

On the Malagasy genus *Jourdainana* Distant, 1913 (Heteroptera, Pyrrhocoridae)

Autor(en): **Stehlík, Jaroslav L.**

Objekttyp: **Article**

Zeitschrift: **Entomologica Basiliensia et Collectionis Frey**

Band (Jahr): **29 (2007)**

PDF erstellt am: **17.09.2024**

Persistenter Link: <https://doi.org/10.5169/seals-980924>

Nutzungsbedingungen

Die ETH-Bibliothek ist Anbieterin der digitalisierten Zeitschriften. Sie besitzt keine Urheberrechte an den Inhalten der Zeitschriften. Die Rechte liegen in der Regel bei den Herausgebern.

Die auf der Plattform e-periodica veröffentlichten Dokumente stehen für nicht-kommerzielle Zwecke in Lehre und Forschung sowie für die private Nutzung frei zur Verfügung. Einzelne Dateien oder Ausdrucke aus diesem Angebot können zusammen mit diesen Nutzungsbedingungen und den korrekten Herkunftsbezeichnungen weitergegeben werden.

Das Veröffentlichen von Bildern in Print- und Online-Publikationen ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. Die systematische Speicherung von Teilen des elektronischen Angebots auf anderen Servern bedarf ebenfalls des schriftlichen Einverständnisses der Rechteinhaber.

Haftungsausschluss

Alle Angaben erfolgen ohne Gewähr für Vollständigkeit oder Richtigkeit. Es wird keine Haftung übernommen für Schäden durch die Verwendung von Informationen aus diesem Online-Angebot oder durch das Fehlen von Informationen. Dies gilt auch für Inhalte Dritter, die über dieses Angebot zugänglich sind.

On the Malagasy genus *Jourdainana* Distant, 1913 (Heteroptera, Pyrrhocoridae)

by Jaroslav L. Stehlík

Abstract. The Madagascan genus *Jourdainana* Distant, 1913 (Heteroptera: Pyrrhocoridae) is redescribed. *Dermatinus aurantiacus* Signoret, 1861 is redescribed and transferred to *Jourdainana*. The following new synonymy is established: *Jourdainana aurantiaca* (Signoret, 1861) comb.nov. = *J. rugifer* Distant, 1913 syn.nov. Two new species from Madagascar, *J. annulata* sp.nov. and *J. pluotae* sp.nov., are described. The first record of *Jourdainana aurantiaca* from the Comoro Islands is included.

Keywords. Heteroptera – Pyrrhocoridae – *Jourdainana* – redescription – new species – new synonym – new combination – Comoro Islands – Madagascar

Introduction

The genus *Jourdainana* Distant, 1913 was established by DISTANT (1913) to accommodate a single new species, *J. rugifer* Distant, 1913. After the description, this genus was listed only in HUSSEY's (1929) catalogue of Pyrrhocoroidea, and it has not been mentioned in any other heteropterological paper. Here I present a redescription of *Jourdainana*, with additional information on this genus, including one new synonymy, one new combination, and descriptions of two new species from Madagascar.

Material and methods

The terminology for body parts largely follows VAN DOESBURG (1968). I have used more specific terms for description of the genital capsule as proposed by SCHAEFER (1977), who has, among others, also studied the pygophore of *Pyrrhocoris apterus* (Linnaeus, 1758).

The following abbreviations are used for collections in which the material is housed:

BMNH	.....	Natural History Museum, London, United Kingdom
MNHN	.....	Muséum National d'Histoire Naturelle, Paris, France
MRAC	.....	Musée Royal de l'Afrique Centrale, Tervuren, Belgium
NHMW	.....	Naturhistorisches Museum, Wien, Austria
NMPC	.....	National Museum, Prague, Czech Republic
SNSD	.....	Staatliche Naturhistorische Sammlungen Dresden, Germany
ZMAS	.....	Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia
ZMHB	.....	Zoologisches Museum, Humboldt Universität, Berlin, Germany

Taxonomy

Genus *Jourdainana* Distant, 1913

Jourdainana Distant, 1913: 157.

Type species: *Jourdainana rugifer* Distant, 1913: 157 (by monotypy).

Redescription. Body smaller (ca. 6.9–7.3 mm), mostly oval. Head horizontally positioned, dull, rugulose, markedly elongated in front of eyes. Eyes markedly small, distinctly approaching anterior margin of pronotum. Eye tempus small, short. Clypeus strongly produced, distinctly dilated apically, paraclypei not gibbous, bucculae wide and rounded. Labium reaching mesocoxae; first segment reaching base of head. Antennifer well developed, its outer margin rounded and convex. Antennae relatively stout; antennomere 1 exceeding apex of head by ca. half its length, in basal portion slender, thickened from mid-length to apex; antennomere 3 shortest, equally widening from base to apex; antennomere 4 incrassate, stoutest, relatively short.

