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## First record of Aneurinae from New Caledonia (Hemiptera, Heteroptera, Aradidae)

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**A b s t r a c t :** The flat bug subfamily Aneurinae was not yet recorded from New Caledonia. In the present paper a new genus *Caledoneurus* nov.gen. with the species *lariviereae* nov.sp. and *Aneurillodes cascadenis* nov.sp. are described and illustrated. Their relationships to other Oriental-South Pacific Aneurinae are discussed.

**K e y w o r d s :** Hemiptera, Heteroptera, Aradidae, Aneurinae, new genus, new species, *Caledoneurus*, *Aneurillodes*, New Caledonia.

### Introduction

The flat bug fauna of New Caledonia is still insufficiently known and no species of the subfamily Aneurinae was recorded to date. A small collection of Aradidae presented to the author contained not only several new taxa of Carventinae (HEISS 2011) but also two species of Aneurinae which are described and figured below.

The Oriental – South Pacific genus *Aneurillodes* HEISS 1999 contains presently 5 species to which a new species *A.cascadenis* nov.sp. can now be added.

A second species could not be placed in one of the known genera or subgenera of Aneurinae for which a new genus *Caledoneurus* nov.gen. is proposed with the type species *lariviereae* n.sp. Both new taxa are from the southern Province of New Caledonia.

### Material and methods

Specimens on which this study is based were collected sifting leaf litter by R.Schuh and presented to the author. They are preserved in his collection at the Tiroler Landesmuseum, Innsbruck (CEHI).

Measurements were taken with a micrometer eyepiece, 40 units = 1 mm.

When citing the text on the labels of a pin attached to the specimens / separates the lines and // different labels. Abbreviations used: deltg = dorsal external laterotergite (connexivum), mtg = mediotergite, vltg = ventral laterotergite, pe-angle = posteroexterior angle (of deltg), ptg paratergite.

Photos (1-3) were taken through an Olympus SZX 10 binocular microscope with Olympus E 3 digital camera and processed with Helicon Focus 4.3 software and using Adobe Photoshop and Lightroom 2.3.

## Taxonomy

### Subfamily Aneurinae

#### *Aneurillodes cascadensis* nov.sp. (Figs 10, 11, photo 1, 2)

**Material examined:** Holotype male labelled: New Caledonia, S-Prov. / Farini – Petite Cascade / 270-340m, 3km N Farino / 20 XI 2009 lg. Schuh (18) // Holotype ♂ / *Aneurillodes cascadensis* nov.spec. / des. E. Heiss 2011; Paratypes: 1♂ 1♀ collected with holotype are designated accordingly.

**Diagnosis:** Smaller species, closest related to *A. tahitianus* HEISS 1999 from Tahiti, Society Islands. It is however distinguished from the latter by smaller size, shorter pygophore of male and tergite VIII of female not wider than head (Figs 8, 10; 9,11).

**Description:** Macropterous, body elongate and slender with smooth and glabrous surface; colouration light brown, head darker.

**Head:** Slightly longer than wide (16/15); clypeus conical reaching about 2/3 of antennal segment I; antenniferous lobes short and rounded; antennae 1.9× as long as width of head (28.5/15); segment I thickest and as long as more slender segment II, III longer than the preceding ones, IV elongate fusiform and longest; length of antennal segments I/II/III/IV = 5/5/6.5/11; eyes oval inserted in head; postocular lobes rounded not exceeding outer margin of eyes, posteriorly converging toward constricted collar; rostrum shorter than head, rostral atrium wide and open without lateral carinae.

**Pronotum:** About 2.4× as wide as long (29/12); anterior margin concave, posterior margin straight; lateral margins parallel at humeri then converging anteriorly to rounded anterolateral angles which are slightly produced over anterior margin; supracoxal lobes of forelegs distinctly visible from above, also a small rim of the epimeral flap (cf. Jacobs 1986) is recognizable; disk of fore lobe triangularly depressed along collar ending in a longitudinal median sulcus; disk of posterior lobe with two thin transverse sulci anteriorly.

**Scutellum:** About twice as wide as long (20/10), subtriangular with a basal and nearly straight sublateral sulci, lateral margins rounded; disk longitudinally striate.

