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The following thirteen new species were described from beech forests in the Shirakami-sanchi World Heritage Area in Nippon: *Phthiracarus (Archiphthiracarus) hirsutus* spec. nov., *Cepheus similis* spec. nov., *Sadocephus tohokuensis* spec. nov., *Heterobelba montana* spec. nov., *Microppia septemtrionalis* spec. nov., *Multioppia yamatogracilis* spec. nov., *Multioppia crassuta* spec. nov., *Suctobelba monobina* spec. nov., *Banksinoma tamayura* spec. nov., *Fuscozetes montanus* spec. nov., *Protoribates shirakamiensis* spec. nov., *Protoribates tohokuensis* spec. nov., *Umbozeltes parvus* spec. nov.

Oribatid fauna was investigated at *Fagus crenata* Blume forest in the Shirakami-sanchi World Heritage Area in Aomori Prefecture, Nippon. This forest is unique among world forests because of its high purity, its preservation of old-growth trees, and its diversity of plants and animals, appeared in East Asia after the last Ice Age (The Environment Agency, 1998). Ten oribatid species were already recorded from the same place in the previous papers (Fujikawa, 2001, 2002a, 2002b, 2002c and 2003). The following marks are used for the sampling localities (140°6'E, 40°30'N) in the present paper:

- **ASH-2**: The same as above, but 520 m above sea, Oct. 2, 1999, Y. Nakamura & T. Fujikawa.
- **ASH-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.
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 as follows. \(ro, le, in, ex\): Rostral, lamellar, interlamellar and exobothridial setae; \(ss\): Sensillus \(da, dm, dp, ia, ln, lp, c_{1,3}\), \(c_{1,2}, e_{1,2}, f_{1,2}, h_{1,3}, p_{1,3}, p_{s_{1,4}}\): Dorsal setae; \(Aa, A_{1,4}\): Area porosae; \(ia, im, ip, ips, iad\): Lyrifissures; \(1a, 2a, 3a, 3c, 4a, 4c\): Epimeral setae; \(an_{1,2}, ad_{1,3}, g, ag\): Anal, adanal, genital and aggenital setae; \(a, m, h\): Anterior, medial and posterior subcapitular setae; \(e\): Famulus on tarsus of leg I; \(\omega, \Phi, \lambda, \sigma, \varphi_{1,2}, \sigma_{1,2}\): Solenidia on tarsi, tibiae and genua of legs; \(d, f', f'', l', l''\): Setae of legs.

**Phthiracarus (Archiphthiracarus) hirsutus** spec. nov.  
[Nipponese name: Arage-irekodani]  
(Fig. 1)

**Phthiracarus (Archiphthiracarus) sp. SH-29**:  

Measurements and body aspect (n=12): Brown coloured. Body surface densely punctuate. Surface of anal-genital region and notogaster weakly foveolate. Aspis: Length 500-543 \(\mu m\), width 428 \(\mu m\), height 186 \(\mu m\); Notogaster: Length 914-1,107 \(\mu m\), width 714 \(\mu m\), height 657-814 \(\mu m\).

Dorsal side. All dorsal setae long and minutely roughened. Median field of aspis long and narrow, extending backward from location of setae \(ro\) for a distance equal to half the length of propodosoma. Lateral carina short, arising from above bothridium, never reaching rim of aspis. Setae \(in\) at the posterior-laterally. Sensilli bacilliform. Other setae setiform with slightly swollen basal portion like sheath. Lengths, \(in>le \geq ex>ro \geq ss\). Setae \(ex\) long. Setae \(c_3\) situated on posterior collar margin. Setae \(c_{1,2}\) submarginally. Setae \(c_{1,3}>(c_{1,2}>d_1)\). Lyrifissures \(ia, im, ip\) and \(ips\) present. Vestigial setae \(f_1\) located anterior to setae \(h_3\) and \(f_2\) midway between setae \(h_2\) and \(h_3\).

