_2 ; ad_3 preanal. Distances $(ad_3-ad_3) > (ag-ag) > (ad_1-ad_1)$. Lyrifissures iad paraanal at level between an_2 and anterior margin of anal aperture. Discidia well developed terminating in fine tips, extending at level of apodemata II. Epimeral setae 3-1-3-3; setae glabrous. Subcapitular setae 1-1-1; setae minutely, sparsely barbed. Pedipalpal setae 0-2-1-3-9[1]. Lengths $an > ad > h > 4a \neq a > ag > m \neq g$. All legs heterotridactylous; claws serrate. Leg chaetotaxy including famulus: I (1-5-3-4-17); II (1-5-2-4-16); III (2-2-1-3-14); IV (1-2-2-3-12). Solenidiotaxy: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0). Famulus minute inserted between solenidion ω_2 and seta ft'' ; famulus and ω_2 with fine tip; solenidion ω_1 bacilliform, shorter than half length of ω_2 .

Material examined: Holotype (NSMT-Ac 11584): from BSH-1; 10 paratypes (NSMT-Ac 11585): from BSH-2.

Remarks. The present species is similar to *S. imperfектus* Hammer, 1972, *S. seghetti* (Runkel et Kates, 1947), *S. subsimilis* Balogh, 1962, *S. yezoensis* Fujita et Fujikawa 1987, however, the new species is distinguished from them by body size, shape of sensilli, length of setae le , in , ad and dorsal setae, and direction of lyrifissures ia , im and iad .

***Eupelops miyamaensis* spec. nov.**

[Nipponese name: Miyama-emmadani]

(Figs. 20 & 21)

Eupelops sp. SH-16*: FUJIKAWA, Report of soil animals from the Shirakami-sanchi World Heritage Area (in press).

