

On two species of Argentinian *Neopucroliella* (Opiliones, Gonyleptidae, Pachylinae)

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Summary

This paper deals primarily with the poorly known harvestman *Neopucroliella pertyi* (Thorell) and a new species, *Neopucroliella sanctiludovici*. The taxonomic identity of the former is clarified and the species is redescribed. *Neopucroliella borgmeieri* (Mello-Leitão) is determined to be a junior synonym of *N. pertyi*. *Neopucroliella sanctiludovici* n.sp. is described and illustrated; its closest relative is the Argentinian *Neopucroliella nonoensis* Canals, from which it differs by the morphology of leg IV of the male, and a morphometric feature (relation between ratios “width/height of the ocular tubercle” and “width of patella III/length of metatarsus III”). The systematic history of *Neopucroliella* and its members is briefly discussed. The Chilean *N. cristobalia* Roewer is once again transferred to *Parabalta*, and the Uruguayan *N. ochracea* Ringuelet is considered misplaced in *Neopucroliella*. Distribution and habitat data are provided for *N. pertyi* and *N. sanctiludovici*.

Introduction

In 1877, Thorell described three females collected at “Córdoba” as *Ostracidium Pertyi*. This was one of the first harvestmen described from Argentina. No new material of this species has been cited since. For more than a century, *O. pertyi* has remained one of the least known harvestmen of this country.

In his first systematic study of the Gonyleptidae, Roewer (1913) placed *Ostracidium* Perty in the subfamily Prostyginae; he retained Thorell’s species in that genus, with doubts, however. Without examining any material, Mello-Leitão (1932a) excluded *pertyi* from *Ostracidium* and created for the species the new genus *Thorellidia*, which he included in the subfamily Pachylinae (not the Prostyginae of Roewer). Mello-Leitão regarded *Thorellidia* as a close relative of *Parabalta* Roewer, *Pachyloides* Holmberg and *Planiphalangodus* Roewer, from which it might be distinguished by the number of tarsal segments. Soares & Soares (1954) retained *Thorellidia pertyi* as a valid species in the Pachylinae.

Based on the previously published descriptions, Ringuelet (1956) concluded that the poorly known *T. pertyi* was actually a member of *Neopucroliella* Roewer. However, because the species was known only by females, he believed that clarifying its identity was not possible. In 1959 Ringuelet proposed the elimination of the name *pertyi*, because of the impossibility of recognising to which species of *Neopucroliella* the name should be referred: he placed the specific name among his “nomina rejicienda” (rejected names). This nomenclatural act is not valid, for only the International Commission on Zoological Nomenclature has the plenary powers for this action. By examining the type material of *Ostracidium pertyi*, I was able to determine that it represents a valid species and a senior synonym of *Neopucroliella borgmeieri* (Mello-

Leitão), a well-known harvestman of the Argentinian provinces of Córdoba and San Luis.

Neopucroliella borgmeieri is the type species of *Neopucroliella*, and has a simpler nomenclatural history. It was described by Mello-Leitão (1923) in combination with *Neopucroliella* Roewer, from two females captured in Alta Gracia, province of Córdoba. Roewer (1931) excluded *borgmeieri* from *Neopucroliella*, and created for it the generic name *Neopucroliella*. *Neopucroliella* was later synonymised with the older name *Eusarcus* Perty (Soares & Soares, 1954).

Soares & Soares (1954) synonymised *Neopucroliella* with *Parabalta*, without explaining the reasons for the change. Thus, the six *Neopucroliella* species then accepted as valid were transferred to *Parabalta* (among them, *N. cristobalia* Roewer from Chile). According to the “traditional” criteria, only one character would differentiate these genera (*Neopucroliella* with five tarsal segments on leg I, *Parabalta* with six), and this seems insufficient to separate them. However, without further evidence, this sole argument is not enough to accept the synonymy, as pointed out by Ringuelet (1956). I support his view, because there is indeed more than this one difference, concerning both the external and genital morphology. Ringuelet (1956) reinstated *Neopucroliella* as a valid name. *Neopucroliella cristobalia*, however, must remain in *Parabalta*, as it has six tarsal segments on legs I, and in many other features differs greatly from *Neopucroliella*. A species from Uruguay, *N. ochracea* Ringuelet, was also referred to *Neopucroliella*, but it probably belongs to another genus. While this species fits into the “traditional” generic limits of *Neopucroliella*, the general morphology and especially the genitalia show many differences. According to the material I examined of *N. ochracea*, both the granulation of the dorsal scutum and the leg morphology are very distinct. Although the penes are nearly indistinguishable between *Neopucroliella* species proper, *N. ochracea* shows a peculiar morphology.