Pronotal and prosternal collars noticeably wide. Callar lobe only laterally wider, medially narrowed, sometimes very distinctly, almost divided in several species. Pronotal lobe flat. Lateral pronotal margin well developed in its entire length, distinctly elevated medially, slightly concave or straight, sometimes even convex. Scutellum wider than long. Costal margin of corium almost straight or convex. Venation of corium protruding, anastomosing on membrane. Legs short, femora medially thickened, basally slightly (at very apex distinctly) slender. Profemora with small denticles. Tibiae stout, short; male protibiae distinctly dilated apically, their underside with small denticles along the entire length; meso- and metatibiae with adpressed spines on their distal parts. Tergite VII of males elongated apically and strongly narrowed; tergite VII of females broad, its posterior margin slightly rounded. Laterotergites broad, in several species almost horizontally positioned. Anterior margins of ventrites V and VI above trichobothria only slightly S-shaped sinuate.

Pygophore relatively uniform within the genus. Ventral rim strongly projecting dorsally and posteriorly, its upper margin sharp and horizontal. Deep furrow situated under ventral rim, its lower margin sharp and slightly elevated dorsally. Ventral rim laterally merging fluently into decreasing sharp lateral rim. Ventral rim infolding broad, steeply falling into genital chamber. Lateral rim infolding very broad, almost horizontal, rising slightly towards dorsal rim infolding, forming an obtuse angle with ventral rim infolding. Anal tube almost horizontal, reaching to ca. half-length of genital chamber. Parameres slender, bent at half or at two-thirds of their length, their apex bifurcate.

Outer female genitalia very similar in all known species of the genus. Valvifer I reaching ca. two-thirds of the genitalia width; inner margin of one valvifer I overlapping the inner margin of its opposite. Outer margin of valvifer I almost straight, vertical; upper margin slightly deflected, slightly sloping towards outer margin of genitalia, distinctly depressed medially. Anal tube horizontal, slit-shaped.

Punctuation of pronotum, clavus, and corium very coarse, foveolate, only in *J. aurentiaca* the punctures of clavus and corium distinctly smaller.

Differential diagnosis. In *Damascarga* Stehlík, 1980, antennomeres 1–3 are slender, antennomere 4 is strongly incrassate and longer than antennomeres 1 and 2; pronotum is

broader, pronotal and prosternal collar shorter, callar lobe regularly emarginate with no trace of a median longitudinal furrow; punctation of pronotal and prosternal collar and on pronotal lobe minute; pygophore lacking distinct furrow under the ventral rim. In *Jourdainana*, antennomeres 1–3 are less slender and antennomere 4 is shorter than antennomeres 1 and 2; the pronotum is, especially proximally, narrowed, pronotal and prosternal collar markedly long, callar lobe nearly divided, irregularly emarginate due to a very coarse foveolate punctation on pronotal collar and pronotal lobe; pygophore with a prominent furrow under the ventral rim.

Key to the species of *Jourdainana* Distant, 1913

- 1(2) Head with longitudinal furrow. Body parallel-sided. Punctation of clavus and corium distinctly smaller than on pronotum. Costal margin of hemelytron narrow, apex of corium truncated sideways. Ventrites pale, only ventrite VII black. *J. aurantiaca* (Signoret, 1861)
- 2(1) Head without longitudinal furrow. Body oval. Punctation of pronotum, clavus and corium approximately of the same size, coarse, foveolate. Apex of corium not truncated sideways. 3.
- 3(4) Antennomere 4 with pale ring. Head narrow, black with four pale spots (one basally, one paired spot on frons, one on clypeus). Femora (except at apex) black. Costal margin of hemelytron fused with exocorium. Ventrites black. Submacropterous. *J. annulata* sp.nov.
- 4(3) Antennomere 4 without pale ring. Head broad, pale. Femora pale. Costal margin of hemelytron wider, not fused with exocorium. Ventrites pale. Macropterous. *J. pluotae* sp.nov.

Jourdainana aurantiaca (Signoret, 1861) comb.nov. (Figs 1, 4, 7, 10)

Dermatimus (?) *aurantiacus* Signoret, 1861: 952 and pl. xiv, fig. 3 (description). [Holotype(?): Madagascar (probably NHMW).]

Scantius aurantiacus: STÅL (1866): 11 (redescription); STÅL (1870): 117 (catalogue); REUTER (1887): 93 (distribution); LETHIERRY & SEVERIN (1894): 251 (catalogue); HUSSEY (1929): 81 (catalogue); BLÖTE (1931): 117 (distribution); CACHAN (1952): 86 and pl. v, fig. 11 (description, distribution).

Jourdainana rugifer Distant, 1913: 157 and pl. xi, fig. 11 (description), **syn.nov.** [Holotype: female, Seychelles, Mahé, 1907 (Thomasset) (BMNH).]

Jourdainana rugifera: HUSSEY (1929): 84 (catalogue), incorrect subsequent spelling (see below).

Material examined. Comoro Islands: Mohéli Island [12°18'S, 43°52'E], xii.1947, 1 female, P. Cachan leg. (MNHN). Madagascar: Nosy Be Island (near NW Madagascar), 17.vii.1895, 1 female, Voeltzkow leg. (ZMHB). Central Madagascar, Antananarivo [18°54'S, 47°31'E], 1 female (ZMHB); ditto, 10 males, 6 females (SNSD); Antananarivo, Tsimbazaza [Zoological and Botanical Garden], 1 female, S. Ranaive leg. (MNHN); ditto, iii.-iv.1930, 1 male, Olsufiev leg. (ZMAS). North-East Madagascar, Maroantsetra env., Fampanambo in Toamasina forest [16°55' S, 48°55' E], 1066 m a.s.l., ii.1950, 1 female, J. Vadon leg. (MRAC).

