

A NEW SPECIES OF *PHYLLORIBATULA* BALOGH & MAHUNKA (ACARI: ORIBATEI: FENICHELIDAE) FROM ARGENTINA

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MITES
ORIBATEI
FENICHELIDAE
PHYLLORIBATULA
ONTOGENY

ACARIENS
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SUMMARY: A second species of *Phylloribatula* from saxicolous lichens (*Xanthoparmelia*) from Buenos Aires Province, Argentina, is described and illustrated. Ontogenetic development and leg chaetotaxy are given for the first time for the genus.

RÉSUMÉ : La deuxième espèce de *Phylloribatula* provenant de lichens saxicoles (*Xanthoparmelia*) de la province de Buenos Aires, Argentine, est décrite et illustrée. Le développement ontogénétique et la chaetotaxie des pattes du genre y sont donnés pour la première fois.

INTRODUCTION

Studies of the fauna living in lichens and mosses have shown their interest as possible bioindicators of pollution (ANDRÉ, 1976a, 1976b; AOKI, 1976; LEBRUN, 1976) as well as in ecological and ethological studies (AOKI, 1973; TRAVÉ, 1969). Recent studies in Argentina of the oribatid fauna from lichens have resulted in the description of new taxa for science (MARTINEZ, VELIS, EGUARAS & FERNANDEZ, 1995; FERNANDEZ, MONETTI & MARTINEZ, 1995; FERNANDEZ, MARCANGELI & MARTINEZ, 1995).

The genus *Phylloribatula* was erected by BALOGH & MAHUNKA for a new form from litter collected in a botanical garden at Asunción, Paraguay, with only one specimen. In recent studies of the mite fauna from lichens from Sierra de Los Difuntos (Buenos Aires, Argentina) specimens of a second species of

this genus were found. The number of specimens allows the description of a new species, as well as providing information on its ontogenetic development and the leg chaetotaxy of the adults.

Phylloribatula xanthoparmeliae sp. nov.

ADULT

Color, sex, size: Color light brownish and reddish (red pigmentation internal, lost when preserved in alcohol). Sex ratio: 1:1.

Dimensions: The mean total length of fifteen specimens was 404 µm (range 364–443 µm); the mean maximum notogastral width was 226 µm (range 199–266 µm). Means for females (n=7) were 423 × 236 µm; means for males (n=8) were 384 × 216 µm. An average specimen was 180 µm thick.

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Integument: Microsculpture inconspicuous and polygonal on prodorsum and notogaster.

Prodorsum and lateral podosoma (Fig. 1 A, C): Prodorsum triangular, very wide. Setae *le* on elevations of the narrow lamella, which are not true cusps. Rostral setae cylindrical and barbulated, about 25 μm long, bases difficult to see their. Lamellar and interlamellar setae filiform, 45 μm long, with small spines on dorsal side, sometimes blunt. Sensillus capitate, head denticulate (35 μm long). Bothridium hidden by notogaster in dorsal aspect. Setae *ex* very thin, about 5 μm long. Two porose areas present, better seen in lateral view (Fig. 1 C). Tutorium absent.

Notogaster: The notogaster is concave anteriorly. It is clearly separated by a sejugal furrow, but after dissecting this suture can stay complete because the notogaster can keep a piece of the prodorsum at the lower level. This means a small tectum is present, as shown by GRANDJEAN (1958) in *Topobates granifer*. There is not noticeable pteromorph. The octotaxic series comprises four pairs of saccules, the canals of which are long and granulate. Five pairs of lyrifissures present. The fourteen pairs of notogastral setae are long and clearly phylliform with apical end rounded (ca. 17 to 45 μm). Setae clearly denticulate, but their shape can vary depending on deformation and position after mounting (posterior setae apparently more acuminate).

Ventral region (Fig. 1B): The ventral region is normal for the genus. There are four pairs of genital, one pair of aggenital, two pairs of anal, and three pairs of adanal setae. Only one specimen was observed with two pairs of adanal setae. Coxisternal setation 3-1-2-3. Aggenital setae shorter and more barbulated than coxisternal setae. Custodium absent.

Gnathosoma: Subcapitulum with 3 pairs of barbulate setae, rutella strong. The pedipalpal setation (0-2-1-3-7) includes two dorsal setae on tarsus (Fig. 2 E). Setae *cm* and ventral setae lacking on tarsus. The four eupathidia (Fig. 2 F) are separate (a great difference from the closest families in Oribatuloidea). Chelicerae with two barbulate setae.

Legs (Figs. 2 A-D): All tarsi tridactylous, with empodial claw slightly thicker than the laterals. All claws with a very fine microspine on dorsal side (not illustrated in drawings). Porose areas present on tro-

chanters III, IV, all femora, tibia and tarsi. They are a large on the femora, but are small on the tibia and tarsi, lying close to setae *v* and *pv*, respectively. All setae filiform, pigmented, with external side barbulated. Basal part of the setae without any pigment or barbulation. Setal formulae for the legs (I-IV, famulus included): trochanter (0-0-1-1); femora (4-4-2-2); genua (2-2-0-1); tibia (4-4-2-2); tarsi (13-13-12-12). All setae normal, except for pair *p* of tarsus I, which is eupathidial. Solenidial formulae: genua (1-1-1-0); tibia (2-1-1-1); tarsi (2-2-0-0).