Excluding this last, doubtfully-placed species, *Neopucroliella* comprises seven species (Acosta, 1989), all from Argentina. Only one lives in the province of Buenos Aires (*N. mesembrina* Ringuelet; Acosta, 1990), with the remaining species occurring in the hilly systems of the provinces of Córdoba, San Luis, La Rioja and Santiago del Estero. Two of these species are the subject of this paper: *N. pertyi*, redescribed, and *N. sanctiludovici*, a new species hereby described and named.

Neopucroliella pertyi (Thorell, 1877) (Figs. 1–7)

Ostracidium Pertyi Thorell, 1877: 213; 1878: 267; Holmberg, 1878: 70.

P. (sic) [Pachylus?] Pertyi: Latzina, 1899: 225.

Ostracidium pertyi: Roewer, 1913: 154; 1923: 454.

Neopucroliella Borgmeieri Mello-Leitão, 1923: 217, fig. 17. NEW SYNONYMY.

Neopucroliella borgmeieri: Roewer, 1931: 102; Mello-Leitão, 1932b: 448 [*Neopucroliella borgmeyer*]; 1939: 621; Canals, 1939: 144; Ringuelet, 1959: 148, 166, 196, 253 (fig. 30j), 338, 339 (fig. 46), Pl. XIII (fig. 1); 1961: 326 (in part); 1962: 3, 4 (in part); 1963: 43, 45, 46 (in part); Maury, 1973: 370 (in part); Galiano & Maury, 1979: 320; Acosta, 1990: 97, 100.

Thorellidia pertyi: Mello-Leitão, 1932a: 123; Soares & Soares, 1954: 298; Ringuelet, 1959: 197 [“*nomen rejiciendum*”].

Neopucroliella Borgmeieri: Canals, 1935: 3, fig. 1; 1943: 6, 7.

Parabalta borgmeieri: Soares & Soares, 1954: 285.

[*Neopucroliella pertyi*: Ringuélet, 1956: 18; 1959: 339.

Neopucroliella borgmeieri borgmeieri: Ringuélet, 1961: 326; 1962: 5; 1963: 45, 46.

Type material

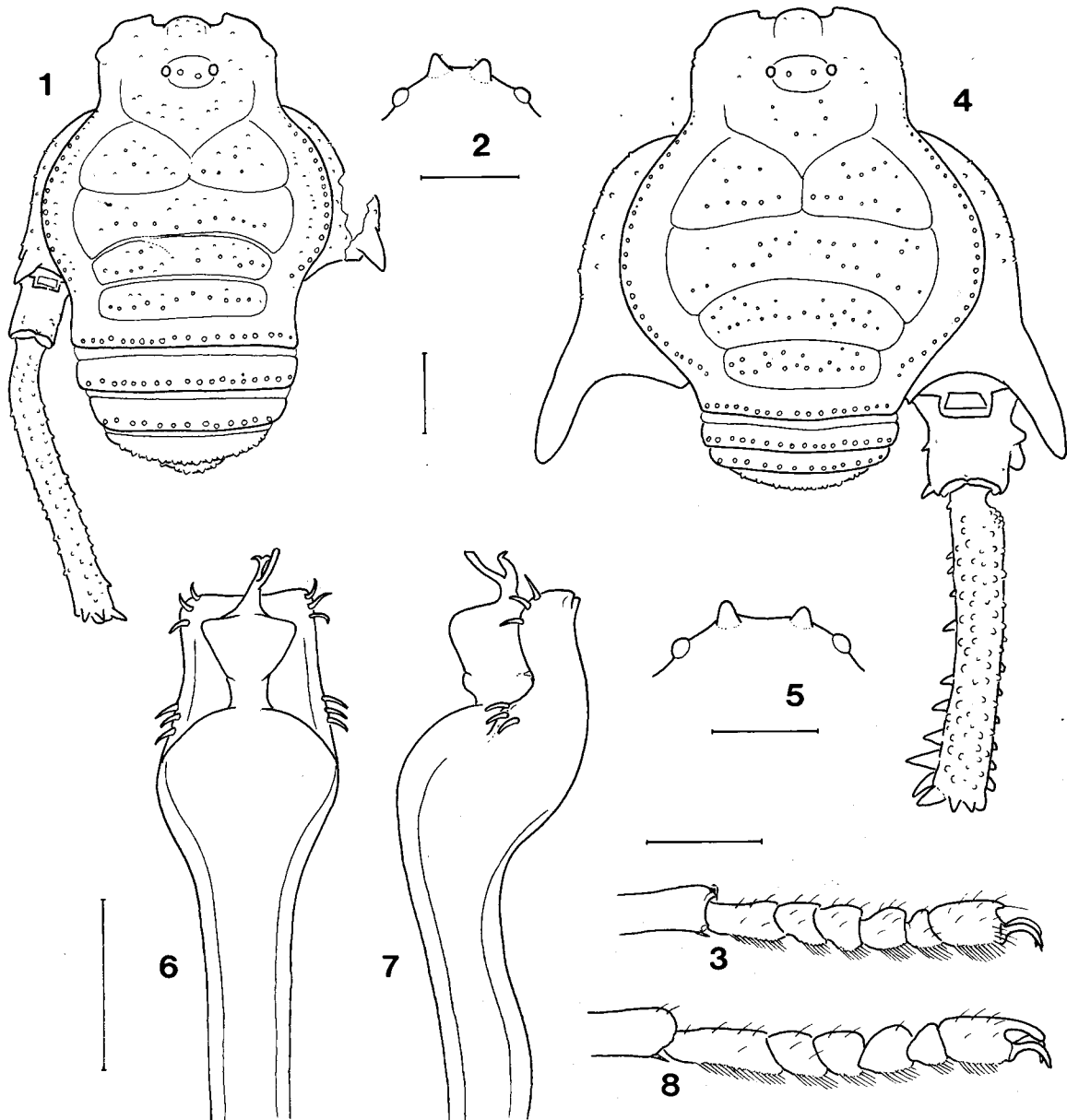
Three ♀ syntypes (NRS, Coll. Thorell 75/103), "*Ostracidium pertyi*", "Córdoba" (sic), Argentina, Weijenbergh coll. One example is placed in a separate vial and hereby designated as lectotype; the two other females are designated paralectotypes. Types of *Neopucroliella borgmeieri*: holotype ♀ (Museu Nacional, Rio de Janeiro, No. 1393, "Typo", not examined), paratype ♀ (MACN 7150, "Cotipo", examined), Alta Gracia, 6 January 1922, C. Bruch coll.