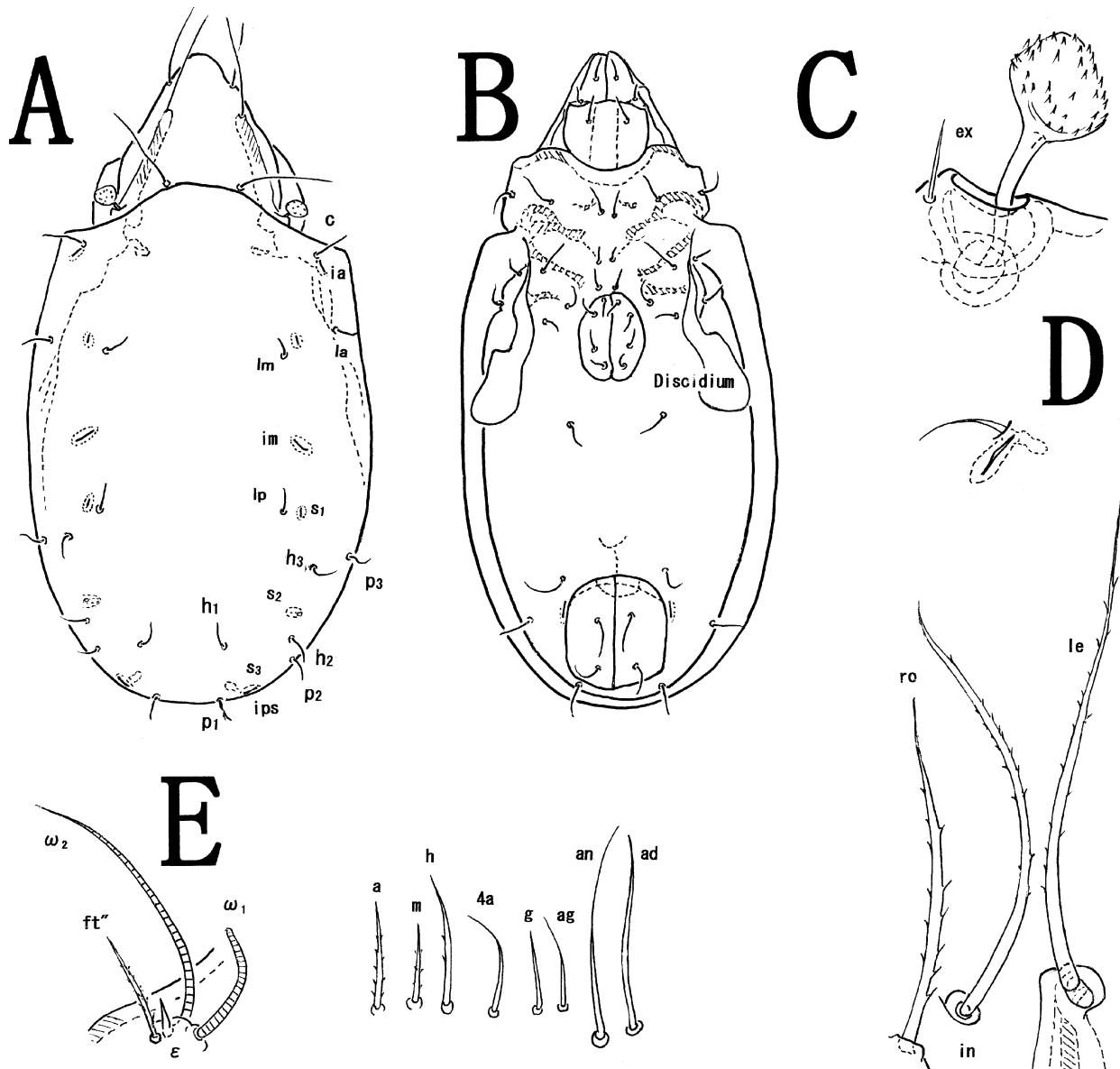


FIG. 19: *Scheloribates bunaensis* spec. nov. A. — Dorsal view; B. — Ventral view; C. — Right bothridial region; D. — Right fissure *ia* and seta *c*; E. — Solenidial region of left tarsus I. A & B (X 300); C-E and setae (X 1,500).



FIG. 20: *Eupelops miyamaensis* spec. nov. (X 600). A. — Dorsal view; B. — Ventral view.