Ventral side. Genito-anal setae 9-1-2-3. Three genital setae situated in progenital position. Two anal setae located on paraxial margin and three analad anal setae submarginally; anal setae located at level between setae \(ad_2\) and \(ad_3\). Lengths \(ad>an>g= ag\); \(a>h\) \(E, m\). Pedipalpal setae 0-2-2-8[1]; setae sul spine-like process, about one third as long as setae \(ul\). Epimeral setae 1-0-1-1. All legs monodactyle; claws bearing three ventral dents and lateral row of serrations; distal portion of dark color. Leg chaetotaxy including famulus: I (1-4-2-5-17); II (1-3-2-3-12); III (2-2-1-2-10); IV (2-2-1-2-10). Solenidiotaxy: I (2-1-3); II (1-1-2); III (1-1-0); IV (0-1-0). Famulus spiniform and rugose. All tibial solenidia coupled with a dorsal seta. Genual solenidion \(\sigma_2\) on leg I coupled with a lateral seta; setae reduced. Seta \(d\) on femur I ciliate, fusiform with a short narrower and curved apex, situated at distal end.

Material examined: Holotype (NSMT-Ac 11540) : from ASH-1; 11 paratopotypes (NSMT-Ac 11541): same data as the holotype.

Remarks. The present species resembles \(P. setosus\) (Aoki, 1980a) which was referred to the genus Phthiracarus by Niedbala (2000). However, the new species is distinguishable from the latter by form, length and situation of median field of aspis, dorsal setae and genital setae.

**Cepheus similis** spec. nov.  
[Nipponese name: Maru-manjudani]  
(Fig. 2)

**Cepheus sp. SH-7**: FUJIKAWA, Report of soil animals from the Shirakami-sanchi World Heritage Area (in press).

Measurements and body aspect (n=4): Length 685 (718) 750 \(\mu m\); width 478 \(\mu m\). Color reddish brown. Interlamellar space and notogaster pustulate; microsculpture of other portion consisting of irregular cristae and foveolae.

Dorsal side. Rostrum rounded. Setae \(ro\) and \(le\) barbed unilaterally. Setae \(le\) tapering to a fine tip. Setae \(in\) and ten pairs of dorsal setae slightly roughened. Sensilli capitate, consisting of spinose head and squamose stem. Lengths: \(le:in>ro:2ss\). Distances: \((le-le)>(ro-ro)>(in-in)\).

Ventral side. Genito-anal setae 6-1-2-3; setae smooth. Subcapitular setae smooth. Lengths, \(a>h>
Fig. 2: *Cepheus similis* spec. nov. A.— Right trochanter IV. B.— Solenidial region of right tarsus I. C.— Prodorsum (x 600). D.— Ventral region. E.— Notogaster. A, B & setae.— (x 1,500). D & E.— (x 300).
Epimeral setae 3-1-3-3; setae smooth. Leg chaetotaxy including famulus: I (1-5-3-4-20); II (1-4-3-4-17); III (2-3-2-3-15); IV (1-2-3-3-12). Solenidiotaxy: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0). Famulus about one half as long as solenidion \( \omega_1 \). Femora and trochantera of legs III and IV each bearing carina with sharply pointed apex. All legs monodactyle; claws smooth.

Material examined: Holotype (NSMT-Ac 11542): from ASH-2; 3 paratypes (NSMT-Ac 11543): same data as the holotype and ASH-3.

Remarks. The present species resembles *C. latus* NICOLET, 1855 redescribed by AOIKI (1980b) and BERNINI & BERNINI (1990). However, the species differs from other congeners by (1) form of areola on the centrodorsal field, (2) form of sensilli, (3) the relative distances mutual of setae ro, le and in, (4) length of famulus, and (5) number of leg setae.

*Sadocephus tohokuensis* spec. nov.
[Nipponese name: Tohoku-sadomanjudani]

(Fig. 3)

*Sadocephus sp. SH-38*:

Measurements and body aspect (n=1): Length 686 \( \mu \)m; width 571 \( \mu \)m. Light brown. Surface punctuate. Lamellae and humeral region, moreover, coriaceous.

Dorsal side. Rostrum slightly protruding. Lamellar cusp without inner dent. Triangular portion between cuspis not sharp, covered with translamella. Interlamellar region trapezoid; anterior portion about one third as wide as posterior one; their mutual distance about 1.5 times longer than posterior portion. Sensilli with smooth, thin and long stem, and penicillate head. Other prodorsal setae setiform, thin and smooth. Setae in inserted on posterior end of lamellae. Dorsal setae smooth spindle-shaped, except for short and thin setae of \( p \)-series.