Redescription. Head, labium (first segment sometimes paler), antennae (antennomeres 1 and 2 sometimes slightly paler in basal halves), pronotal collar, callar and pronotal

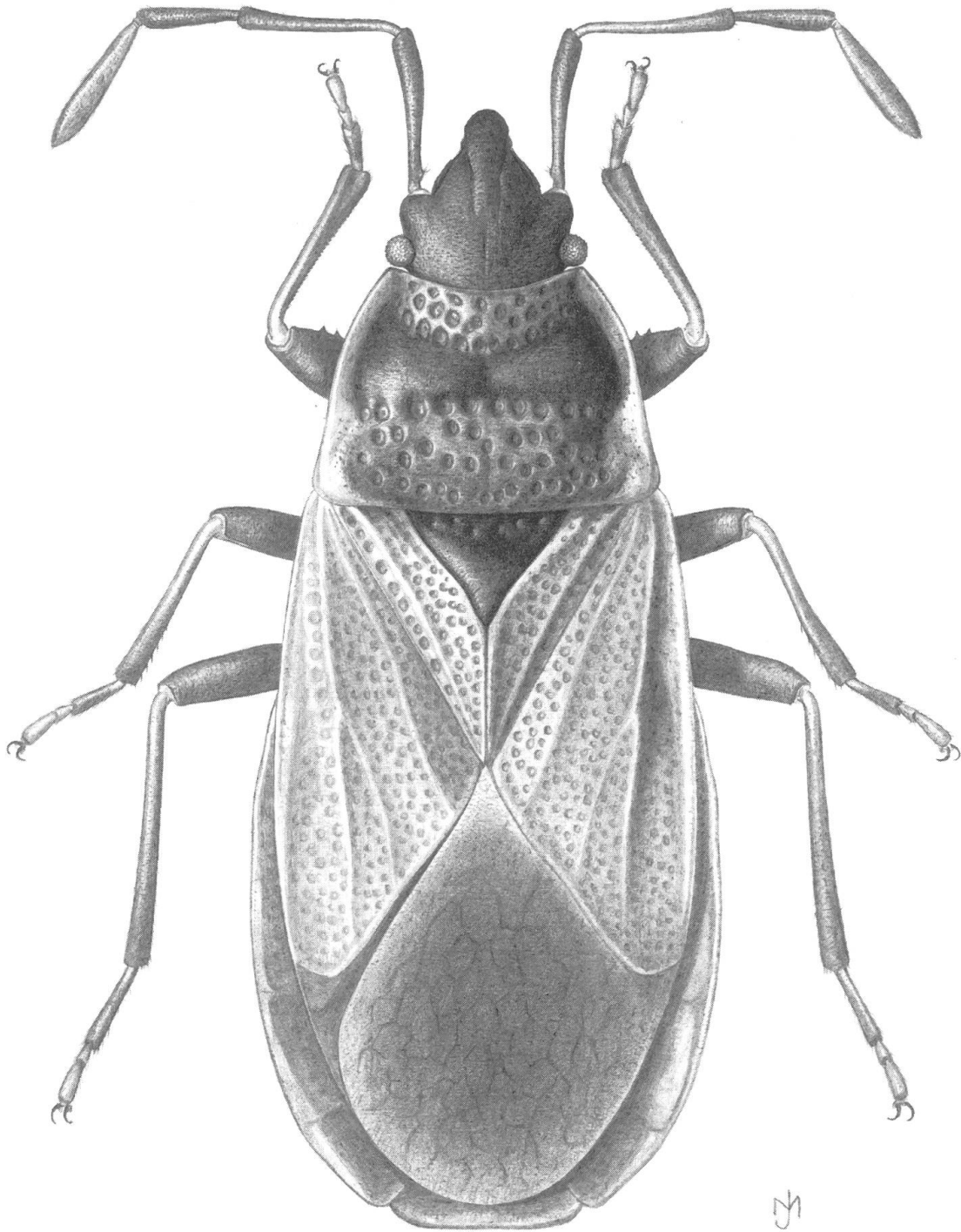


Fig. 1. *Jourdainana aurantiaca* (Signoret), female.

lobes, scutellum, membrane, prosternal collar (sometimes slightly paler), pleura I–III, ventrite VII and femora, black. Lateral margins of pronotum, entire pronotal epipleuron, and pleural flange I posteriorly reddish or orange. Ventrites II–VI pale, yellowish or orange, dorsal laterotergites of the same colour. Tibiae brown, darkened towards apex.

Body small, almost parallel-sided. Head relatively broad, less elongated in front of eyes, antennae shorter, frons with median furrow. Anterior pronotal margin less obviously deflected, lateral pronotal margins in anterior portion rounded convex, at the level of pronotal lobe either straight or slightly concave. Callar lobe medially narrowed, only in some specimens with inconspicuous bifurcation. Costal margin of hemelytron narrow, distinctly elevated, and almost equally wide in its entire length. Apex of corium not pointed, but truncated askew towards its outer margin. Median vein of corium conspicuous. Hypocostal lamina narrow. Membrane covering entire abdomen.