Type locality

"Córdoba" (refers to the city, 31° 24' S, 64° 11' W, not the province).

Description

General colour light reddish-hazel to greyish-yellow. Dorsal scutum length: males 3.99–5.50 mm (\bar{x} = 4.67, n = 11), females 3.85–4.72 mm (\bar{x} = 4.26, n = 21). Measurements of female lectotype: Table 1. Ocular tubercle low, bearing two subconical, minute apophyses. Scutum with conspicuous granules, especially in male. Prosoma and area I with scattered granules; areas II and III with irregular granulation, or granules arranged in two transverse rows; area IV with two rows, and area V and free



Figs. 1–7: *Neopucroliella pertyi* (Thorell). 1–3 Lectotype female (NRS, Coll. Thorell 75/103). 1 Dorsal scutum, free tergites, anal operculum, coxae IV, trochanter and femur IV (left), dorsal view (right coxa partially broken); 2 Ocular tubercle, posterior view; 3 Tarsus IV (left), lateral view. 4–7 Male (Alta Gracia, province of Córdoba, MACN). 4 Dorsal scutum, free tergites, anal operculum, coxae IV, trochanter and femur IV (right), dorsal view; 5 Ocular tubercle, posterior view; 6 Distal end of penis, dorsal view; 7 Idem, lateral view.

Fig. 8: *Neopucroliella extraordinaria* Canals. Tarsus IV (left), lateral view, showing well-developed tarsal process.

Scale lines = 1 mm (Figs. 1, 4), 0.5 mm (Figs. 2, 3, 5, 8), 0.2 mm (Figs. 6, 7).

tergites with a single row each; lateral areas with a complete, ectal row, and a few granules forming a mesal row. Lateral surface of coxa IV with few granules. Number of tarsal segments: 5:6–8:6:6 (lectotype with 5:7:6:6; variability in Table 2). All legs have a short tarsal process (Fig. 3).

Male: Coxa IV apophysis slightly curved downwards, in lateral view. Femur IV nearly straight, basally narrowed, and slightly thickened on proximal third; mesal row of 3–5 small apophyses and a larger, subapical one on distal half, completed in proximal half by a file of tubercles and granules; each side of femur-patella joint with a large, ventroapical apophysis; ventrolateral row of rounded tubercles; entire femur with irregular files of granules. Penis: Figs. 6, 7.

Female: Femur IV with rows of granules; few mesal granules slightly larger; three small, apicodorsal apophyses.