**Hemelytra:** Corium much shorter than scutellum; clavus small and triangular; membrane finely wrinkled.

**Abdomen:** Elongate oval, lateral margins slightly but evenly rounded; deltg II+III fused, IV-VII separated by distinct sutures; additional triangular sclerite on tergite VII present. Venter with a sublateral fold along sternites II-VII delimiting the ventral hem; spiracle II and VII lateral and visible from above, III-VI ventral and placed on sublateral fold, VIII terminal on paratergites VIII.

**Legs:** Femora strongly incrassate, tibiae tapering toward base; protibial comb present; claws with pseudopulvilli and setiform parempodia.

**Genitalic structures:** Pygophore subglobose only slightly longer than wide at base (7/6); ptg VIII clavate not reaching apex of pygophore.

**Female:** Basically as male but of larger size; tergite VII as wide as head.

**Measurements:** Holotype male. Length 2.55mm; width of abdomen across

tergite IV 39; paratype ♂: length 2.5mm; paratype female: length 2.75mm; head length / width 17/16; pronotum l/w 13/30.3; length of antennal segments I/II/III/IV = 5/5/7/12.5; ratio length of antennae / width of head 1.84; width of abdomen 41.

**E t y m o l o g y :** Named after the type locality Petite Cascade in New Caledonia.

**D i s c u s s i o n :** There are only 2 species of *Aneurillodes* described to date sharing the small size of *cascadensis* nov.sp.: *leptosomus* HEISS 1999 from Sumatra and *tahitianus* HEISS 1999 from Tahiti both distinguished by structural characters as shape of pygophore or width of tergite VIII in female.

As these small flat bugs may easily be overlooked in the field it can be expected that there might occur further taxa between these two very distant localities of Oriental and South Pacific regions.

### ***Caledoneurus* nov.gen.**

**T y p e s p e c i e s :** *Caledoneurus lariviereae* nov.sp.

**D i a g n o s i s :** Macropterous small species; deltg II and III not fused, a sinuate suture separates deltg II from fused mtg I+II not catching the posterior lateral apodemal impression; tergal plate with lateral rugose strips, anterior margin triangularly produced; spiracles II, IV-VII lateral and visible from above, III ventral, VIII terminal.

**D i s c u s s i o n :** The new genus resembles *Paraneurus* JACOBS 1986 described from African species, however several Oriental species were later tentatively assigned to this most probably paraphyletic genus (HEISS 2001). This should be ascertained by using molecular data and subsequent phylogenetic analyses.

Compared with the characters given for *Paraneurus* by JACOBS 1986:15 *Caledoneurus* is distinguished by a different suture between fused mtg I+II and deltg II which is sinuate (not straight, fig. 1), the sublateral ridges of scutellum reach nearly to apex (only basal), the distal bar of clavus of hind wing is as long as the corium (longer than corium, figs 5,6) and only spiracle III is ventral (at least III-VI are ventral).

Species of the biogeographically closest genus *Aneurodellus* HEISS 1998a from New Zealand and those of the East Palaearctic genus *Aneurus* subgenus *Aneurodes* HEISS 1998b share also a similar habitus but both are easily distinguished by the fused deltg II+III and the presence of a contergite (HEISS 1988a, b).

In the past the structure and fusion line of abdominal tergites and the position of spiracles were recognized and used as important taxonomic characters to define and separate genera or subgenera of Aneurinae (KORMILEV 1968, ŠTYS 1974, JACOBS 1986, HEISS 1998a, 1998b, 1999). The aberrant combination of these characters differing from all other Aneurinae taxa justify the erection of the new genus *Caledoneurus* n.gen.

### ***Caledoneurus lariviereae* nov.sp. (Figs1-5,7, photo 3)**

**M a t e r i a l e x a m i n e d :** Holotype male labelled: New Caledonia, S-Prov. / Farini – Petite Cascade / 270-340m, 3km N Farino / 20 XI 2009 lg. Schuh (18) // Holotype male / *Caledoneurus* nov.gen. / *lariviereae* nov.spec. / des. E.Heiss 2011; Paratypes: 1 male (dissected) 1 female collected with holotype are designated accordingly.

**D e s c r i p t i o n :** Macropterous male, body legs and antennae finely granulate,

membrane wrinkled; colouration dark brown with lighter base of hemelytra and tarsi.