Ventral side. All ventral setae smooth. Genito-anal setae 6-1-2-3. Epimeral setae 3-1-3-3. Genital setae arranged near inner margin of each genital plate. Setae ag inserted almost mid-distance between anal and genital openings, antero-laterally to anal aperture. Fissure iad aligned slightly obliquely and posterior to anterior border of anal aperture. Setae ad3 situated posterior to fissure iad. Distances, \((ad_1-ad_2)=1.5x (ad_2-ad_3); (ad_1-ad_2)>(ad_2-ad_3)\). All legs monodactyle: claws smooth. Leg chaetotaxy including famulus: I (1-4-3-4-18); II (1-3-3-4-15); III (2-2-3-14); IV (1-1-2-4-12). Solenidiotaxy: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0). Femora and trochantera of leg III and IV each bearing carina with sharply pointed apex like sword in form. Famulus blunt distally, situated posteriorly between solenidia.

Material examined: Holotype (NSMT-Ac 11544): from ASH-4.

Remarks. The present species differs from other congeners by (1) form of rostrum, cuspis and interlamellar region, (2) situation setae in, ag, ad2 and fissure iad, and (3) distance between setae ad2 and ad3.

**Sadocephus tohokuensis** spec. nov.

[Fig. 3]

**Sadocephus sp. SH-38***:

Measurements and body aspect (n=1): Length 686 \( \mu \)m; width 571 \( \mu \)m. Light brown. Surface punctuate. Lamellae and humeral region, moreover, coriaceous.

Dorsal side. Rostrum slightly protruding. Lamellar cusp without inner dent. Triangular portion between cuspis not sharp, covered with translamella. Interlamellar region trapezoid; anterior portion about one third as wide as posterior one; their mutual distance about 1.5 times longer than posterior portion. Sensilli with smooth, thin and long stem, and penicillate head. Other prodorsal setae setiform, thin and smooth. Setae in inserted on posterior end of lamellae. Dorsal setae smooth spindle-shaped, except for short and thin setae of \( p \)-series.

Ventral side. All ventral setae smooth. Genito-anal setae 6-1-2-3. Epimeral setae 3-1-3-3. Genital setae arranged near inner margin of each genital plate. Setae ag inserted almost mid-distance between anal and genital openings, antero-laterally to anal aperture. Fissure iad aligned slightly obliquely and posterior to anterior border of anal aperture. Setae ad3 situated posterior to fissure iad. Distances, \((ad_1-ad_2)=1.5x (ad_2-ad_3); (ad_1-ad_2)>(ad_2-ad_3)\). All legs monodactyle: claws smooth. Leg chaetotaxy including famulus: I (1-4-3-4-18); II (1-3-3-4-15); III (2-2-3-14); IV (1-1-2-4-12). Solenidiotaxy: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0). Femora and trochantera of leg III and IV each bearing carina with sharply pointed apex like sword in form. Famulus blunt distally, situated posteriorly between solenidia.

Material examined: Holotype (NSMT-Ac 11544): from ASH-4.

Remarks. The present species differs from other congeners by (1) form of rostrum, cuspis and interlamellar region, (2) situation setae in, ag, ad2 and fissure iad, and (3) distance between setae ad2 and ad3.

**Heterobelba montana** spec. nov.

[Nipponese name: Miyama-amimemantodani]

(Fig. 4)

**Heterobelba sp. SH-19***:

Measurements and body aspect (n=4): Length 379 (393) 407 \( \mu \)m; width 264-271 \( \mu \)m. Surface granulate. Exobothridial region tuberculate. Notogaster circular in shape.

