Description of *Lyrifissella* gen. n. and *Lyrifissellidae* fam. n. (Acari, Oribatei).

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**ABSTRACT**

*Lyrifissella* new genus and *Lyrifissellidae* new family (Acari, Oribatei) are described. The type species, *Pedrocortesella latoclava* Hammer, 1966, from Milford, New Zealand, is fully redescribed from the holotype. The congeneric species, *Pedrocortesella cryptonota* Hammer, 1966, Lake Ratoitis, New Zealand, is compared with the type species and transferred to the new genus. *Plateremaeus vestitus* Tragardh, 1931, the species thought to be very close to *Plateremaeus ornatissimus* (Berlese), and which was erroneously used to characterize *Plateremaeus* and *Plateremaeidae*, causing them to be misunderstood for about five decades, is now placed in *Lyrifissella*.

*Lyrifissellidae* fam. n.

**Type Genus:** *Lyrifissella* gen. n.

**Characteristics** – Euphederemers, i.e., nymphs retain exuviae of previous instars; adults without exuviae. Tracheal system sub-normal, i.e., trachea I missing. Pycnonotics, i.e., without areae porosae on notogaster. Body covered by cerotegument, with or without microtubercles; legs covered by a thick reticular cerotegument; notogastral, prodorsal and ventral cuticle foveate or reticulate. *Apo le*, *apo c*, *apo bo* absent; *apo ro*, *apo ex* with mammillate structures. Prodorsum with a transversal furrow on tooth p area. *le* lateral, on apophysis, anterior and close to *ro*; *ro* lateral; *ex* short, lateral; *in* very short, on tubercle; bothridium dorso-lateral, dark, covered by cerotegument, very close to notogastral margin; *ss* ciavate, the head black, pilose. Centro-dorsal setae absent on notogaster; with five pairs of notogastral setae; *ps*1 ventral, closer to its homologous seta than *h*1; *ps*2, *ps*3 close together, away from *ps*1, dorso-lateral, at notogastral margin, anterior to *r*2; notogaster distal margin salient between lyrifissures *ip* terminal ends; *h*1 latero-ventral, short, close together, at the terminal salience; *r*2(1p) latero-ventral, at notogastral margin, posterior and close to *ip*. Lyrifissures large to median size; *ip* oblique, long. Notogaster flat, almost

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rounded with notogastral tectum between bng, lambda lines. Median sized mites, ranging from 500 to 800 μ. Apo I complete, with no back turned extension; other apodemata incomplete, with strong apodematic bonds as transversal bars; apo IV resembling a “hat” over genitalia. Epimeral chaetotaxy: 3: 1: 3: 3; epimeral setae of equal size. Genitalia almost square; anal aperture pyriform to almost cylindrical; genital and anal openings contiguous, completely fused together, the contours no longer seen at the contact area; genital and anal plates foveate; apo ad, apo ag present. Seven pairs of genital setae on a sole longitudinal row, close to inner margin; ag away from genitalia, posterior to it, below the joining point of the plates; two pairs of anal setae on a sole longitudinal row; three pairs of anal setae; adl postero-lateral. Tectopedia absent; pedotectal tooth p present; lateral carenae present; acetabula I, II cotyloid and integument forming a blunt structure. Leg articulations on proximal sockets, i. e., sockets on proximal ends of tarsi, tibiae and genua; femoral and trochanteral tracheae present; Ts I, II distal apophyses present; tibial apophysis of medium size, covering proximal end of tarsus; Tr. and Fe-Tr articulation outside acetabula; femora proximal orientation after trochantera articulation straight; tarsi pedicels not too short, as long as one third of the segment; three strong claws, slightly serrulate on outer margin, the medial one the strongest; famulus enclosed on Ts I; (it), (tc) on apophyses, with long secondary branches; ft” Ts I a little behind omega; ft’ lateral, at the same height as a; pv” Ts I anterior to pv’; (pl) Ts I almost at the same level; v”A Ts I anterior to v’A; omega 1 Ts I paraxial, larger than omega 2; d Tb I at the same direction of 1”; fil long, antiaxial, f12 short, paraxial on Tb I; d Ge I very close to sigma; Fe I, II with d absent, 1’, 1” distal, and 3v’, one proximal, one medial, one distal; ft” Ts II, III anterior to ft’, away from it; pl’ present on Ts II; pl” Ts II, III, IV absent; pv” Ts II anterior to pv’; omega 1 close to omega 2 on Ts II; d Tb II well anterior to (1), at distal end; fi Tb II close to d; sigma Ge II, III close to d; v’Ge II absent; pl’ Ts III, IV absent; ft’ Ts III present, away from ft”; pv’ Ts III anterior to pv’; fi Tb III close to d; Fe III with d, v’ proximal, l’ distal; ft” Ts IV present, ft’ absent; Fe IV with d, v’ median. Leg chaetotaxy: Ts. 19(2) – 17(2) – 15-14; Tb. 4(2) – 5(1) – 4(1) – 4(1); Ge. 4(1) – 3(1) – 2(1) – 2; Fe. 5 – 5 – 3 – 2; Tr. 1 – 1 – 2 – 1.