**Head** : Slightly wider than long (22/21); genae shorter than clypeus this as long as antennal segment I with round apex; antenniferous lobes short, diverging anteriorly with acute apices; antennae 1.29× as long as width of head, segment I short and globular, II of equal length but more slender, III cylindrical and longer than I and II, IV longest fusiform; length of antennal segments I/II/III/IV = 5.5/5.5/6.5/11; eyes oblong inserted in head; postocular lobes angulate behind eyes then curved and constricted posteriorly toward collar; vertex flat with 2 sublateral round depressions, transversely striate posteriorly; rostrum arising from an open atrium shorter than head, rostral groove flat wide and open.

**Pronotum** : 2.46× as wide as long (37/15); lateral margins subparallel at humeri sinuately converging anteriorly to round anterolateral angles which are produced over anterior margin; posterior margin straight; disk with flat ovate callosities on anterior half followed posteriorly by a transverse depression, posterior lobe finely granulate.

**Scutellum** : Semicircular about 1.5× as wide as long (23/15); basal carina present, sublateral carinae long and curved obliterating toward apex, disk with transverse rows of granules.

**Hemelytra** : Corium short with two elevated veins; lateral margins subparallel and carinate; clavus reduced to a small triangle; distal bar of clavus of hind wing as long as corium (Fig. 5); membrane irregularly wrinkled reaching 2/3 of mtg VI.

**Abdomen** : Lateral margins of deltg II-VII granulate and evenly rounded, pe-angles not produced; deltg II and III separated by a suture, a sinuate suture separates fused mtg I+II from deltg II, the posterior lateral apodemal impression of deltg II is placed on mtg I+II; surface of deltg II-VII granulate, a thin carina along the inner margin follows the suture confining the tergal plate, longitudinal rows of larger granules delimit the lateral margin; disk of tergal plate with distinct lateral rugose strip and sublateral rugulose areas which are separated and bordered by smooth shiny areas (fig. 1).

**Venter** : Ventral laterotergites III-VI with distinct ventral hem which is obliterating on vltg VI, spiracles II, IV-VII lateral and visible from above, III ventral, VIII terminal on ptg VIII (fig. 2).

**Legs** : Femora short and incrassate, tibiae tapering toward base, claws with curved pseudopulvilli.

**Genitalic structures** : Pygophore pear-shaped, surface granulate; paratergites VIII clavate and not projecting over lateral margin of deltg VII; parameres crescent shaped with a dorsal concave surface bearing longer basal and shorter apical setae; median projecting lobe of dorsal opening triangular (fig. 7).

**Female** : Generally as male but slightly larger; posterior margin of tergite VIII sinuate, ptg VIII small and rounded (fig. 3).

**Measurements** : Holotype male: length 3.22mm; width of abdomen 58; paratype male: length 3.30mm; width of abdomen 60, paratype ♀: length 3.65mm; width / length of head 23/22; w/l pronotum 39/17; w/l scutellum 26/18; width of abdomen 70.

**Etymology** : This species is dedicated to Marie-Claude Larivière (New Zealand Arthropod Collection, Auckland) recognizing her strong interest in Aradidae of New Zealand and Pacific Region and her continuous support of my investigations of this fauna.

## Acknowledgments

I want to thank Rudolf Schuh (Wiener Neustadt) who generously donated these Aradids, Colin Johnson for his linguistic advice and Stefan Heim (TLMF Innsbruck) who skilfully prepared the photos.