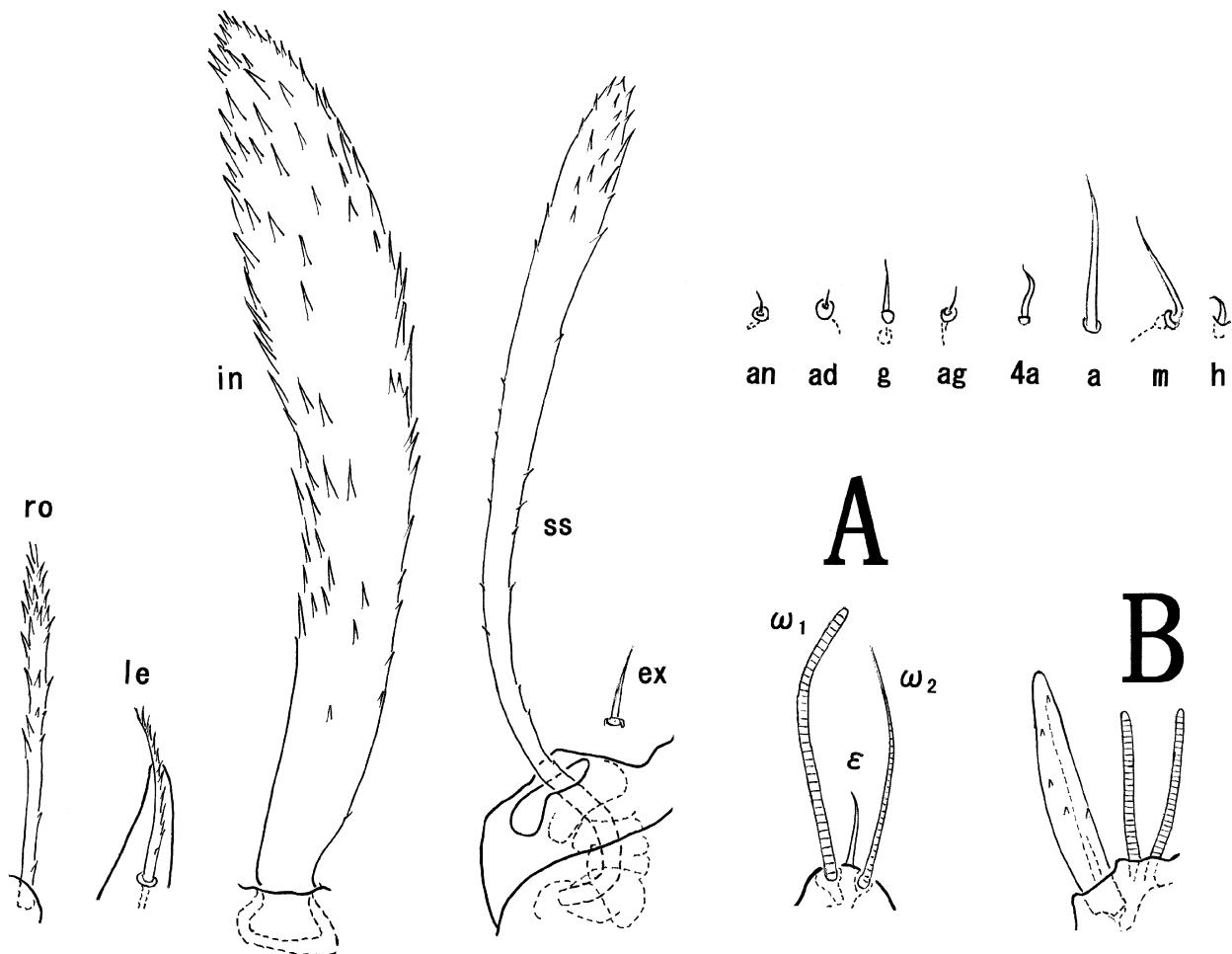


FIG. 21: *Eupelops miyamaensis* spec. nov. (X 1,500). A. — Solenidial region of right tarsus I; B. — Solenidial region of left tarsus II.

Measurements and body aspect (n=8): Length 521 (544) 557 μm ; width 414 (453) 486 μm . Color reddish brown. Dorsal surface bearing dark polygonal areoiae variable in shape and size.

Dorsal side. Rostrum protruding with angular tip. Setae *ro* bearing barbs progressively densely from the base to tip, inserted on lateral margins, extending at level of anterior margin of rostrum. Lamellar cuspidis long, extending for a short distance beyond anterior margin of rostrum; interspace between cuspidis forming U-shape. Setae *le* barbed unilaterally, arised dorsally on cuspidis. Tutorium developed, sharply pointed at tip, extending for a short distance beyond

anterior margin of rostrum. Setae *in* large, phylliform, roughened, extending near anterior margin of rostrum. Bothridia opened antero-laterally. Sensilli sparsely spiculate; its head fusiform. Setae *ex* glabrous. Lengths *in*>*ss*>*ro*>*le*>*ex*. Notogaster with large pteromorphae, elliptical lenticulus, ten pairs of bacilliform, roughened setae, and wave of anterior tectum covering basal part of prodorsum. Area porosae A₁ located between setae *lp* and *h*₃; those organs situated close together. Lyrifissures *im* located transversely, and antero-laterally to setae *lp*.

Ventral side. Genital and anal apertures almost pentagonal, having almost same length; interspace

between them about 1.5X as long as genital aperture. Genito-anal setae 5-1-2-3; setae ad_1 and ad_2 postanal; ad_3 adanal, inserted at level of a short distance behind level of setae an_2 . Lyrifissures iad inverse apoanal, situated at level of anterior margin of anal aperture. Epimeral setae 3-1-3-3. Discidia developed, with narrow pointed apex, extending at level of apodemata II. Subcapitular surface striate; setae 1-1-1. Genito-anal, epimeral and subcapitular setae minute, glabrous. Lengths $a > m > g \neq 4a > h > an \neq ag > ad$. All legs heterotridactylous; claws serrate. Leg chaetotaxy including famulus: I (1-5-3-4-19); II (1-5-3-4-14); III (2-3-1-3-12); IV (1-2-2-3-12). Solenidiotaxy: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0). Femora and trochantera of legs III and IV bearing carina. Dorsal setae on tarsi and tibiae of legs I and II, tarsi of legs III and tibiae of legs IV bearing phylliform, roughened setae. Famulus inserted anteriorly between solenidia; solenidion ω_1 bacilliform, longer than setiform ω_2 .

Material examined: Holotype (NSMT-Ac 11586): from BSH-1; 3 paratotypes (NSMT-Ac 11587 and 11588): same data as holotype; 2 paratypes (NSMT-Ac 11589): from BSH-2; 1 paratype: from BSH-4; 1 paratype: from BSH-6.

Remarks. The present species is similar to *E. japonensis* Fujikawa, 1990, however, the new species is distinguished from the latter by direction of lyrifissures *im*, situation of setae ad_2 , and length of rostral and dorsal setae.

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