_Lyrifissella_ gen. n.

Type species: _Pedrocortesella latoclava_ Hammer, 1966

Diagnosis – _Lyrifissella_ is close to _Hammeriella_ Paschoal, from which it differs mainly by the following features: adults without exuviae; apo c, apo bo absent; prodorsum with a transversal furrow medianly; le lateral, close to ro; notogaster distal margin prominent; ps2, ps3 away from ps1, dorso-lateral, anterior to r2; h1, r2 latero-ventral; genital and anal apertures completely joint together; apo ad in arc before anal aperture; two pairs of anal setae; genital setae almost equidistant one from the other; ag below the joining point of anal
and genital apertures; adl postero-lateral; tibial apophysis of median size; tarsi pedicels not too short, with three strong, serrulate claws; d Tb I at the same direction of 1'; fī Tb II close to d; v' Ge II, III absent; pl' Ts III, IV absent.

**Description** — Body of clarified specimens covered by cerotegument, with or without microtubercles; legs covered by a thick polygonal mass, with no microtubercles generally; notogastral, prodorsal, ventral region foveate or reticulate. Exuviae absent on adults. Apo le, apo c, apo bo absent; apo ro, apo ex with mammillate protuberances; prodorsum with a transversal furrow medianly at p level. le lateral, on apophysis, anterior and close to ro; ro, ex lateral; in very short, on tubercle; bothridium dorso-lateral, dark, covered by cerotegument, very close to notogastral margin; ss clavate, head black, pilose, large to slightly expanded. ps1 ventral, closer to its homologous seta than h1; notogaster distal margin prominent between ip; ps2, ps3 close together, away from ps1, dorso-lateral, at notogastral margin, anterior to r2; h1 latero-ventral, on tubercle, close to its homologous seta; r2(1p) latero-ventral, at notogastral margin, posterior and close to ip; r3 (1m) absent. Lyrifissures large to median size; ip oblique, large. Notogaster flat, rounded. Median size mites, ranging from 500 to 800μ. Epimeral apodemata with strong apodemetic bonds; apo IV as a “hat” over genitalia; epimeral chaetotaxy 3: 1: 3: 3. Genital and anal apertures contiguous, completely fused; anal aperture pyriform to almost cylindrical; genitalia proximal margin at the level of coxae III; genital and anal plates foveate; apo ag, apo ad present; apo ad as an arc before anal plate; genitoanal chaetotaxy 7 - 1 - 2 - 3; genital setae on a sole longitudinal row; g1 - g2, g2 - g3 further away than the other setae; ag posterior to genitalia, below the joining point of the apertures, away from them; anal setae on a sole longitudinal row; adl postero-lateral. Tibial apophysis I of median size; tarsi pedicels not too short, with three strong, serrulate claws, the medial one the strongest; Ts I famulus enclosed; (it), (tc) on apophyses, with long secondary branches; d Tb I at the same direction of 1'; fī Tb II close to d; v' Ge II absent; pl' Ts III, IV absent; all other leg features as for the family. Leg chaetotaxy: Ts. 19(2) - 17(2) - 15 - 14; Tb. 4(2) - 5(1) - 4(1) - 4(1); Ge. 4(1) - 3(1) - 2(1) - 2; Fe. 5 - 5 - 3 - 2; Tr. 1 - 1 - 2 - 1.

**Discussion** — The name *Lyrifissella* is derived from the remarkable lyrifissures present on dorsal and lateral body of these mites.

*Lyrifissella latoclava* (Hammer) **comb. n.**

*Pedrocortesella latoclava* Hammer, 1966: 49, fig. 62

**Types** — Female holotype n°. 285, collected by Marie Hammer in Milford, New Zealand, from humid moss on a stone, in a *Notochagus* forest; no collecting date mentioned. Depository: Zoologisk Museum, Copenhagen, Denmark.