Pygophore. Ventral rim in lateral view less projected posteriorly and dorsally, its upper edge medially very slightly concave. Transverse furrow deep, its lower edge slightly arcuate; ventral wall under the transverse furrow depressed submedially. Body of paramere almost evenly wide, in two-thirds of its length narrowed and bent, dilated and bifurcated before apex, its tips triangular.

Female outer genitalia corresponding with generic redescription.

Punctuation. Ventral side of head with small punctures. Pronotal and prosternal collars and prosternal lobe with coarse, deep, foveolate punctures. Clavus and corium with regular, distinct, but much smaller punctures than on preceding body parts. Mesoscutum with distinct punctures, mesoscutellum smooth, not punctured. Hypocostal lamina not punctured. Posterior pleural flange with punctures arranged in rows along pleuron I, pleuron II proximally and distally with rows of punctures, pleuron III only proximally with such punctuation.

Measurements. Male: body length 6.05–6.37 mm, width of pronotum 1.94–2.00 mm. Female: body length 5.67–6.80 mm, width of pronotum 1.94–2.08 mm.

Distribution. Comoro Islands: Mohéli Is. (new record), Madagascar: recorded from north – Ansiranana (formerly Diego Suarez) (CACHAN 1952); north-east (Maroantsetra env.) (this paper), west – Antsigny de Becopaca (probably Antsigny near Mahajanga [15°48' S, 46°12' E]) (CACHAN 1952), and centre of the island – Antananarivo (formerly Tananarivo) (BLÖTE 1931, CACHAN 1952), and Nosy Be Island situated near north-west coast of Madagascar (Loucoubé – REUTER 1887; this paper). Seychelles (Mahé Is.) (DISTANT 1913).

Taxonomy and nomenclature. Because original descriptions (accompanied by habitus drawings) of both *Dermatinus aurantiacus* and *Jourdainana rugifer* are identical, I establish the synonymy of these species.

The Latin descriptive *rugifer* (= bearer of wrinkles) is a noun in apposition. Therefore, the change of *rugifer* to *rugifera* assumed by HUSSEY (1929) as a correction to gender termination is in error and an incorrect subsequent formulation of the name.

