Two New Species of the Genus *Liacarus* from Mt. Tateyama, Central Japan (Acari: Oribatida)

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ABSTRACT

Two new species of the genus *Liacarus* are described from beech forests of Mt. Tateyama: *Liacarus luscus* sp. n. and *Liacarus tenuilamellatus* sp. n. *L. luscus* is similar to *L. latilamellatus* Kaneko et Aoki, 1982, but differs from the latter in the prominent lamellar tips with small teeth, the rostrum with two notches, and the longer interlamellar setae. *L. tenuilamellatus* is distinguishable from the other congeners by the rostrum with two notches, the slender lamellae and the cylindrical lamellar cusps with long lamellar setae, a small triangular structure protruding between the lamellar tips, and interlamellar setae which is far longer than lamellar setae.

Key words: Oribatida, new species, *Liacarus luscus*, *Liacarus tenuilamellatus*, Central Japan

In the course of my ecological studies on the oribatid mite community in the beech (*Fagus crenata*) forests, 136 species of oribatid mites were collected from litter and soil samples. The beech forests are situated at Arimine (altitude 1,220 m) and Setokura (altitude 1,280 m) at the foot of Mt. Tateyama, in Toyama Prefecture, Central Japan. Two undescribed species of the genus *Liacarus* found among the specimens are now described as new.

Liacarus luscus sp. n.

(Figs. 1-13)

Measurement: Body length 657(716)756 μ m; width 406(456)469 μ m.

Prodorsum: Rostrum rounded, with two notches (Fig. 7). Rostral seta smooth and thin, pointed at the tip, about 2/3 as long as lamellar seta. Lamellae very broad, anteromedian parts close to each other, but never touching, leaving a very narrow interspace between them; anteromedian edge of lamella weakly concave; anterolateral tip with a short lamellar cusp, bearing 2-6 irregular small teeth (Fig. 3); lateral part of lamella striated in longitudinal direction. Lamellar seta thick and long, 97-106 μ m (avr. 100 μ m), inserted on the inner corner of anterior margin of lamella, extending almost straight anteriorly. Interlamellar seta thinner and a little longer than lamellar seta; it inserted on lamella near the anterior margin of notogaster, somewhat closer to lateral margin than to median margin of lamella. Lamellar and interlamellar setae slightly roughened and not sharply pointed at the tips. Sensillus spindle-shaped and weakly roughened; apex elongated, as long as the swollen portion; peduncle completely and swollen portion partly concealed under the humeral part of notogaster.

Notogaster: Notogaster elongate oval; anterior margin distinctly concave. A round internal

Figs. 1-9. *Liacarus luscus* sp. n.

1: Dorsal side. 2: Ventral side. 3: Variation in the anterolateral tip of lamellae.

4: Rostral seta. 5: Lamellar seta. 6: Interlamellar seta. 7: Prodorsum and anterior part of notogaster.

8: Genital plates. 9: Teeth on dorsal edge of trochanter III.

Figs. 10-13. *Liacarus luscus* sp. n.

10: Leg I (antiaxial). 11: Leg II (antiaxial). 12: Leg III (paraxial). 13: Leg IV (paraxial).

structure a little longer than wide with a distinct dark-colored outline found on the anteromedian part of notogaster. Ten pairs of notogastral setae very short and fine, except for prominent setae p_1 . Opening of lateroabdominal gland (*gla*) located between *im* and r_3 . Notogastral fissure *ia* located lateral or posterior to seta *te*, *im* anterior to *gla*, *ih* lateral to r_3 , *ip* inside of p_2 .

Ventral side: Genal setae and hypostomal seta thin and smooth. Apodemata II, SJ, III, IV and sternal ridge well developed. A network-like structure found on each epimeron; lateral side of epimera granulated. Setal formula of epimerata: 3-1-3-3. Genital aperture pentagonal, wider than long. Genital setae six pairs; four pairs aligned longitudinally on the anterior half of genital plates, and two pairs situated on the posterior part; seta g_5 most remote from the median margin of the plate (Fig.8). Aggenital seta situated a little closer to genital aperture than to anal one; mutual distance of aggenital setae as wide as the widest part of genital aperture. Anal aperture as long as wide. Anal setae, an_1 and an_2 equal in length; mutual distances: $an_1 - an_2 > an_1 - an_1 \doteq an_2 - an_2$. Relative length of adanal setae: $ad_2 \geq ad_1 > ad_3$; relative distances among them: $ad_1 - ad_1 > ad_2 - ad_3 > ad_1 - ad_2$. Anal and adanal setae far longer and thicker than genital and aggenital ones. Adanal fissure (*iad*) situated at a level half way between an_2 and ad_3 . In almost specimens, surface of anal plates and ventral plate indistinctly punctate.