**Diagnosis** — *L. latoclava* is close to *Lyrifissella cryptonota* (Hammer, 1966), from which it differs mainly by the following features: notogaster foveate, forming no reticulum, foveae circular, deep, large, set apart one from the other.
on central portion, and smaller and closer together laterally and posteriorly; prodorsum not reticulate, with deep foveae of salient sharp-pointed margins on rostrum; cuticle smooth with no microtubercles on body and legs; apo bo without strong transversal bar; ss clavate, of small size; larger species.

**Description** — Integument — Cuticle of clarified specimens smooth, without microtubercles on body and legs; body and legs covered by a thick layer of cuticle, forming polygonal reticulum; leg cuticle as high as the width of the segment. Notogastral cuticle foveate, with large, deep circular foveae set apart one from the other on central portion, and with smaller and closer foveae on lateral and posterior notogaster; prodorsum foveate, with sharp-pointed margins on rostrum, and shallow foveae of lesser diameter posteriorly; foveae of lateral opistosomum, infracapitulum, genitoanal and epimeral regions large to small, deep, with prominent edges; anal and genital plates equally foveate; legs without foveae. Exuviae absent on adults. **Prodorsum** — Apo le absent; apo ro strong on coxal region, forming no transversal bar on epimeral region; apo ro forming a lateral loop without mammillate saliences; apo c absent; apo ex a strong bar originated on bothridium, pointing to apo ro loop, forming no mammillate protuberance; apo in a well sclerotized plate resembling an anvil; apo bo absent. With a furrow at pedotectal p tooth area, between legs I, II. le anterior to ro, lateral, on apophysis, being smooth, bent to the sagital plane; ro lateral, smooth, close to le, bent to the sagital plane; ex short, lateral, ahead and below bothridium; in very short, on tubercle, up turned; bothridium dorso-lateral, salient, almost black, with no ventral salience, covered by a deep cutergetumental mass, very close to notogastrial margin, the opening turned slightly forward and outward; distance between bothridia 165 μ (F); ss short, clavae, well expanded — distally, forming a black, pilose club, emerging straight then turning towards the side at an obtuse angle; ss length 96 μ (F). Prodorsum length 206.3 μ(F); width 300 μ(F). **Notogaster** — Dorsum flat, excavated, almost circular. With notogastrial tectum between bng, lambda lines. Five pairs of median to large size lyrifissures; ia, im, ip oblique; ip large; ih, ips smaller than the dorsal. Posterior margin of notogaster salient between ip. Latero-abdominal gland opening posterior and close to in. Five pairs of notogastrial setae; r2 (1p) latero-ventral, at notogastrial margin, at the same direction of ip, bent to the sagital plane; h1 latero-ventral, short, pointed downward, on tubercle; p1 ventral, further apart from its homologous seta than h1, ps2, ps3 dorso-lateral, at notogastrial margin, bent to the sagital plane, anterior to r2. Notogaster length 577.5 μ(F); width 522.5 μ(F); length/width 1.10 (F). **Epimeral region** — a, m normal; labiogenal apodeme narrow; h short, straight; mentotectum narrow. Apo I complete, well developed close to acetabulum I, forming a short bar linking the homologous — parts; apo II incomplete, as large trapezoidal blades, linked to the homologous part by a transversal bar of undulated borders due to foveae; apo sj incomplete, also presenting a transversal bar on epimeral region; apo III incomplete with no apodematic bond; apo IV reduced, with a curved strong bar resembling a hat over genitalia. Epimeral chaetotaxy 3 : 1 : 3 : 3 ; epimeral setae short, smooth, not on apophysis. **Genitoanal region** — Anal and genital apertures contiguous, fused one into the other, the contours no longer seen at the contact area.