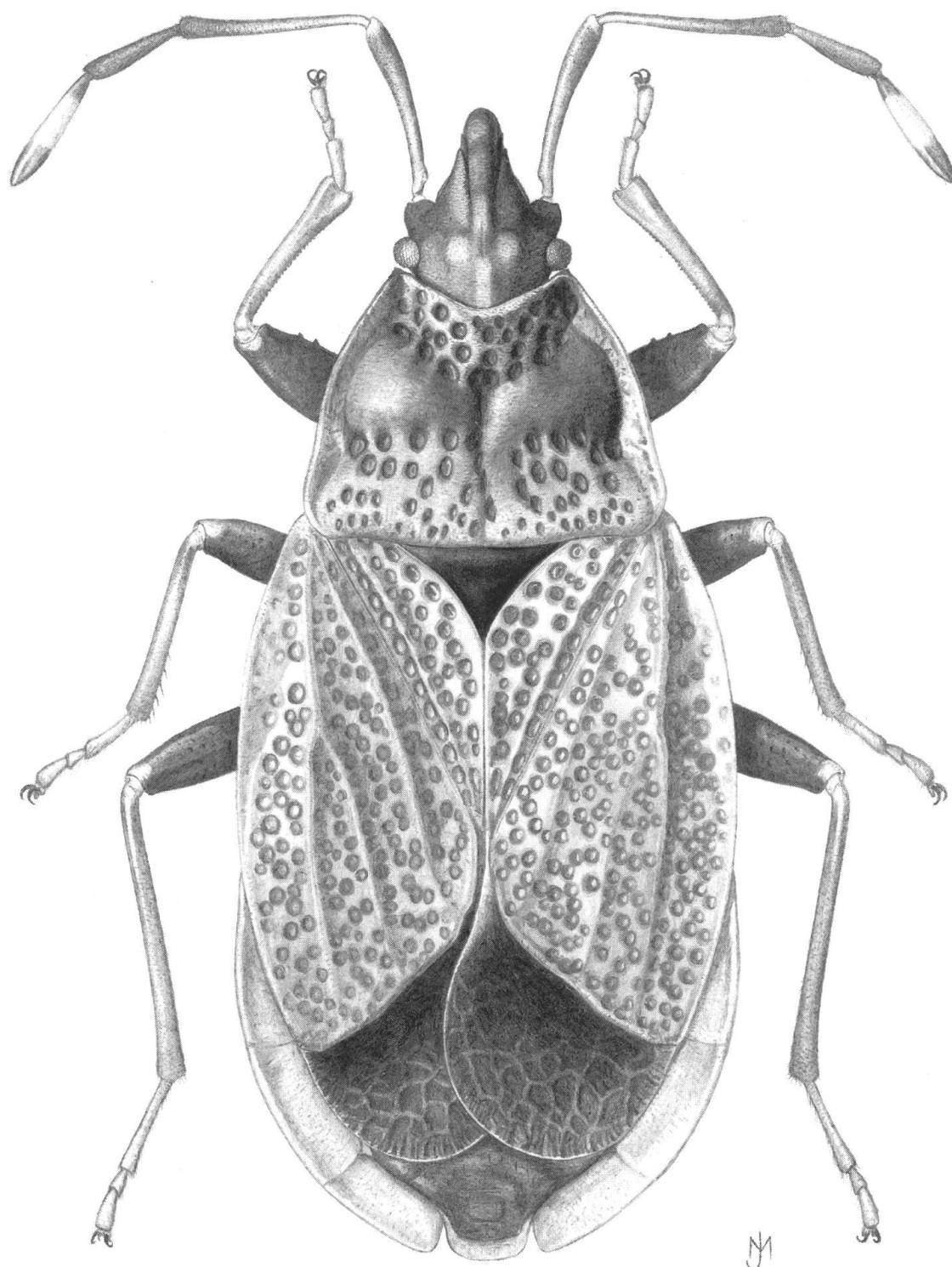


Fig. 2. *Jourdainana annulata* sp.nov., male.

***Jourdainana annulata* sp.nov.** (Figs 2, 5, 8)

Type material. Holotype: male: "Madagascar Sud-Ouest, Beloha, Ambovombo, 100 m, vi.1957, Andria R." (MNHN); paratypes, male: "Beloha, 5.viii.[19]48, Inst. Scient. Madagascar, A.[ndria] R." (NMPC); female: "Madagascar Sud-Ouest, Lak Iotry, Marombe, 40 m, vii.1957, Andria R." (MNHN).

Description. Head darkened, but not deeply black, with four pale spots forming a cross (one spot on head base, one paired spot on frons, and one spot on base of clypeus); apex of clypeus pale. Labium dark. Distal halves of antennomeres 1 and 2 blackish; antennomere 3 black; base and more than apical one-third of antennomere 4 black, medially with pale, wide ring. Pronotal and prosternal collars, lateral margins of pronotum, and posterior pleural flange I-III darkened. Callar lobe, scutellum, pleura, tergites, ventrites, femora (except at very apices), and hemelytral membrane, black. Tibiae and tarsi pale, tibiae basally and apically somewhat darkened. Laterotergites of male brown, those of female dark brown, medially paler and with small pale spot in its posterolateral angles. Tergite VII submedially with distinct pale spot.

Body more robust, oval. Head smaller, narrow, distinctly elongated in front of eyes, frons convex, clypeus towards apex distinctly dilated. Antennae not very long, antennomeres 3 and 4 shorter. Anterior pronotal margin distinctly concave, lateral pronotal margins convex, proximally narrowed. Pronotal collar very wide, callar lobe medially very narrow and depressed, in female almost indistinct. Scutellum small. Clavus wide, its inner margin slightly rounded, claval commissure long. Costal margin of hemelytron convex, fused with exocorium; distal margin of corium rounded; hypocostal lamina very wide. Submacropterous, membrane reaching base of tergite VII, its margin strongly rounded. Distal part of tergite VII strongly narrowed, its lateral margins parallel, and distal margin almost horizontal. Laterotergites broad.

Pygophore relatively small. Ventral rim in lateral view very strongly projected posteriorly and almost horizontal. Upper margin of ventral rim slightly arcuate. Transversal furrow deep, its lower edge slightly arcuate. Base of paramere quite wide, flat; body of paramere bent and narrowed after centre; apex bifurcate, its tips acute.

Female outer genitalia corresponding with generic redescription.

Punctuation. Head ventrally with minute punctures. Pronotum and prosternal collar, pronotal lobe and posterior pleural flange I with deep foveolate punctuation. Clavus and corium with dense, black, foveolate punctuation forming circles; however, less deep than on preceding structures. Outer margin of corium and hypocostal lamina with colourless, smaller punctuation. Pleuron II distally with rows of punctures and proximally with two large foveae; one large fovea present also on epicoxal lobe III (the number of foveae on both preceding structures may well vary).

Measurements. Male (holotype): body length 7.13 mm; head: width (including eyes) 1.12 mm, interocular width 0.73 mm, length 1.13 mm; antenna: lengths of antennomeres 1 – 1.19 mm, 2 – 1.16 mm, 3 – 0.65, 4 – 0.85 mm; pronotum: collar length 0.38 mm, callar lobe length 0.43 mm, pronotal lobe length 0.59 mm, width 2.20 mm, total length 1.40 mm; scutellum: length 0.54 mm, width 0.97 mm; corium: length 3.40 mm, width 1.51 mm. Female (paratype): body length 7.67 mm; head: width (including eyes) 1.19 mm, interocular width 0.81 mm, length 1.19 mm; antenna: lengths of antennomeres 1 – 1.08 mm, 2 – 1.16 mm, 3 – 0.59, 4 – 0.76 mm; pronotum: collar length