IMMATURES (Figs. 3A-D).

Color reddish, lost when preserved in alcohol. Dimensions of single larva studied were 180 \times 120 μm . Dimensions of nymphs: protonymph 185 \times 155 μm ; deutonymph 229 \times 153 μm ; tritonymph 365 \times 227 μm .

Aspis well developed in all instars, forming a complete rostral tectum anteriorly; finely porose throughout (Fig. 3 A). Sensillus capitate, denticulate, similar to that of adults, but lying in an open furrow that begins from seta *in* and continues around bothridium (Fig. 3A). Setae *in*, *le* and *ro* flagelliform, with small barbs.

Opisthosoma globular, with cuticular striations in all immature stases.

Ontogenetic setal formula for gastronomic region (larva, nymphs, adult) 12-15-14. Gastronomic setae of the larva flagelliform, with minute barbs; all setae are similar in length. In the tritonymph setae are ca. 100 μm . Porose eccentric microsclerites present at bases of all setae in all immature instars.

Setae of ventral region similar to most gastronomic setae, but shorter. Ventral region with granulate epimeric plates (granulation similar to that found on prodorsal plate). Genital setal formula (larva to adult) 0-1-2-3-4; aggenital formula 0-0-0-1-1. Coxisternal setation: larva 2-1-2 (Claparède's organ not included); protonymph 2-1-2-1; deutonymph 2-1-2-1 (4b present); tritonymph 3-1-2-2; adult 3-1-2-3. Ontogenetic anal formula is (32222) (0333) (022), shown in Figs. 3 B-E. Proral setae (*p*) eupathidial. Legs monodactylous in larva and nymphs.