Dorsal side. Rostrum with two notches; median projection truncate anteriorly at level of lateral ones; lateral ones triangular without sharply pointed apex. Setae ro setiform, inserted posterior or posterolateral to incisions, and proximal half conspicuously minutely barbed. Setae le, in and ex, thick, spiniform and verrucose. Sensilli setiform and speculate. Setae ro and le extending forwards from rostral anterior margin. Lengths and distances, \( ss>le>in>ro>ex; (in-in)>(le-in)>(le-le)>(ro-le)>(ro-ro) \). Notogastral humeral region with a small round protruding. Three pairs of dorsal setae setiform, short, smooth and situated ventromarginally.
Fig. 3: *Sadocephus tohokuensis* spec. nov. A.— Prodorsum. B.— Genital plate. C.— Left humeral region. D.— Solenidial region on right tarsus I (x 1,500). E.— Projection of left trochanter IV. A, B, C & E.— (x 600).
Ventral side. Genito-anal setae 7-2-2-3; setae thick, setiform and ciliate. Lyrissure \textit{iad} aligned longitudinally, at the level of seta \textit{an}_2. Three pairs of subcapitular setae (\textit{a}, \textit{m}, \textit{h}) thin, setiform, minutely barbed unilaterally. Epimeral setae 3-1-3-3; setae thin minutely and densely barbed. Chelicerae bearing two and one projections on fixed and movable jaws, respectively. Legs I to III monodactyle, leg IV tridactylous; claws smooth. Leg chaetotaxy including famulus: I (1-6-3-4-18); II (1-5-3-4-14); III (2-4-2-3-14); IV (1-2-2-3-10). Solenidiotaxy: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0). Famulus longer than solenidia on tarsus I.

Nymphal exuviae. Reticulation without sharp corner.

Material examined: Holotype (NSMT-Ac 11545): from ASH-2; 3 paratopotypes: same data as holotype.

Remarks. The present species is distinguished from other congeners by (1) form of rostral anterior margin, projection on notogaster, chelicerae and reticulation of nymphal exuviae, and (2) length of prodorsal setae, anal setae, genital setae, and famulus.

\textbf{Microppia septentrionalis} spec. nov.  
[Nipponese name: Kitage-tsubudani]  
(Fig. 5)

\textit{Microppia sp.} SH-23*:  
\textit{FUJIKAWA, Report of soil animals from the Shirakami-sanchi World Heritage Area (in press).}

Measurements and body aspect (n=1): Length 229 \(\mu\)m; width 107 \(\mu\)m. Light yellow colored.

Dorsal side. Rostrum rounded. One pair of longitudinal ridges weak, extending for about half way along length of prodorsum in front of bothridia. Four pairs of light areas of weak sclerotization present lateral to ridges, one pair near insertions of setae \textit{le}; a few pairs in the interlamellar region. Setae \textit{ro} thick, long and pilose unilaterally. Setae \textit{le}, \textit{in} and \textit{ex} smooth, thin and short. Sensilli composed of a thin stem and an expanded head bearing spines terminated a sharp point. Lengths, \textit{ss}>>\textit{ro}>>\textit{ex}>>\textit{le}>>\textit{in}. Humeral process weakly developed and short. Ten pairs of dorsal setae simple and short; setae \textit{c}_2 the shortest and setae \textit{lp} the longest; right seta \textit{la} lost, abnormally. Lyrissures \textit{ia} aligned longitudinally, \textit{im} and \textit{ip} obliquely. Some light areas of weak sclerotization present along notogastral margin.

Ventral side. Anal aperture almost circular and genital aperture almost square in outline. Distance between genital and anal apertures about twice as long as the length of the genital aperture. Genito-anal setae 5-1-2-3; setae smooth; setae \textit{ad}_1 postanal and setae \textit{ad}_2 preanal. Lyrissure \textit{iad} paraanal, situated at the level of mid-distance between setae \textit{an}. Epimeral setae 3-1-3-3; setae smooth and short. All legs monodactyle; claws simple. Leg chaetotaxy including famulus: I (1-5-3[2]-4-20); II (1-5-3-4-12); III (2-3-1-3-12); IV (1-2-2-3-10); setae on genu I variable in number. Solenidiotaxy: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0). Famulus on tarsus I inserted posterior to solenidia.

Material examined: Holotype (NSMT-Ac 11546): from ASH-4.

Remarks. The present species is distinguished from other congeners by (1) form of setae \textit{ro}, sensilli and humeral process, (2) situation of setae \textit{le}, and (3) number of gental setae.

\textbf{Multioppia yamatogracilis} spec. nov.  
[Nipponese name: Yamato-tamoutsubudani]  
(Fig. 6)

\textit{Multioppia sp.} SH-26*:  
\textit{FUJIKAWA, Report of soil animals from the Shirakami-sanchi World Heritage Area (in press).}

Measurements and body aspect (n=12): Length 293 (304) 321 \(\mu\)m; width 143 (165) 186 \(\mu\)m. Color light brown.