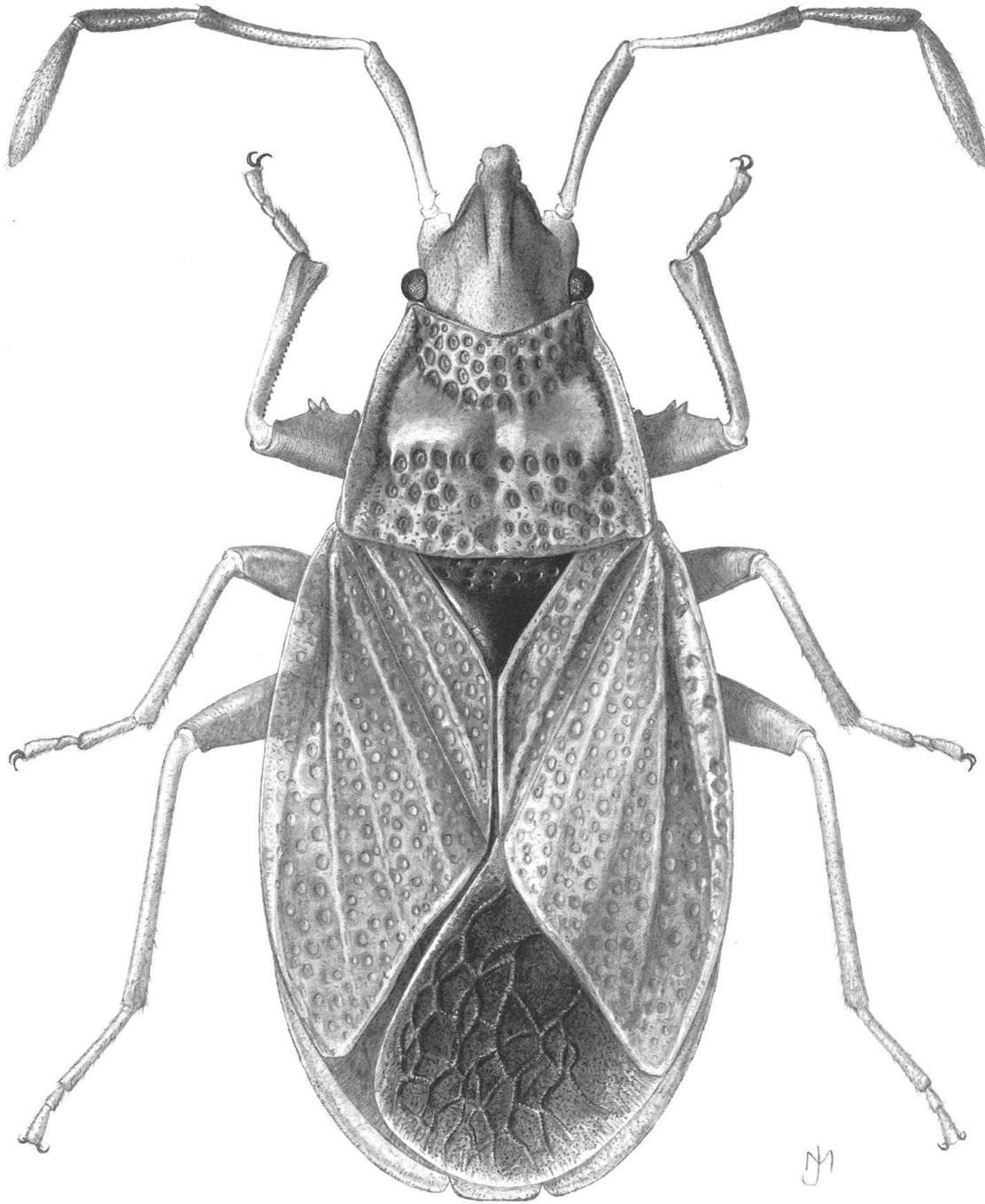


Fig. 3. *Jourdainana pluotae* sp. nov., male.

0.54 mm, callar lobe length 0.27 mm, pronotal lobe length 0.76 mm, width 2.32 mm, total length 1.57 mm; scutellum: length 0.70 mm, width 1.03 mm; corium: length 4.05 mm, width 1.73 mm.

Distribution. South-western Madagascar.

Derivatio nominis. The specific epithet is the Latin adjective *annulatus*, -a, -um (= annular), used in reference to the distinct pale median ring on the final antennomeres.

Differential diagnosis. See key.

***Jourdainana pluotae* sp.nov.** (Figs 3, 6, 9)

Type material. Holotype: male: "Madagascar Nord, Diégo-Suares, Analamerana 50 km SE Diégo, 80 m, I-59, Andria R." (MNHN).