Diagnosis and comparisons

Neopucroliella pertyi can be easily identified and distinguished from the other *Neopucroliella* species of Córdoba and San Luis, by the poorly-developed tarsal process on legs III and IV (Fig. 3, cf. Fig. 8). Only *N. mesembrina* from Buenos Aires shares this character state. According to Ringuélet (1961, 1962), the “short” tarsal process should indicate a close relationship between that species and *N. pertyi* (called *N. borgmeieri* by Ringuélet); consequently that author described *mesembrina* as a subspecies of *borgmeieri*. Such a character state is, however, a symplesiomorphy (Acosta, 1990), and thus cannot be used to determine cladistic relationships. In addition, the apophyses on femur and coxa IV of the males of *N. mesembrina* show a close affinity with *N. nonoensis* Canals and *N. calamuchitaensis* Canals (two species with “long” tarsal process), and for this reason I raised Ringuélet’s form to specific rank (Acosta, 1990).

	<i>N. pertyi</i>		<i>N. sanctiludovici</i>	
	lecto.	holo.	holo.	allo.
Scutum, length	4.35	5.34	4.49	
maximal width	3.73	4.65	3.60	
Leg I, total length	9.25	11.00	8.53	
femur length	2.35	2.72	2.04	
Leg II, total length	15.78	16.73	13.06	
femur length	3.99	4.03	3.04	
Leg III, total length	12.05	14.02	10.66	
femur length	3.34	3.63	2.70	
Leg IV, total length	15.92	19.35	13.88	
trochanter	0.85	1.51	0.82	
femur	4.13	4.52	3.34	
patella	1.44	1.87	1.34	
tibia	3.41	3.99	2.85	
metatarsus	4.58	5.17	3.60	
tarsus	1.51	2.29	1.93	
Pedipalp, total length	6.11	6.88	5.80	
femur length	1.65	1.80	1.47	
Chelicera, total length	1.62	1.90	1.70	
Ocular tubercle, width	0.69	0.91	0.80	
height	0.31	0.41	0.33	

Table 1: Measurements (mm) of lectotype female of *Neopucroliella pertyi* (Thorell), and holotype male and allotype female of *Neopucroliella sanctiludovici* n.sp.

Number of tarsal segments	<i>N. pertyi</i>		<i>N. sanctiludovici</i>	
	males	females	males	females
6	1	7	0	2
7	19	31	8	3
8	6	1	1	1
9	0	0	1	0
<i>n</i>	26	39	10	6

Table 2: Number of tarsal segments of leg II in *Neopucroliella pertyi* and *Neopucroliella sanctiludovici*.

Material examined

ARGENTINA. Province of Córdoba: Córdoba (H. Weyenbergh), 3 ♀ — lectotype and 2 paralectotypes (NRS Coll. Thorell 75/103); Villa Rivera Indarte, 9 June 1940 (R. Maldonado B.), 1 ♀ (MLP 24124); city of Córdoba, Barrio San Vicente, November 1986 (F. Pereyra), 1 ♀ (CZI); same loc. and coll., 4 November 1987, 1 ♂ (CZI); same loc. and coll., April 1988, 1 ♀ (CZI); city of Córdoba, Barrio Ayacucho, date? (A. Huergo), 1 ♂, 2 ♀ (CZI); same loc. and coll., January 1989, 1 ♂, 3 ♀ (CZI); city of Córdoba, Cerro de las Rosas, 10 December 1989 (M. Bertona), 1 ♂ (CZI); Dique La Quebrada, Río Ceballos, 2 December 1989 (C. Jewsbury), 1 ♂ (CZI); Villa Corazón de María, 23 April 1988 (L. Acosta, F. Pereyra), 1 ♂, 3 ♀ (CZI); Costa Azul, Villa Carlos Paz, 3 February 1989 (R. Maggi), 2 ♂ (CZI); Cuesta Blanca, 15 April 1987 (P. Goloboff), 1 ♀ (CZI); Alta Gracia, July 1955 (J. Gallardo), 1 ♀ (MACN); same loc., July 1958 (coll.?), 1 ♂ (MACN); same loc., 6 January 1922 (C. Bruch), 1 ♀ — paratype of *Neopucroliella borgmeieri* (MACN 7150); same loc. and coll., 15–30 January 1924, 1 ♀ (MACN); same loc., date? (S. Pierotti), 1 ♂ (IML 00027); Calamuchita, December 1941 (J. M. Viana), 1 ♂, 2 ♀ (MACN 4682); same data, 1 ♀ (MACN 4683); Sierra de Pocho, between Las Palmas and Chancani, 11 December 1969 (W. Weyrauch), 1 ♂ (IML 00134); “Córdoba”, without specification (J. Fentanes), 1 ♀ (MACN 4680).