Dorsal side. Rostrum rounded. Four pairs of light areas of weak sclerotization present at posterior prodorsal margin, and several pairs around setae \textit{in}. Lamellae of weak sclerotization, short and strongly converging; setae \textit{le} originating from anterior end. Setae \textit{ro} strongly curved and barbed unilaterally extending in front of rostrum for a distance equal to about half of their length. Setae \textit{le} and \textit{in} short and
Fig. 5: *Microppia septemtrionalis* spec. nov. (× 1,500). A.— Prodorsum. B.— Epimeral region. C.— Notogaster. D.— Solenidial region on left tarsus I. E.— Anal region.
Fig. 6: *Multioppia yamatogracilis* spec. nov. A.— Dorsal view. B.— Bothridial region. C.— Ventral region. D.— Solenidial region of left tarsus I and tibia I. E.— Right genu I. F.— Left trochanter III. A & C.— (x 600). B, D, E, F & setae.— (x 1,500).
minutely barbed. Sensilli thin, and bilaterally specular bearing four long branches. Setae ex smooth. Lengths, ro>in=ex>le. Notogaster with 12 pairs of dorsal setae; setae short, smooth, and almost equal in length to setae in. Lyrifissures ia and im aligned transversely.

Ventral side. Ventral plate with well developed and broadly rounded posterior margin. Anal aperture about twice as wide as genital aperture. Distance between anal and genital apertures about twice as long as the length of the genital aperture. All ventral setae smooth. Genito-anal setae 5-1-2-3; setae ad thick and the other setae thin. Epimeral setae 3-1-2-3. Pedipalpal setae 2-1-3-9[1]. Setae ad1 inserted postanal, ad1 preanal, and setae ag almost mid-distance between anal and genital aperture Lyrifissure iad aligned obliquely. Lengths, m>ag>an>ad>a>h>1a>ge.

Material examined: Holotype (NSMT-Ac 11547): from ASH-2; 18 paratopotypes (NSMT-Ac 11548): the same data as holotype.

Remarks. The present species bears some resemblance to M. gracilis HAMMER, 1972. However, new species is distinguished from the latter by (1) relative mutual distances of setae da, dm and dp, (2) form of setae le, in and ex, (3) their mutual distance of setae ad1, and (4) situation of lyrifissure iad.

Multioppia crassuta spec. nov.
[Nipponese name: Futoge-tamoutsubudani]
(Fig. 7)

Multioppia sp. SH-25*:
FUJIKAWA, Report of soil animals from the Shirakami-sanchi
World Heritage Area (in press).

Measurements and body aspect (n=7): Length 393 (452) 486 \( \mu m \); width 214 (236) 250 \( \mu m \). Color yellowish brown.

Dorsal side. Rostrum rounded. Short curved ridges present antero-lateraly to insertions of setae le. Three pairs of light areas of weak sclerotization present behind setae le, and in front of setae in. All prodorsal and 12 pairs of notogastral setae somewhat thick and barbed unilaterally, except for sensilli, setae in and ex; setae in and ex barbed bilaterally. Setae ro strongly curved extending in front of rostrum. Setae le and in not extending to insertions of ro and le, respectively. Sensilli speculate, bearing several pectinations; not expanded medially or distally. Lengths and distances, ss>ro>in≤da>le>ex; (ro-le)>(le-in)>(le-le)>(in-in)>(ro-ro).

Ventral side. Anal aperture about 1.7x as wide as genital aperture. Distance between anal and genital apertures about twice as long as length of genital aperture. Setae ad1 inserted on each posterior side of anal aperture, ad1 preanal, and ag almost mid-distance between anal and genital apertures. Lyrifissures iad aligned longitudinally but divergent anteriorly. Genito-anal setae 5-1-2-3; setae ad barbed unilaterally, other setae smooth. Epimeral setae 3-1-2-3; setae smooth. Pedipalpal setae 0-2-1-3-9[1]. Subcapitular setae a roughened, m minutely barbed unilaterally, h smooth. Legs monodactyle; claws simple. Leg chaetotaxy: I (1-5-2-4-16); II (1-4-1-3-14); 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). Famulus inserted posterior to solenidion \( \omega 1 \). Solenidia on tibia and genu without coupled seta. Trochantera III with sharp projection.

Material examined: Holotype (NSMT-Ac 11549): from ASH-1; 6 paratopotypes (NSMT-Ac 11550): the same data as holotype.