Genital opening almost square; anal aperture pyriform; genitalia proximal margin posterior to the level of coxae IV. Genitalia length 153.1 μ(F); width 132.1 μ(F); anal opening length 164.3 μ(F); width 153.5 μ(F); Genitalia inner margin weakly sclerotized; genitalia outer margin and anal outer and inner margins well sclerotized; apo ad, apo ag present; apo ad linked to its homologous apodeme forming a well sclerotized arc before the anal plate. Genitoanal chaetotaxy 7 - 1 - 2 - 3; genital setae on a sole longitudinal row; g1, g2, g3 away one from the other; g1 at distal margin; g3 through g7 almost equidistant; anal setae on a sole longitudinal row on small re-entrances of anal plate inner margin; ag away from genitalia; posterior to it, below the plates joining point; ad well developed, on small apophysis, ad3 at a height equivalent to half the anal plate, being the farthest from the sagittal plane, ad2, ad1 close together, near genitalia latero-distal margin. Lateral features – Tectopia absent; pedotectal tooth p present, very similar to a true pedotectum when seen from above, being not auriculiform however; lateral carenae present on proterosome; acetabula I, II integument and cotyloid forming a blunt structure. Legs – Ts – Tb, Tb – Ge, Ge – Fe articulations on proximal sockets, i. e., sockets on proximal ends of tarsi, tibiae, genua. Femoral and trochanteral tracheae present. Tarsi I, II with distal apophyses; Tb I apophysis of median size, forming no transparent collar at fi base. Tr and Fe – Tr articulation of all legs outside acetabula; proximal femora orientation, after trochanter articulation, almost straight; tarsi pedicels narrow, not too short, about one third the length of the segment; with three strong claws, finely serrulate on outer margin, the medial one slightly stronger than the others; tarsi (v), (p), (it), (tc) with long secondary branches; all other with short spines; (tc), (it) on apophyses. Ts. I – ft″ dorsal, slightly behind omega; ft' lateral, at the same level as (a); pv' posterior to pv"; p1', p1" at the same level; v'A anterior to v'A; omega 1 paraxial, larger than omega 2, both on a dorsal, antiaxial, apophysis of tarsus; famulus enclosed on tarsus I; Ts. length 132.1 μ(F). Tb I – 1″ (d) at the same direction of 1′; v″, v′ at the same level; tibial apophysis of median size, covering proximal end of tarsus only, being dorsal, antiaxial, Tb. length 142.8 μ(F). Ge.1 – (1′), v′ at proximal half; d short, antiaxial; sigma slender, setiform, small, very close to d; Ge. length 50 μ(F). Fe. I – d absent; 1′, 1″ at distal end; three v″ setae, one proximal, one medial, one distal; Fe. length 185.6 μ(F). Ge. I – only one seta present; Tr. length 50 μ(F). Ts. II – ft″ anterior to ft′, away from it; ft′ dorso-lateral, at half of the segment; pl" absent; pl′ present; pv" anterior to pv'; omega 1 close to omega 2, paraxial, slightly larger than it. Ts. length 117.8 μ(F). Tb. II – d antiaxial, anterior to (1) at distal end, close to fi; (v), (1) at the same height; fi close to d, antiaxial, long, at distal apophysis; Tb. length 114.3 μ(F). Ge. II – d' medianly set; 1″, 1′″ at the same transversal level; v' absent; sigma setiform, long, antiaxial, close to d; Ge. length 50 μ(F). Fe. II – as in Fe. I; Fe. length 178.5 μ (F); Tr. II – one sole seta, ventral; Tr. length 50 μ(F). Ts. III – ft′ present, lateral, away from ft″; pl″ absent; pv′ anterior to pv"; solenidia absent; Ts. length 121.4 μ(F). Tb. III – d″ anterior to 1′, at distal end; v″, v′″ almost at the same level; fi antiaxial, long, close to d; Ge. length 60 μ(F). Fe. III – d well developed; v′ proximal, 1′ distal; Fe. length 150 μ(F). Tr. III – 1′, v′; Tr. length 92.3 μ(F). Ts. IV – ft′ absent; (it) present; pl′, pl″ absent; pv′
slightly ahead of pv”; solenidia absent; Ts. length 126 μ(F); Tb. IV – as in Tb. III; Tb. length – 142.8 μ(F). Ge. IV – as in Ge. III; solenidia absent; Ge. length 61 μ(F). Fe. IV – d long, v* median; Fe. length 157.1 μ(F). Tr. IV – one sole seta, ventral; Tr. length 121.4 μ(F). Leg chaetotaxy: Ts. 19(2) – 17(2) – 15–14; Tb. 4(2) – 5(1) – 4(1) – 4(1); Ge. 4(1) – 3(1) – 2(1) – 2; Fe. 5 – 5 – 3 – 2; Tr. 1 – 1 – 2 – 1.