Legs: All legs tridactyle; median claw thicker than lateral ones. Chaetotaxy of trochanter-femur-genu-tibia-tarsus (excluding solenidia and including famulus): I (1-5-3-4-20), II (1-4-3-4-16), III (2-3-1-3-15), IV (1-2-2-3-12). Solenidiotaxy of genu-tibia-tarsus; I (1-2-2), II (1-1-2), III (1-1-0), IV (0-1-0). Leg I: Solenidia subequal in length, ω_1 thicker than ω_2 ; famulus ϵ located posterior to solenidion ω_2 ; solenidion ϕ_2 thicker than ϕ_1 and about $3 \times$ as long as ω . Leg II: Solenidia ω_1 and ω_2 subequal in length and thickness; solenidion ϕ $2.8 \times$ as long as ω . Dorsal edge of trochanter III provided with irregular teeth; the number of teeth varies from one to six (Fig.9). Femora I-IV and trochanter IV each bearing a narrow ventral blade throughout its length, and trochanter III with a short blade.

Remarks: *Li acarus luscus* sp. n. closely resembles *L. latilamellatus* Kaneko and Aoki, 1982, in having the broad lamellae, a round structure on the anteromedian part of notogaster, thick and long lamellar setae, and spindle-shaped sensilli with elongate apex. It is, however, distinguishable from the latter by (1) the rostrum with two notches, (2) the anteromedian corners of lamellae each without a convex swelling covering the proximal part of lamellar setae, and (3) the interlamellar setae longer than the lamellar setae.

Type series: Holotype (NSMT-Ac 10779): Setokura in Mt. Tateyama, Ohshima-machi, Toyama Prefecture, 3-V-1997, Y. Hirauchi, from litter and soil in *Fagus crenata* Blume forest at 1280 m above the sea level. Paratypes (NSMT-Ac 10780-10785): 5 paratypes, with the same data as holotype; 1 paratype, Arimine (1220 m above the sea level) in Mt. Tateyama, 22-X-1996, Y. Hirauchi. The type series is deposited in the collection of the National Science Museum, Tokyo.

***Li acarus tenuilamellatus* sp. n.**

(Figs.14-32)

Measurement: Body length 748(834)904 μ m; width 422(491)526 μ m.

Prodorsum: Rostrum broadly rounded and rather trapezoid (Fig.14), with two notches well

Figs. 14-24. *Liacarus tenuilamellatus* sp. n.

14: Dorsal side. 15: Variation in the structure between lamellar cusps. 16: Rostral seta.

17: Lamellar seta. 18: Interlamellar seta. 19: Ventral side. 20: Notogastral seta ps_1 .

21: Anal seta an_1 . 22: Adanal seta ad_1 . 23: Adanal seta ad_2 . 24: Adanal seta ad_3 .

Figs. 25-27. *Liacarus tenuilamellatus* sp. n.

25: Prodorsum and anterior part of notogaster. 26: Genital plates.

27: Lateroanterior part of prodorsum.

visible in ventral aspect (Fig.19). Rostral seta inserted just inside the anterior portion of tutorium (Fig. 27), smooth and a little longer than their mutual distance, about $2/3$ as long as lamellar seta. Lamellae slender, converging with angle of 60° on $3/4$ the way of lamellae, the remaining anterior parts run parallel with each other, terminating in a cylindrical cusp bearing long lamellar seta; lateral part of lamella striated, while median part punctate (Fig.25). Bases of lamellar cusps incompletely connected by a triangular projection and a translamella-like ridge in front of it (Fig.15). Lamellar seta almost smooth, thick and long, $143\text{--}156\mu\text{m}$ (avr. $150\mu\text{m}$), a little shorter than the length of lamella. Interlamellar seta inserted inside of lamella and near the anterior margin of notogaster, slightly roughened and very long, about $1.7\times$ as long as lamellar seta, stretched outward straightly. All these prodorsal setae pointed at the tip, their relative length: $ro : la : in = 1 : 1.5 : 2.5$ (Figs.16-18). Sensillus short and clavate, swollen portion weakly roughened, apex often slightly pointed (Fig.25). Bothridium except the anteromedian corner almost hidden under the anterior part of notogaster.

Notogaster: Notogaster oval, wider anteriorly than posteriorly, nearly straight on the anterior margin. Notogastral setae twelve pairs, fine and minute, except for prominent ps_1 , especially setae c_1 and lm hardly visible. Seta c_1 located near the anteromedian part of

Figs. 28-32. *Liacarus tenuilamellatus* sp. n.

28: Leg I (antiaxial). 29: Leg II (antiaxial). 30: Leg III (paraxial).

31: Teeth on dorsal edge of trochanter III. 32: Leg IV (paraxial).

notogaster; mutual distance of setae c_1 about half of that of interlamellar setae. Notogastral fissure ia located posterolateral to seta c_3 , im lateral to seta lm , ih lateral to seta lp , ips anterior to seta ps_3 , ip medioposterior to seta ps_2 . Latroabdominal gland opening (gla) situated between im and ih .