Province of San Luis: Quines, 17 February 1940 (M. Birabén), 1 ♂ (MLP 24074).

Distribution and habitat

Argentina: provinces of Córdoba and San Luis. This species is found mainly in moist places in the hilly region (probably excluding the higher altitudinal environments), but there are also some examples from non-rocky, dry spots, near the hills. In this latter situation, the specimens hide under half-buried tree trunks or at the bases of tree stumps. At Villa Corazón de María, *N. pertyi* was collected together with the cosmetid *Metalibitia paraguayensis* (Sörensen) and the gagrellid *Holmbergiana weyenberghii* (Holmberg). Mello-Leitão (1923) stated that this species was found in ants’ nests. *Neopucroliella pertyi* also exists within the urban area of the city of Córdoba.

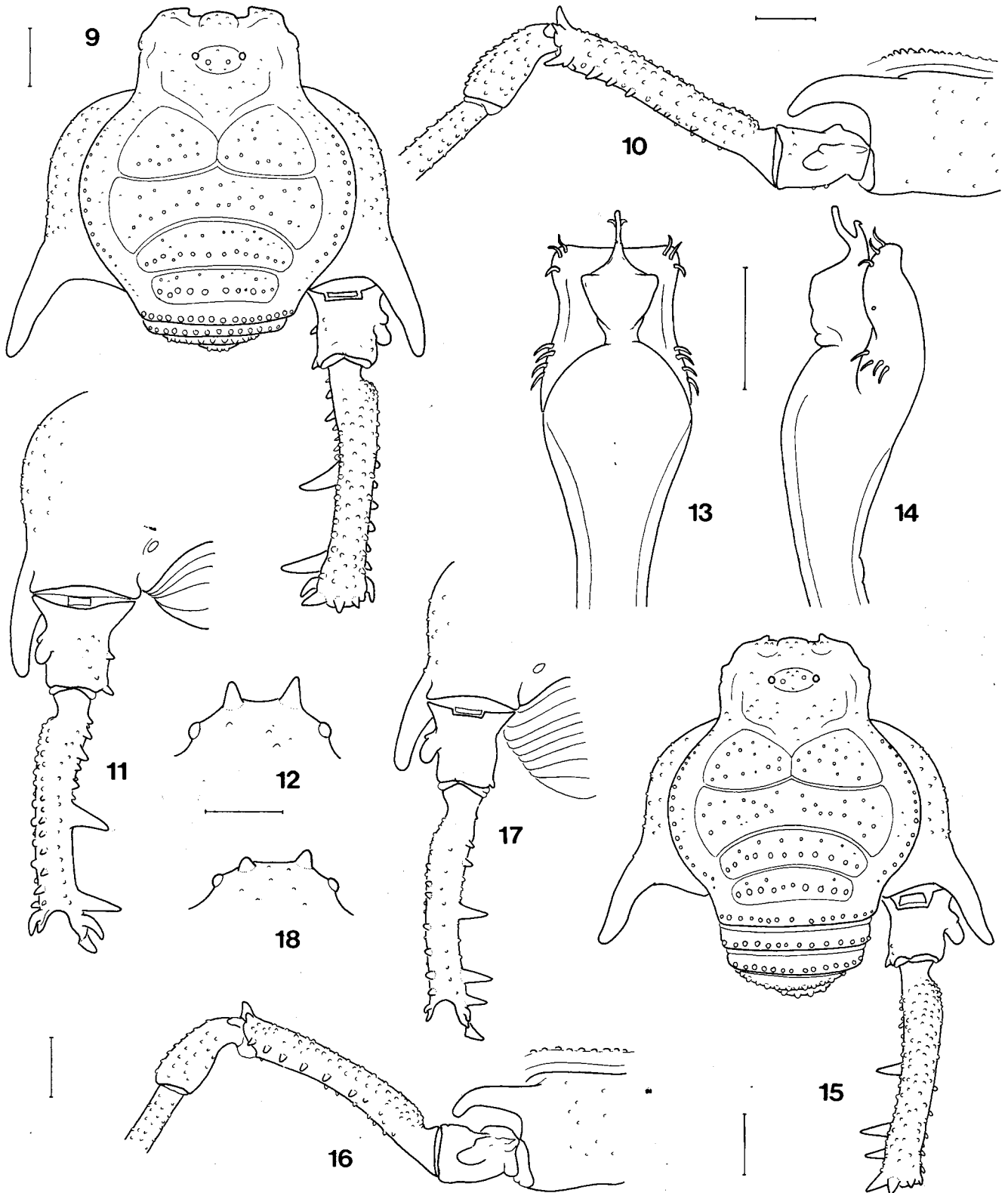
Neopucroliella sanctiludovici sp. nov. (Figs 9–14)

Derivatio nominis

The specific name *sanctiludovici* is the genitive of Sanctus Ludovicus (Latin denomination of San Luis), and refers to the type locality.