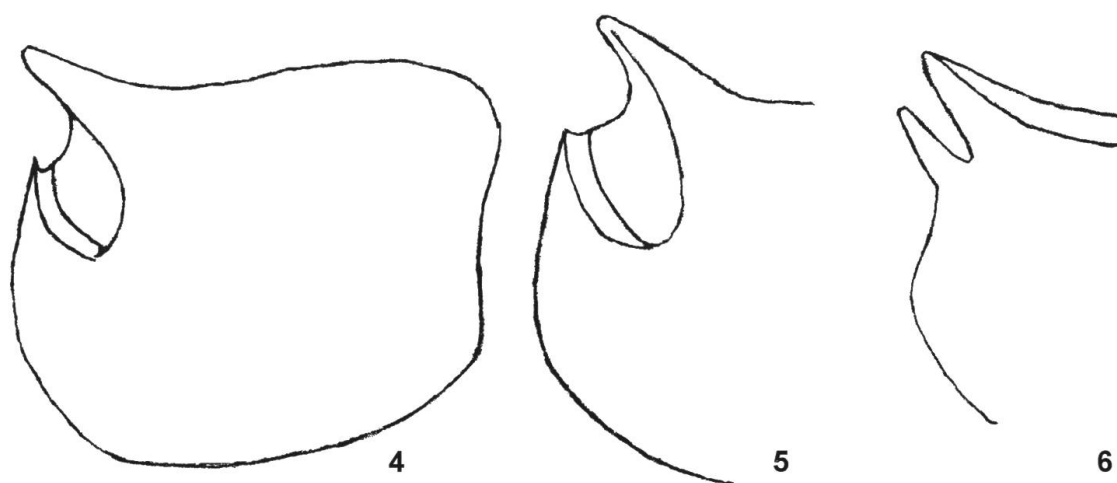
Description. General coloration both dorsally and ventrally pale brown with reddish tinge, legs and labium of nearly the same coloration. Scutellum, two basal thirds of membrane, and antennomere 3 velvety black; antennomere 4 darkened. Pleura I–III reddish, their distal margins black.

Body more robust, distinctly oval. Head wider, distinctly elongated in front of eyes, frons convex, clypeus long; antennae longer and stouter; antennomere 2 slightly deflected. Pronotum relatively narrow, its anterior margin distinctly concave, lateral margins rounded in their entire length, narrowing proximally. Pronotal collar very wide, callar lobe medially narrow and depressed. Costal margin of hemelytron convex, wide, distinctly narrowing towards apex; apex of corium slightly rounded. Macropterous, membrane covering even the projecting part of tergite VII, with the exception of a narrow stripe. Hypocostal lamina wide. Profemora with one smaller denticle medially and two larger teeth standing side by side near its apex.

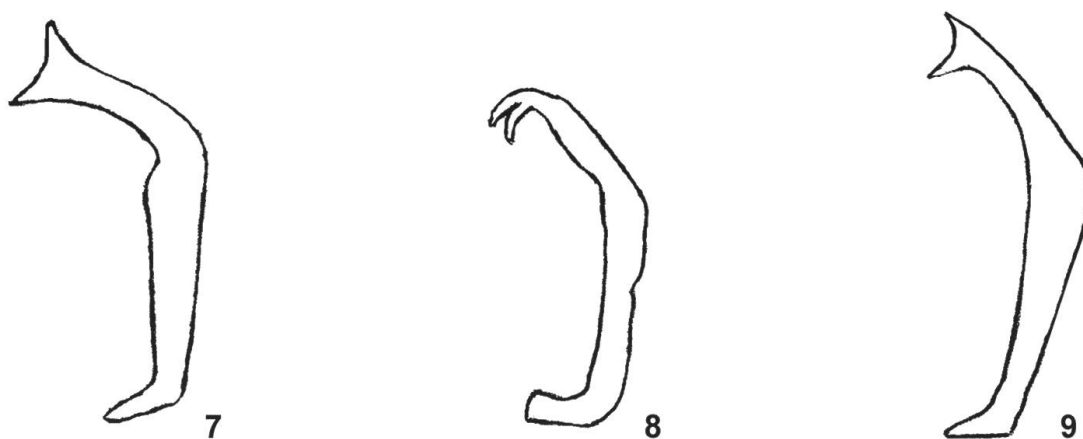
Pygophore relatively large. Ventral rim in lateral view projected posteriorly and dorsally; upper margin of ventral rim straight. Transversal furrow deep, its lower edge slightly arcuate with very narrow protracted lamella, medially decreased. Base of paramere bent, its body slender near the base and evenly thickening, at two-thirds slightly bent and narrowed, apex bifurcate, tips of both ends shortly triangular.

Punctuation. Ventral side of the head with minute punctuation. Pronotal and prosternal collars, pronotal lobe, and posterior pleural flange I with distinct deeper foveolate punctuation. Clavus and corium with distinct, but less deep punctuation arranged in circles; foveolate punctures black with their centres slightly lighter. Posterior pleural flange I with two rows of punctures, first complete, second to half-length. Punctuation of pleuron II proximally smaller, distally larger; pleuron III punctured only proximally; posterior pleural flange III with more dense, very fine punctuation. Costal margin of hemelytron and hypocostal lamina with colourless punctuation.

Measurements. Male (holotype). Body length 7.29 mm; head: width (including eyes) 1.32 mm, interocular width 1.32 mm, length – 1.24 mm; antenna: lengths of antennomeres 1 – 1.20 mm, 2 – 1.24 mm, 3 – 0.85 mm, 4 – 1.08 mm; pronotum: collar length 0.49 mm, callar lobe length 0.27 mm, pronotal lobe length 0.76 mm, width 2.27 mm, total length – 1.51 mm; scutellum: length 0.76 mm, width 1.19 mm; corium: length 3.78 mm, width 1.62 mm.



Figs 4–6. Pygophore, lateral view: 4 – *Jourdainana aurantiaca* (Signoret), 5 – *J. annulata* sp.nov., 6 – *J. pluotae* sp.nov.