Remarks. The present species is similar to M. insularis MAHUNKA, 1985. However, new species is distinguishable from the latter by form, length or situation of setae ro, in, ss, ex, ad and dorsal setae, and fissure iad.
**Suctobelba monobina** spec. nov.  
[Nipponese name: Hitoe-madodani]  
(Fig. 8)

*Suctobelbidae sp. SH-43*:
Fujikawa, Report of soil animals  
from the Shirakami-sanchi  
World Heritage Area (in press).

Measurements and body aspect (n=4): Length 257 \( \mu \text{m} \); width 150 \( \mu \text{m} \). Colour light brown. Surface tuberculate on prodorsum and smooth on hysterosoma.

Dorsal side. Rostrum with truncate apex and 4 pairs of teeth laterally. Setae \( r_0 \) simple, strongly curved inwards; proximal half unilaterally pilose. Tectopedial field polygonal, lamellar knob very weakly developed. Podosomal tubercle remarkable, posterobothridial tubercle lost. One pair of semicircular ridges weakly present at the interbothridial field. Setae \( l, i, e, x \) smooth. Bothridia directed anteriorly. Sensilli elongate fusiform, sensely barbed unilaterally, extending to anterior margin of tectopedial field and strongly curved inwards. Lengths, \( ss > ro > in > le = ex = 1/5 xx \). Notogaster circular in form. Dorsosejugal suture bearing one pair of short roundish lateral condyles. Ten pairs of dorsal setae present, minutely and sparsely pilose. Lyri fissures \( im \) large, aligned obliquely.

Ventral side. Genito-anal setae 5-1-2-3; epimeral setae 3-1-3-3; all setae smooth. Anal and genital apertures almost quadrangular in form; distance between them about 2.3x as long as length of genital aperture. Anal aperture about 1.3x as wide as genital aperture. Setae \( ad_i \) inserted on each posterior side of anal aperture, \( ad_j \) preanal. Lyri fissures \( iad \) located longitudinally at level of setae \( an_j \) and \( ad_j \). Setae \( an_j \) inserted almost mid-distance along the anal plate. Their mutual distance of setae \( ag \) wide. Distances \( (ad_j-ad_j)/(ag-ag)=1/2.2 \). Setae \( g_j \) about twice as long as other genital setae. Three pairs of subcapitular setae smooth. All legs monodactyle; claws smooth. Leg chaetotaxy including famulus: I (1-5-2-4-17); 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). Famulus inserted anteriorly to solenidia. Solenidia on tibia and genu without coupled seta.

Material examined: Holotype (NSMT-Ac 11551): from ASH-2 ; 3 paratopotypes (NSMT-Ac 11552): same data as holotype.

Remarks. The present species differs from other congeners by (1) form of setae \( ro \), prodorsal knob and dorsosejugal condyles, and (2) number and length of rostral dents and ano-genital setae.

**Banksinoma tamayura** spec. nov.  
[Nipponese name: Tamayura-anadani]  
(Fig. 9)

*Banksinoma sp. SH-1*:
Fujikawa, Report of soil animals  
from the Shirakami-sanchi  
World Heritage Area (in press).

Measurements and body aspect (n=2): Length 343 \( \mu \text{m} \); width 200 \( \mu \text{m} \). Color light brown. Costulae and exobothridial region densely granulate, other surface smooth.

Dorsal side. Rostrum protruding. Costulae somewhat thick, strongly convergent and about one-third as long as the length of prodorsum. Setae \( ro \) minutely, sparsely and unilaterally barbed, extending in front of rostrum for a distance equal to two third their length. Proximal half of setae \( le \) conspicuously pilose, reaching anterior margin of rostrum. Setae \( in \) somewhat thick, minutely barbed throughout their length, extending beyond insertions of setae \( le \) for a distance equal to half their length. Sensilli fusiform, terminating into a long hair; thin stem bearing a few minute barbs near expanded portion. Setae \( ex \) thin minutely barbed. Setae, \( ss > le > in > ex \). Distances, \( (in-in) > (le-le) > (ro-ro) \). Notogaster with 11 pairs of setae; \( c_2 \) ciliate; other setae minutely barbed unilatellary, and longer than \( c_2 \), but shorter than their own mutual distance. Lyri fissures \( ia \) and \( ip \) aligned obliquely, \( im \) transversely.