Type material

Holotype ♂ (MACN 8754), Pampa de San Luis, Córdoba, 10 June 1986 (L. Acosta, A. Peyroti, R. Pizzi); allotype ♀ (MACN 8755), same data. 1 paratype ♂ (CZI), Parque Siquiman, Córdoba, 19 December 1986 (M. Nores).



Figs. 9–14: *Neopucroliella sanctiludovici* n.sp., male holotype (Pampa de San Luis, province of Córdoba, MACN 8754). **9** Dorsal scutum, free tergites, coxae IV, trochanter and femur IV (right), dorsal view; **10** Coxa, trochanter, femur and patella IV (right), lateral view; **11** Coxa, trochanter and femur IV (right), ventral view; **12** Ocular tubercle, posterior view; **13** Distal end of penis, dorsal view; **14** Idem, lateral view.

Figs. 15–18: *Neopucroliella nonoensis* Canals, male holotype (Nono, province of Córdoba, MLP 24062). **15** Dorsal scutum, free tergites, anal operculum, coxae IV, trochanter and femur IV (right), dorsal view; **16** Coxa, trochanter, femur and patella IV (right), lateral view; **17** Coxa, trochanter and femur (right), ventral view; **18** Ocular tubercle, posterior view.
Scale lines = 1 mm (Figs. 9, 10, 11, 15, 16, 17), 0.5 mm (Figs. 12, 18), 0.2 mm (Figs. 13, 14).

Type locality

Pampa de San Luis, province of Córdoba, Argentina (31° 20' S, 64° 46' W).

Description

General colour light reddish-hazel to greyish-yellow; legs I-III, and tibia, metatarsus and tarsus IV lighter. Measurements of holotype and allotype: Table 1. Dorsal scutum length: males 4.80–5.34 mm (\bar{x} = 5.10, n = 5), females 4.39–4.49 mm (\bar{x} = 4.45, n = 3). Prosoma granulate; ocular tubercle with a pair of small, subconical apophyses and a few granules. Scutum with conspicuous granulation, irregularly arranged in areas I and II, in transverse rows in remaining areas. Areas III and IV often with a posterior row of larger granules, and an anterior row, not so sharply defined, of smaller granules; area V and free tergites with single row of granules (rounded in male, acute in female); lateral areas with an ectal row of tall granules, and a mesal, incomplete row, of few, small granules. Pedipalps: femur with one (proximal) and trochanter with two ventral piliferous tubercles; femur has also a dorsal row of minute tubercles, and a subapical, mesal spine. Legs I-III unarmed, with rows of small granules. Number of tarsal segments: 5:6–9:6:6 (holotype and allotype with 5:7:6:6, allotype tarsus IV left broken; variability in Table 2). Legs III-IV with well-developed tarsal process.

Male: Leg IV: Lateral surface of coxa with small, acute granules; strong, curved lateral apophysis. Morphology of trochanter similar to congeners (lateral apophysis with lobular extension, and two minute mesal tubercles). Femur basally narrowed, with a slight, granulate mound on proximal third; mesal surface bears two strong apophyses (one in middle of segment, other subapical), and a short file of conical tubercles and small apophyses. Each side of distal end of femur with two well-developed ventroapical, downward-pointing apophyses; with a ventrolateral row of rounded tubercles, that distally become taller and pointed; dorsal and lateral surfaces with rows of rounded, conspicuous granules; distal end bearing three dorsal apophyses, the mesal one well developed. Patella and tibia granulate. Penis: Figs. 13, 14.

Female: Leg IV: coxa granulate, with a short conical apophysis. Trochanter with a small, spine-like tubercle (mesal). Femur unarmed, with rows of granules and three small, apical apophyses; three acute granules, slightly detached from others, resemble mesal apophyses of male.