Figs 7–9. Paramere: 7 – *Jourdainana aurantiaca* (Signoret), 8 – *J. annulata* sp.nov., 9 – *J. pluotae* sp.nov.

Distribution. Northern Madagascar.

Derivatio nominis. This species is dedicated to Dr. Dominique Pluot-Sigwalt (Muséum National d'Histoire Naturelle, Paris) in gratitude for her help with my studies of the Pyrrhocoroidea.

Differential diagnosis. See key.

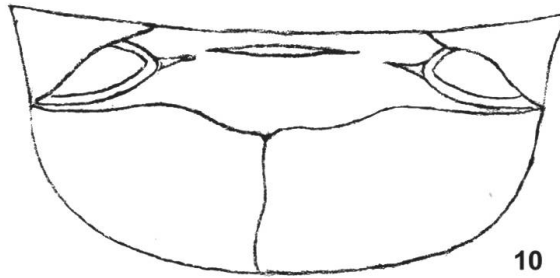


Fig. 10. *Jourdainana aurantiaca* (Signoret): female outer genitalia.

10

Discussion

Jourdainana, distributed in Madagascar and Mascarenes, belong to the same phylogenetic lineage as genera *Brancucciana* Ahmad et Zaidi, 1986 (Indian subcontinent), *Heissianus* Stehlík, 2006 (Malayan peninsula), and *Damascarga* Stehlík, 1980 (Madagascar). Probably the most ancestral, and also the most common, species of *Jourdainana* is *J. aurantiaca*. Apomorphic characters of *Jourdainana* are: i) coastal margins of hemelytra fused with exocorium (*J. annulata* sp.nov.), ii) large foveolate punctation of hemelytra, and iii) anastomoses of membrane veins. Anastomoses of the membrane veins, although not so frequent, also occur in the primitive genus *Scantius* Stål, 1866, which is as well characterized by its small eyes and medially dilated first antennomere. It seems probable that *Scantius* is a sister group of the above-mentioned pyrrhocorid lineage, including *Jourdainana*.

Acknowledgements

I am indebted to I. M. Kerzhner (Zoological Institute, Russian Academy of Sciences, St. Petersburg), P. Kment (National Museum, Prague), R. Krause (Staatliche Naturhistorische Sammlungen, Dresden), D. Pluot-Sigwalt (Muséum National d'Histoire Naturelle, Paris), and G. Schmitz (Musée Royal d'Afrique Centrale, Tervuren) for the loan of material. I also thank P. Kment and M. Webb (The Natural History Museum, London) for valuable comments on the manuscript, and the late J. Meduna for the illustrations.

References

- BLÖTE H. C. (1931): *Catalogue of the Pyrrhocoridae in 's Rijks Museum van Natuurlijke Historie*. Zoologische Mededeelingen **14**: 97–136.
 CACHAN P. (1952): *Pyrrhocoridae de Madagascar*. Mémoires de l'Institut Scientifique de Madagascar **Ser. E 1(1)**: 71–92.

- DISTANT W. L. (1913): *Rhynchota. Part I: Suborder Heteroptera*. In: *The Percy Sladen Trust Expedition to the Indian Ocean in 1905, under the leadership of Mr J. Stanley Gardiner, M. A. Vol. V*. Transactions of the Linnean Society of London **Second Series 16 (Zoology)**: 139-191, pls. xi-xiii.
- DOESBURG P. H. JR. VAN (1968): *A revision of New World species of Dysdercus Guérin Méneville (Heteroptera, Pyrrhocoridae)*. Zoologische Verhandelingen (Leiden) **97**: 1–215.
- HUSSEY R. F. (1929): *Fasc. III. Pyrrhocoridae*. In: HORVÁTH G. & PARSHLEY H. M. (eds): *General Catalogue of the Hemiptera*. Smith College, Northampton, 144 pp.
- LETHIERRY L. & SEVERIN G. (1894): *Catalogue général des Hémiptères. Tomme II. Hétéroptères. Coreidae, Berytidae, Lygaeidae, Pyrrhocoridae*. F. Hayez, Bruxelles, 277 pp.
- REUTER O. M. (1887): *Ad cognitionem Heteropterorum madagascariensium*. Entomologisk Tidskrift **8**: 77–109.
- SCHAEFER C. W. (1977): *Genital capsule of the trichophoran male (Hemiptera: Heteroptera: Geocorisae)*. International Journal of Insect Morphology and Embryology **6**: 277–301.
- SIGNORET V. (1861): *Faune des Hémiptères de Madagascar (Suite et fin.)*. Annales de la Société Entomologique de France **Ser. III 8** (1860): 917–972 + separate pls. 13–14.
- STÅL C. (1866): *Hemiptera Africana. Tomus III*. Officina Nordstedtiana, Holmiae, 200 pp.
- STÅL C. (1870): *Enumeratio Hemipterorum. Bidrag till en förteckning öfver alla hittills kända Hemiptera, jemte systematiska meddelanden*. 1. Kongliga Svenska Vetenskaps-Akademiens Handlingar **9(1)**: 1–232 (in Swedish and Latin).

Author's address:

Dr. Jaroslav L. Stehlík
Moravian Museum
Department of Entomology
Hviezdoslavova 29a
CZ-627 00 Brno
CZECH REPUBLIC