## Zusammenfassung

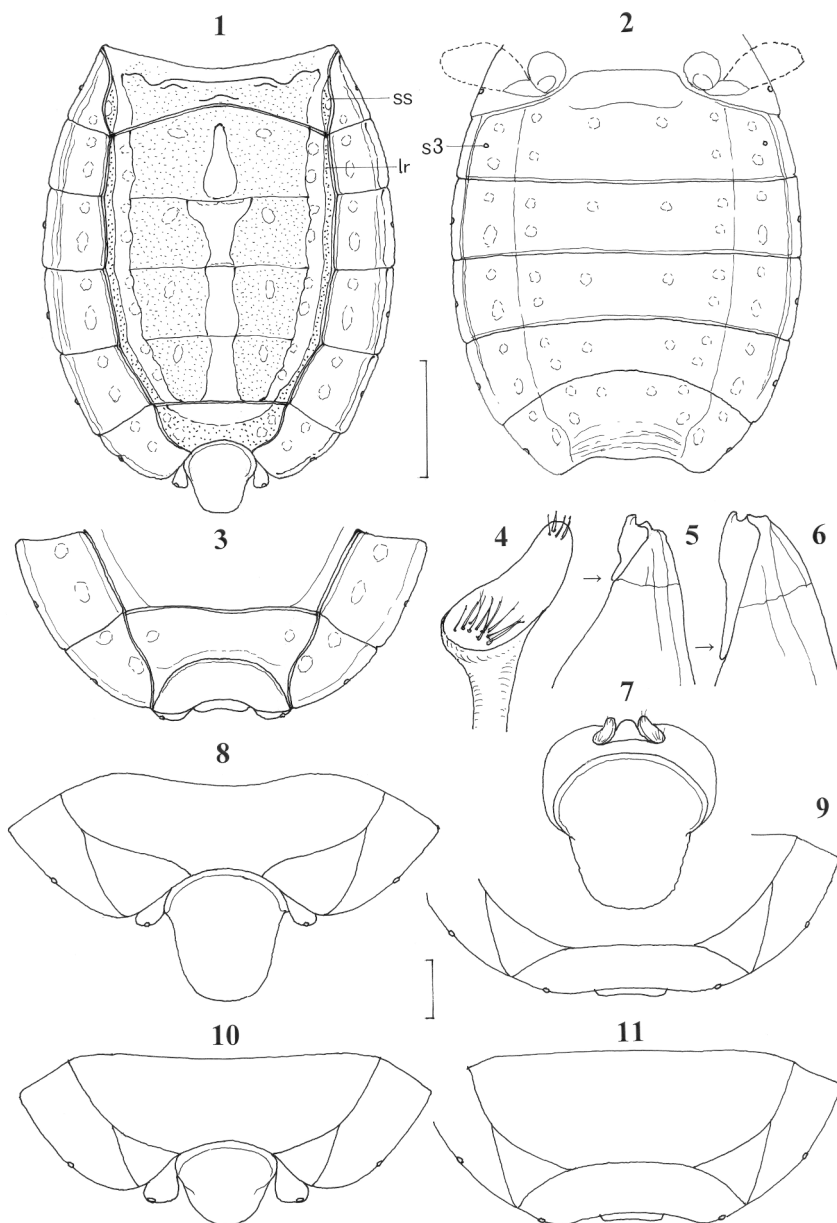
Die Aradidenfauna von Neukaledonien ist nach wie vor unzureichend erforscht. Insgesamt sind bisher 29 Arten in 17 Familien aus 5 Unterfamilien bekanntgeworden, davon keine Art der weltweit verbreiteten Unterfamilie Aneurinae. Aus einer rezenten Aufsammlung liegen nun 2 Arten von Aneurinae vor, von denen eine in die Gattung *Aneurillodes* HEISS 1999 gestellt werden kann, die andere keiner der bekannten Gattungen zuzuordnen ist und dafür eine neue Gattung *Caledoneurus* nov.gen.vorgeschlagen wird. *Aneurillodes cascadiensis* nov.sp und *Caledoneurus larievieri* nov.sp. stammen beide von der Südprovinz Neukaledoniens.

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**Figs 1-11:** 1-5,7 *Caledoneurus lariviereae* nov.gen., n.sp.; (1) abdomen of male, dorsal view, (2) ditto ventral view; (3) terminal segments of female, dorsal view; (4) paramer; (5) anterior part of clavus, (6) ditto of *Paraneurus* sp.; (7) pygophore dorsal view; 8-9: *Aneurillodes tahitianus*; 10-11: *Aneurillodes cascadenis* nov.sp.; (8, 10) terminal segments of male, dorsal view; (9, 11) ditto of female, dorsal view. Abbreviations: lr = lateral rugose strip of tergal disk; ss = sinuate suture along deltg II; s3 = spiracle 3. Scales: 0.5mm for figs. 1-3; 0.1mm for figs. 8-11.



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**Photo 1-2:** *Aneurillodes cascadensis* nov.sp.; (1) paratype female; (2) holotype male.

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**Photo 3:** *Caledoneurus lariviereae* nov.gen., n.sp., holotype male.



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