Geographical distribution and habitat – Milford, New Zealand, on humid moss on stones, Nothofagus forest.

Discussion – In describing P. latoclava, Hammer (1966) reported its peculiar features not found in the other species of the genus; postero-dorsal seta in a ventral position; ip long, reaching notogastral margin; notogaster distal margin pointed; outer margins of the claws serrulate; genital and anal plates completely joint together. She also found these characteristics to occur in P. cryptonota Hammer, 1966, a related species also collected in Milford. It was her observation that these two species could be placed in a different genus from Pedrocortesella; however she decided by keeping them under this genus. Hammer was not able to see the ps1 setae, which in fact do exist as shown in the description above.

The present redescription of L. latoclava is based on the holotype sent on loan from the Zoologisk Museum, Copenhagen, Denmark.

Lyrifissella cryptonota (Hammer, 1966) comb. n.

Pedrocortesella cryptonota Hammer, 1966; Aoki & Suzuki, 1970:117

Types – One syntype specimen no. 236, in mosses and bryophytes close to a spring in a Nothofagus forest, Lake Ratoitis, New Zealand; three syntypes with no data, in mosses grown on the soil, on dead branches, in a Nothofagus forest, Milford, New Zealand. Depository: Zoologisk Museum, Copenhagen, Denmark.

Diagnosis – L. cryptonota is close to L. latoclava (Hammer, 1966) by presenting a median furrow on prodorsum; ss clavate; notogaster almost circular, ending in a remarkable salience; five pairs of short notogastral setae; hl ventral; r2 (lp) latero-ventral, at ip height; ps2, ps3 dorso-lateral, anterior to r2; ip long reaching notogastral margin; epimeral formula 3 : 1 : 3 : 3; genitoanal chaetotaxy 7 – 1 – 2 – 3; anal and genital plates fused together; ag below unifying point of genital and anal plates; genital setae not all equidistant; three strong claws with serrulate outer margins; tarsi pedicels not too short. It can be separate from L. latoclava by the following characteristics: smaller species (500 μ against 784 μ); notogaster reticulate with hexagonal foveae presenting – large, dark microtubercles at central portion, becoming irregular laterally; prodorsum also reticulate, irregular; sensillum with large, flat, almost rounded
Geographical distribution and habitat — Lake Ratoiti and Milford, New Zealand, on mosses and bryophytes, in a Nothofagus forest.


In 1979, Dr. H. Enghoff, from the Zoologisk Museum, Copenhagen, Denmark, send on loan for this revision work, a vial labeled *P. cryptonotus* (Ramsay), No. 236, Lake Ratoiti, by Hammer, which unfortunately only contained the syntype exuviae (specimen probably lost). Because of that misfortune, the redescription of *L. cryptonota* was not possible. Its great similarity with *L. latoclava*, as noticed by Hammer, was enough reason for transferring it to *Lyrifissella*.

*Lyrifissella vestita* (Tragardh, 1931) comb. n.


**Types** — Syntypes in Masatierra, the Juan Fernandez Islands, Chile, from dead leaves, in August 16, 1917. Depository: unknown.

**Diagnosis** — *L. vestita* is close to *L. latoclava* (Hammer), by presenting dorsal and ventral cuticle foveate; abundant cerotegument, forming reticula; prodorsum with a medial transversal furrow at tooth p area; with no transversal apodemata on anterior prodorsum; le lateral; bothridium dorso-lateral, with no ventral salience, very close to notogaster, the opening pointing to the outside and slightly forward; ss short, clavate, bent on obtuse angle to the outside; notogaster circular, with a remarkable salience posteriorly; apo II, apo sj with strong apodemetic bonds as transversal bars; apo III reduced; apo IV resembling a hat over genitalia; epimeral formula 3 : 1 : 3 : 3; genital and anal plates united; genitoanal chaetotaxy 7 — 1 — 2 — 3; genitalia proximal margin posterior to the level of coxae IV; tarsi pedicels narrow, not too short; three strong claws; (p), (it), (tc) with strong branches. It can be well apart from *L. latoclava* mainly by its larger size (880 μ against 784 μ); by the presence of mammillate protuberances on apo ro, apo ex; by ss, which forms a poorly expanded club; and by notogaster, which presents no foveae laterally.

Geographical distribution and habitat — Masatierra, Juan Fernandez Islands, Chile, on dead leaves.

Discussion — *L. vestita* has its historical great importance because Tragardh (1931) featured *Plateremaeus* on the characteristics presented by this species, which he thought was close to the type species *Plateremaeus ornatissimus* (Berlese). This erroneous interpretation of Tragardh led to decades of mistakes.
on the exact nature of the Plateremeidae and related families, which only recently was ordered by Paschoal (1979, 1987b). The first to question P. vestitus as a true Plateremaecus were Balogh (1962) and Cziszár & Jeleva (1962), who also guessed that it could be cogenetic with Pedrocortesia Hammer; they failed, however, to precise its proper taxonomic position.

Tragardh’s description, although incomplete, lacking most details, is comprehensible enough to permit the transferrence of this species to Lyrifissella.

REFERENCES