Ventral side. Anal and genital apertures large, close together but not touched. Genito-anal setae 6-1-2-3; adanal setae minutely and sparsely barbed; anal, genital and aggenital setae smooth. Distances, \( (ag-ag) > (ad_1-ad_1) > (ad_2-ad_2) > (ad_2-ad_3) \geq (ad_1-ad_3) \).

Epimeral setae 3-1-3-3; setae smooth; \( 3a \) the longest. Subcapitular setae smooth. Pedipalpal setae
FIG. 8: *Suctobelba monobina* spec. nov. (x 1,500). A.— Ventral view. B.— Dorsal view. C.— Solenidial region on left tarsus I. D.— Left tibia I. E.— Right genu I.
Fig. 9: Banksinoma tamayura spec. nov. A.— Lamellar region. B.— Dorsal view (x 600). C.— Ventral view (x 300). D.— Left tarsus I. E.— Tarsus of left palp. F.— Tibia and genu of left leg I. A, D, E, F & setae.— (x 1,500).
All legs monodactyle; claws smooth. Leg chaetotaxy: I (1-5-2-4-17); II (1-5-2-4-14); III (2-3-1-3-14); IV (1-2-2-3-12). Solenidiotaxy: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0). Famulus situated posterior to solenidia. Solenidia on tibia and genu without coupled seta.

Material examined: Holotype (NSMT-Ac 11553): from ASH-1; 1 paratopotype: same data as holotype. Remarks. The present species is distinguished from other congeners by (1) form of rostral apex costulae and sensilli, and (2) situation of setae in, ag, fissures.

**Fuscozetes montanus** spec. nov.

[Nipponese name: Miyama-fukairokobanedani] (Figs. 10 & 11)

**Fuscozetes sp. SH-18***: FUJIKAWA, Report of soil animals from the Shirakami-sanchi World Heritage Area (in press).

Measurements and body aspect (n=17): Length 450 (478) 500 µm; width 279 (306) 343 µm. Color dark brown. Surface of genital plates striate, other body surface punctuate.

Dorsal side. Rostrum rounded. Setae ro minutely barbed unilaterally, extending a short distance beyond anterior margin. Lamellae cusps without dent, about twice as long as length of translamella. Setae le ciliate originating from tip of cusps, extending in front of rostrum for a distance equal to about one third of their length. Setae in ciliate, inserted anterior to dorsosejugal suture and extending slightly anterior to translamella. Tutorium narrow, reaching insertion of setae ro, without dent. Sensilli consisting of thin long stem and clavate head densely bearing minute barbs. Setae ex somewhat thick and roughened. Lengths, \( in>ro>ss=ex>le \). Distances, \( (le-le)/(in-in) = 1/1.5 \). Notogaster bearing 14 pairs of ciliate setae, 4 pairs of circular area porosae, small pteromorphae and small lenticulus. Sizes of porosae, \( A_1>A_a>A_2=A_3 \). Lyrissitures \( ia \) and \( im \) aligned somewhat obliquely. Setae \( c_1 \) slightly longer than distance between insertions of setae \( c_1 \) and \( da \).

Ventral side. Anal and genital apertures almost pentagonal; distance between them slightly shorter than length of anal aperture. Genito-anal setae 6(7)-1-2-3; setae minutely barbed; genital setae valuable in number. Setae \( ad_1 \) and \( ad_2 \) inserted postanal. Lyrissutures \( iad \) aligned obliquely, at level between setae \( an_2 \) and anterior anal margin. Setae ag inserted almost mid distance between anal and genital openings. Epimeral setae 3-1-3-3; setae minutely barbed. Pedipalpal setae 0-2-1-3-9[1]. Gnathosoma diarthric, bearing 3 pairs of subcapitular setae \( a \) and \( m \) smooth, \( h \) ciliate unilaterally. All legs tridactylous. Leg chaetotaxy including famulus: I (1-5-3-4-20); II (1-5-3-4-15); III (2-3-2-3-14); IV (1-2-2-3-12). Ventral setae on femora and genua thick, dark color at tip of barbs. Solenidiotaxy: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0). Famulus inserted lateral to solenidion \( \omega_1 \). Solenidia on tibiae and genua without coupled seta.

Material examined: Holotype (NSMT-Ac 11554): from ASH-4; 16 paratopotypes: same data as holotype. Remarks. The present species differs from any other congeners by (1) form of rostrum, cusps, sensilli and area porosae, and (2) length and situation of setae.