Diagnosis and comparisons

Neopucroliella sanctiludovici belongs to the "long tarsal process" species group, and shows the greatest affinity with *N. nonoensis*. At first glance, when seen from above, males of both species appear to have three large, mesal apophyses on femur IV (Figs. 9, 15). However, the two distal apophyses are not homologous, as becomes evident when they are viewed ventrally (Figs. 11, 17): in *N. nonoensis* these apophyses are subapical, and there is a small, hook-like mesoapical apophysis; *N. sanctiludovici* has only one subapical apophysis, the other being the

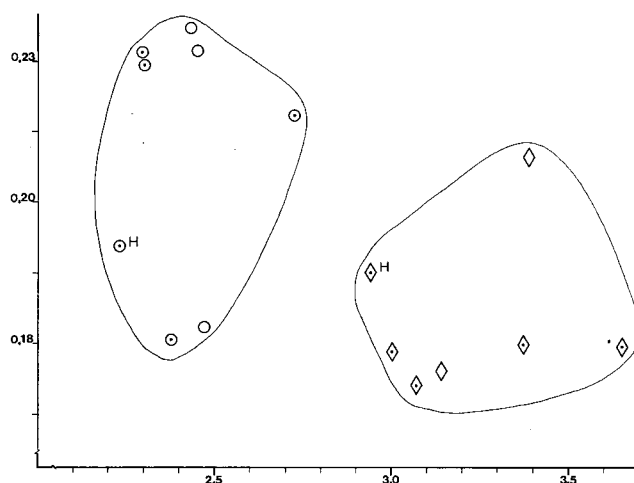


Fig. 19: Relation between the ratios "width/height of ocular tubercle" (abscissae) and "width of patella III/length of metatarsus III" (ordinates) of *Neopucroliella sanctiludovici* n.sp. (circles) and *N. nonoensis* (rhombs); males are indicated by a point within the symbol, the holotypes by an "H".

well-developed mesoapical apophysis. Also, the latero-apical apophysis on femur IV is larger in *N. sanctiludovici*. A third diagnostic feature is the coxal apophysis, which in *N. nonoensis* points more laterally and is slightly S-shaped in dorsal view (Figs. 9, 15); the tip of this apophysis in *nonoensis* is also more strongly curved in lateral view (Figs. 10, 16). These two species can be separated morphometrically (Fig. 19) by relating the ratios "width/height of the ocular tubercle" (that of *N. sanctiludovici* is comparatively taller, Figs. 12, 18) and "width of patella III/length of metatarsus III".

Material examined

ARGENTINA. Province of Córdoba: Pampa de San Luis, 10 June 1986 (L. Acosta, A. Peyroti, R. Pizzi), 1 ♂ (holotype) (MACN 8754); same data, 1 ♀ (allotype) (MACN 8755); same data, 2 ♂, 1 ♀ (CZI); Parque Siquiman, 19 December 1986 (M. Nores), 1 ♂ (paratype) (CZI); same loc., 5 February 1987 (C. C. de Mischis), 1 ♀ (CZI); Biale Massé, 20 April 1987 (N. de Argüello), 1 ♂ (CZI).

Distribution and habitat

This species has only been collected at three localities in the hilly systems of the province of Córdoba: Parque Siquiman, Biale Massé and Pampa de San Luis. The first two localities are in the southern Valle de Punilla, a valley whose natural vegetation was the so-called "bosque serrano" (highland woods; Luti *et al.*, 1979); for several decades this area has been strongly modified by people. The biotope at Pampa de San Luis is a typical high-altitude grassland (1,900 m above sea level), with numerous rocky outcrops; the specimens were captured in a moist place, near a brook, under stones that were almost completely embedded in the soil.

Acknowledgements

I thank the following people and institutions for the loan of specimens studied: Dr Torbjörn Kronestedt (Naturhistoriska Riksmuseet, Stockholm; NRS), Dr

Emilio A. Maury (Museo Argentino de Ciencias Naturales, Buenos Aires; MACN), Lic. Ricardo Arrozpide (Museo de La Plata; MLP), and Lic. Fani Draht (Instituto Miguel Lillo, Tucumán; IML). Other material belongs to the Cátedra de Zoología I, Universidad Nacional de Córdoba (CZI). Dr Maury and James C. Cokendolpher kindly read the manuscript, and the latter provided valuable help with the English text. The present contribution is part of my Doctoral Thesis (Acosta, 1989), presented at the Facultad de Ciencias Exactas, Físicas y Naturales, Universidad Nacional de Córdoba.