Ventral side: Genal setae and hypostomal seta thin and smooth (Fig.19). Apodemata II, SJ, III and sternal ridge well developed; a network-like structure more or less developed on each epimeron; lateral side of epimera granulated. Setal formula of epimerata: 3-1-3-3; setae $1b$, $3b$ and $4b$ longer than the remaining setae. Genital aperture formed as a rounded pentagon, wider than long; each plate with six long setae almost equal in length; the anteriormost two setae (g_1 and g_2) inserted side by side and close together; mutual distance of g_5 the widest (Fig.26). Aggenital setae thin, located a little closer to genital aperture than to anal one; their mutual distance slightly longer than width of genital aperture. Anal aperture roundish, nearly as long as wide. Anal setae two pairs, equal in length; mutual distance of an_1 a little shorter than that of an_2 . Adanal setae long, almost straight, their relative distances: $ad_1 - ad_1 > ad_2 - ad_3 > ad_1 - ad_2$. Anal and adanal setae minutely roughened and almost the same length (Figs.21-24), longer and stronger than genital and aggenital ones. Adanal fissures (iad) situated at, or a little anterior to, the level of an_2 .

Legs: All legs tridactyle; median claw thicker than lateral ones. Chaetotaxy of trochanter-femur-genu-tibia-tarsus (excluding solenidia and including famulus): I (1-5-3-4-20), II (1-4-3-4-16), III (2-3-1-3-15), IV (1-2-2-3-12). Solenidiotaxy of genu-tibia-tarsus; I (1-2-2), II (1-1-2), III (1-1-0), IV (0-1-0). Leg I: Solenidion ω_1 thicker than ω_2 and nearly the same in length; famulus ϵ located posterior to solenidion ω_2 ; solenidion ϕ_2 thicker than ϕ_1 and more than $3\times$ as long as ϕ_1 . Leg II: Solenidia ω_1 and ω_2 subequal in length and thickness; solenidion ϕ $3\times$ as long as ω . Dorsal edge of trochanter III has irregular teeth; the number of teeth varies from one to six. Femora I-IV and trochanter IV each bearing a narrow ventral blade throughout its length, and trochanter III bearing a short ventral blade.

Remarks: *Li acarus globifer* Kramer, 1897, and *Dorycranosus angustatus* Welgmann, 1976, are very similar to *L. tenuilamellatus* sp. n. in having the slender lamellae and cylindrical lamellar cusps with long lamellar setae, a triangular projection between lamellar tips, and the short sensilli. The new species is, however, easily distinguishable from *L. globifer* by (1) the rostrum with two notches, (2) not so strongly rounded head of the sensilli, and (3) interlamellar setae far longer than lamellar setae, and is distinguishable from *D. angustatus* by (1) the rostrum with two narrow notches, (2) incomplete translamella, (3) the longer distance between lamellar cusps, (4) interlamellar setae far longer than lamellar setae, and (5) twelve pairs of notogastral setae. *L. keretinus* Nordenskiöld, 1901, has also slender lamellae and cylindrical lamellar cusps, but it is distinguished from the new species by (1) lamellae broadest in the middle, (2) complete translamella smoothly bent forward, (3) long sensilli with a weakly swollen head, and (4) notogastral setae p_1 of lancet form. *L. mucronatus* Willmann, 1939, and *L. floridensis* Berlese, 1908, have also a triangular projection between lamellar tips, but *L. mucronatus* differs from the new species in (1) lamellar cusps each with a long inner tooth, (2) a triangular projection located far anteriorly, and (3) long sensilli pointed at the tip, and *L. floridensis* differs from it in the short lamellar cusps and the complete translamella.

Type series: Holotype (NSMT-Ac 10786): Setokura in Mt. Tateyama, Ohyama-machi, Toyama Prefecture, 3-V-1997, Y. Hirauchi, from litter and soil in *Fagus crenata* Blume forest at 1280 m above the sea level. Paratypes (NSMT-Ac 10787-10792): 1 paratype, with the same data as holotype; 2 paratypes, with the same data as holotype excepting for the collecting date, 11-X-1996. 3 paratypes: Arimine, in Mt. Tateyama, 14-X-1994, Y. Hirauchi, in beech forest at the 1220 m above the sea level. The type series is deposited in the collection of the National Science Museum, Tokyo.

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摘 要

立山で見いだされたツヤタマゴダニ属の2新種(ダニ目: ササラダニ亜目) 平内好子(富山県立新川女子高等学校)

富山県の立山山麓の有峰と瀬戸蔵のブナ林からツヤタマゴダニ属の2新種を見出し、それぞれ *Liacarus luscus* sp. n. (タテヤマタマゴダニ), *Liacarus teuilamellatus* sp. n. (ケタボソタマゴダニ)と命名し記載した。タテヤマタマゴダニは、アシュウタマゴダニ *L. latilamellatus* Kaneko et Aoki, 1982に極めて似ているものの、吻両側に浅い切れ込みがあること、桁遊離部の外側が強く突出し、歯をもつこと、桁毛の基部が露出していること、桁毛が桁間毛より短い点において相違している。また、ケタボソタマゴダニは、切れ込みのある吻、細い縦桁、桁遊離部からまっすぐ伸びる太くて長い桁毛、中央に三角形の突起を持った不完全な横桁、棍棒状に膨らんだ短い胴感毛、桁毛よりはるかに長い桁間毛などによって、同属の既知種から区別される。