**Protoribates shirakamiensis** spec. nov.

[Nipponese name: Shirakami-nagakosodedani] (Fig. 12)


Measurements and body aspect (n=16): Length 336 (366) 407 µm; width 157 (198) 221 µm. Color light yellowish brown.

Dorsal side. Rostrum round. Lamellae as long as half the prodorsum. Sublamellae lost or short, branched off in basal part of lamellae. Setae ro inserted inside anterior margin of rostrum, setae le lateral to anterior extremity of lamellae on inner side; setae ro and le smooth. Setae in bearing sparsely minute barbs unilatellary, blunt distally. Sensilli fusiform and spinose unilatellary. Setae ex smooth. Distances, \( (le-le)/(in-in)>(ro-ro) \). Notogaster elliptical with
Fig. 10: *Fuscozetes montanus* spec. nov. A.— Dorsal view (x 600). B.— Solenidial region of right tarsus I and tibia I. C.— Left genu II. B & C.— (x 1,500).
Fig. 11: *Fuscozetes montanus* spec. nov. A.— Ventral view (x 600). B.— Femur II. C.— Left palp. B & C.— (x 1,500).
Fig. 12. *Protoribates shirakamiensis* spec. nov. A.— Dorsal view (x 600). B.— Ano-genital region. C.— Solenidial region on left tarsus I and tibia I. B, C & setae.— (x 1,500).

Ventral side. Anal aperture almost rectangular, genital aperture pentagonal; former about 1.6x as long as length of the latter; distance between them about twice as long as length of genital aperture. Genito-anal setae 5-1-2(3)-3; setae smooth; anal setae variable in number. Setae ady situated postanal, ady preanal. Setae ag situated about one-third distance between anal and genital apertures. Lyri fissures iad located parallel to lateral margin of anal openings. Epimeral setae 3-1-3-3; all setae smooth. Subcapitular setae minute; setae a smooth and bacilliform; m smooth and h roughened unilaterally; lengths, h>m>a. All legs monodactyle. All femora and trochantera of legs III and IV bearing carina. Solenidiotaxy: I (1-2-2); II (1-1-1); III (1-1-0); IV (0-1-0); famulus inserted posterior and lateral to solenidia. Lengths ω1=ω2=2.5μ; ft’’=6μ; ω1=5μ.

Material examined: Holotype (NSMT-Ac 11557): from ASH-2; 26 paratopotypes (NSMT-Ac 11558); same data as holotype; 16 paratypes (NSMT-Ac 11558): ASH-1.

Remarks. The present species is distinguished from other congeners by form, length and situation of rostrum, discidium and setae.

Umbellozetes parvus spec. nov.
[Nipponese name: Ko-kirekomiketakamuridani] (Fig. 14)

Umbellozetes sp. SH-44*:

Measurements and body aspect (n=471): Length 257 (283) 307 μm; width 200 (218) 236 μm. Color light brown. Surface shiny.
Dorsal side. Rostrum protruding and broadly triangular in shape. Setae ro short penicillate, arising latero-ventrally. Lamellae fused, forming a wide shield covering most part of prodorsum, with a conspicuous notch in middle anterior margin; lateral sides of notch incised at tip and setae le inserted in incisions. Anterior part of rostrum hard visible under lamellar shield. Setae in inserted posteriorly on the shield. Setae le smooth spindle, in smooth, thin and short. Distances, (in-in)>(le-le). Bothridia directed anteriorly. Sensilli lanceolate, smooth and elongate, strongly curved, about 1.5x as long as length of prodorsum. Setae ex thin and smooth. Notogaster semi-circular in shape, with straight dorsosejugal suture, movable pteromorphae, 10 pairs of short and smooth circular in shape, with straight dorsosejugal suture, lamellar shield. Setae g1-3, g4-6 short. Distances, dorsal setae, setae ex and (2) length of dorsal setae, setae in and ss.

Material examined: Holotype (NSMT-Ac 11559): from ASH-1; 234 paratypes: same data as holotype; 229 paratypes (NSMT-Ac 11560): from ASH-2; 7 paratypes: from ASH-4 and ASH-5.

Remarks. The present species is distinguished from other congeners by (1) form of lamellae and setae ro, and (2) length of dorsal setae, setae in and ss.

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