References

- ACOSTA, L. E. 1989: *La fauna de escorpiones y opiliones (Arachnida) de la provincia de Córdoba*. 1-333. Doctoral thesis. Facultad de Ciencias Exactas, Físicas y Naturales, Universidad Nacional de Córdoba.
- ACOSTA, L. E. 1990: Redescripción de *Neopucroliella mesembrina* Ringuelet, 1961 nov. stat. (Opiliones, Gonyleptidae, Pachylinae). *Revta Soc.ent.argent.* **48**(1-4): 97-105.
- CANALS, J. 1935: Opiliones de la Argentina. El alotipo de *Neopucroliella Borgmeieri* (Mell.-Leit.) y descripción de tres géneros y cuatro especies nuevos. *Estudios Aracnol.* **6**: 1-12.
- CANALS, J. 1939: Nuevos opiliones de la Argentina. *Notas Mus.La Plata (Zool.)* **4**(18): 143-156.
- CANALS, J. 1943: Descripción de nuevos géneros y especies de opiliones de la subfamilia "Pachylinae". *Notas Mus.La Plata (Zool.)* **8**(63): 1-22.
- GALIANO, M. E. & MAURY, E. A. 1979: Lista de los ejemplares típicos de "Arachnida" (Araneae, Opiliones, Scorpiones y Solifugae) depositados en el Museo Argentino de Ciencias Naturales "Bernardino Rivadavia". *Revta Mus.argent.Cienc.nat.Bernardino Rivadavia (Ent.)* **5**(11): 301-334.
- HOLMBERG, E. L. 1878: Notas aracnológicas. Sobre los solpúgidos argentinos. *El Nat.Argent.* **1**(3): 69-74.
- LATZINA, F. 1899: *Diccionario geográfico argentino, con ampliaciones enciclopédicas rioplatenses* (3rd ed): 1-814. Buenos Aires, Ed. J. Peuser.
- LUTI, R., de SOLIS, M. B., GALERA, F. M., de FERREIRA, N. M., BERZAL, M., NORES, M., HERRERA, M. A. & BARRERA, J. C. 1979: Vegetación. In J. Vázquez, R. Miatello & M. Roqué (dir.), *Geografía física de la provincia de Córdoba*: 297-368. Buenos Aires, Ed. Boldt.
- MAURY, E.A. 1973: Los escorpiones de los sistemas serranos de la provincia de Buenos Aires. *Physis B.Aires (C)* **32**(85): 351-371.
- MELLO-LEITÃO, C. 1923: *Neopucroliella Borgmeieri*, especie nova de Gonyleptidae Pachylinae. In C. Bruch, Estudios mirmecológicos IV-VI. *Revta Mus.La Plata* **27**: 217-218.
- MELLO-LEITÃO, C. 1932a: Opiliões novos ou criticos. *Archos Mus.nac.Rio de J.* **33**: 117-145.
- MELLO-LEITÃO, C. 1932b: Opiliões do Brasil. *Revta Mus.paul.* **17**(2): 1-505.
- MELLO-LEITÃO, C. 1939: Les arachnides et la zoogéographie de l'Argentine. *Physis B.Aires* **17**(49): 601-630.
- RINGUELET, R. A. 1956: Anotaciones críticas sobre opiliones de la subfam. Pachylinae. *Revta Soc.ent.argent.* **19**(1-2): 17-20.
- RINGUELET, R. A. 1959: Los arácnidos argentinos del orden Opiliones. *Revta Mus.argent.Cienc.nat.Bernardino Rivadavia (Zool.)* **5**(2): 127-439.
- RINGUELET, R. A. 1961: Un nuevo opilión de Sierra de la Ventana. *Physis B.Aires* **21**(62): 326-327.
- RINGUELET, R. A. 1962: Un nuevo opilión de fauna de altura y observaciones sobre las vinculaciones evolutivas en algunos Pachylinae (Arachnida). *Revta Soc.ent.argent.* **23**(1-4): 1-6.
- RINGUELET, R. A. 1963: Opiliofauna uruguaya. *Revta Soc.ent.argent.* **24**(1-4): 35-51.
- ROEWER, C. F. 1913: Die Familie der Gonyleptiden der Opiliones-Laniatores. *Arch.Naturgesch.* **79A**(4): 1-256.
- ROEWER, C.F. 1923: *Die Weberknechte der Erde*. 1-1116. Jena, G. Fischer.
- ROEWER, C. F. 1931: Weitere Weberknechte V. V Ergänzung der: "Weberknechte der Erde", 1923. *Abh.naturw.Ver.Bremen* **28**(2-3): 101-164.
- SOARES, B. A. M. & SOARES, H. E. M. 1954: Monografía dos géneros de opiliões neotropicos. *Archos Zool.Est.S.Paulo* **8**(9): 225-302.
- THORELL, T. 1877: Sobre algunos arácnidos de la República Argentina. *Periódico zool.* **2**(4): 201-218.
- THORELL, T. 1878: Sobre algunos arácnidos de la República Argentina. *Bohn Acad.nac.Cienc.Córdoba* **2**(3): 255-272.