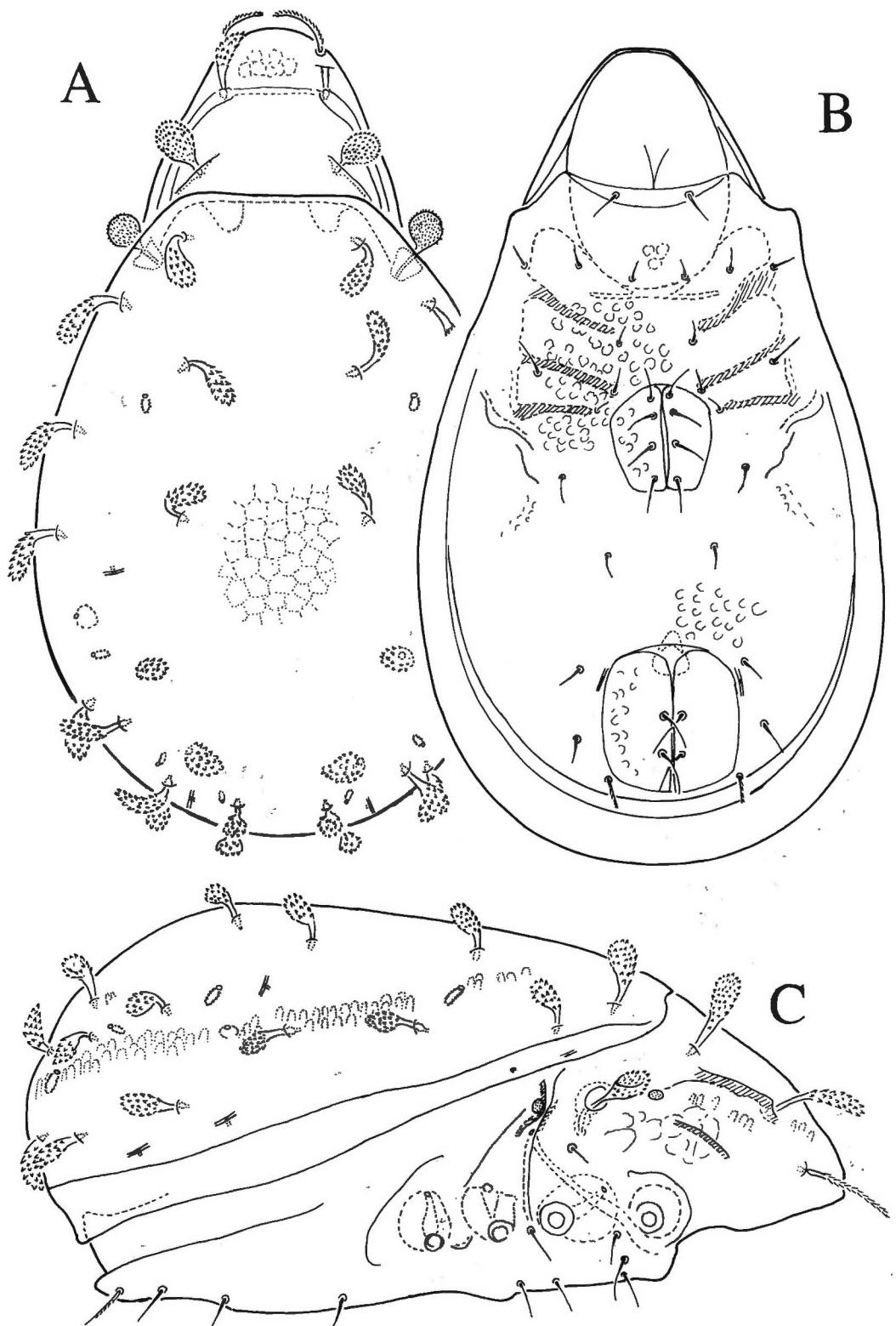


FIG. 1: *Phylloribatula xanthoparmeliae* sp. nov. Adult.
A. — Dorsal view. B. — Ventral view. C. — Lateral view.

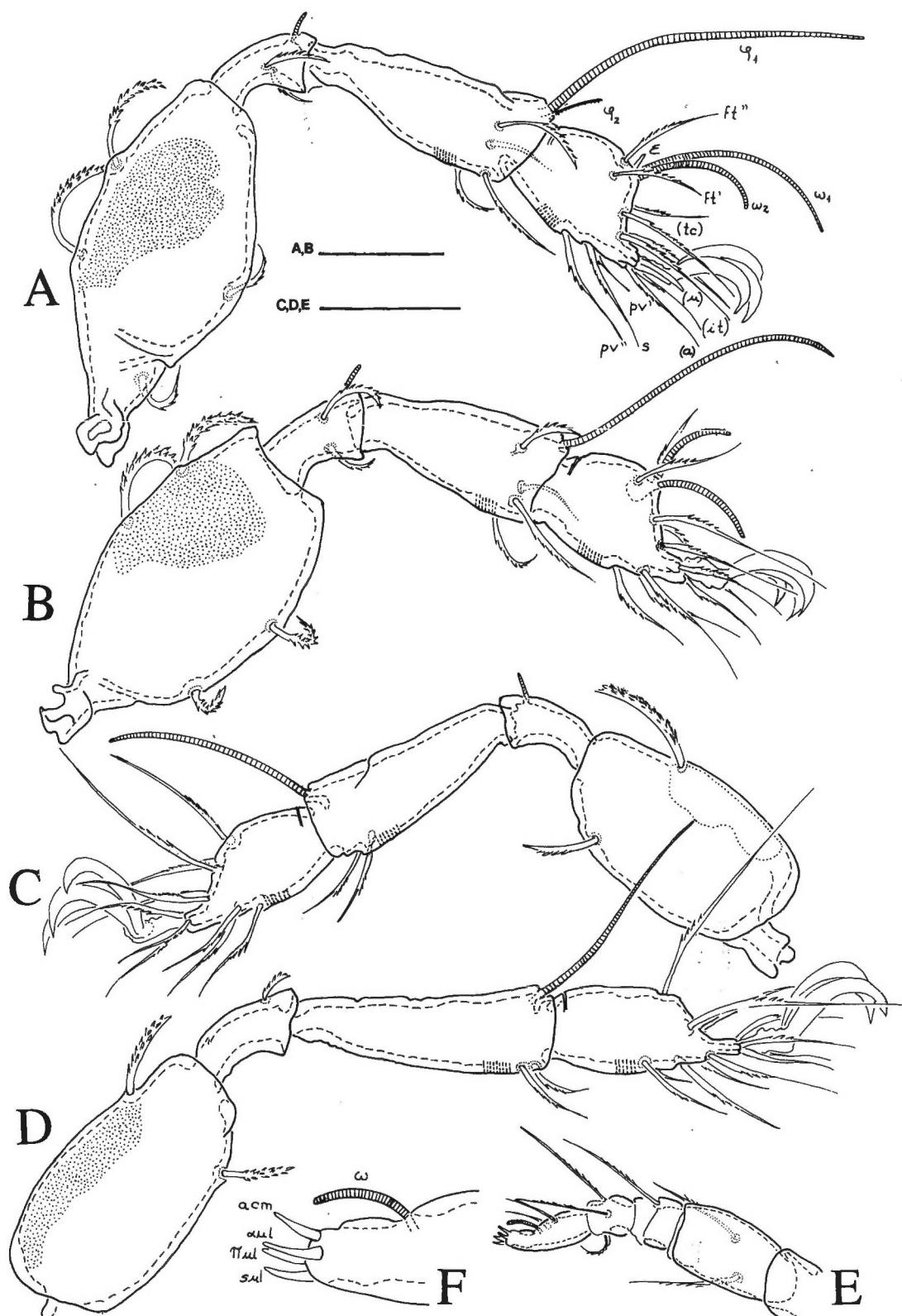


FIG. 2: *Phylloribatula xanthoparmeliae* sp. nov. Adult.

A. — Leg I, right, antiaxial. B. — Leg II, right, antiaxial. C. — Leg III, left, paraxial. D. — Leg IV, right, antiaxial. E. — Palp. F. — Scheme of palpal tarsus, showing the disposition of eupathidies and solenidia (not to scale). Scale bars = 30 μ m.

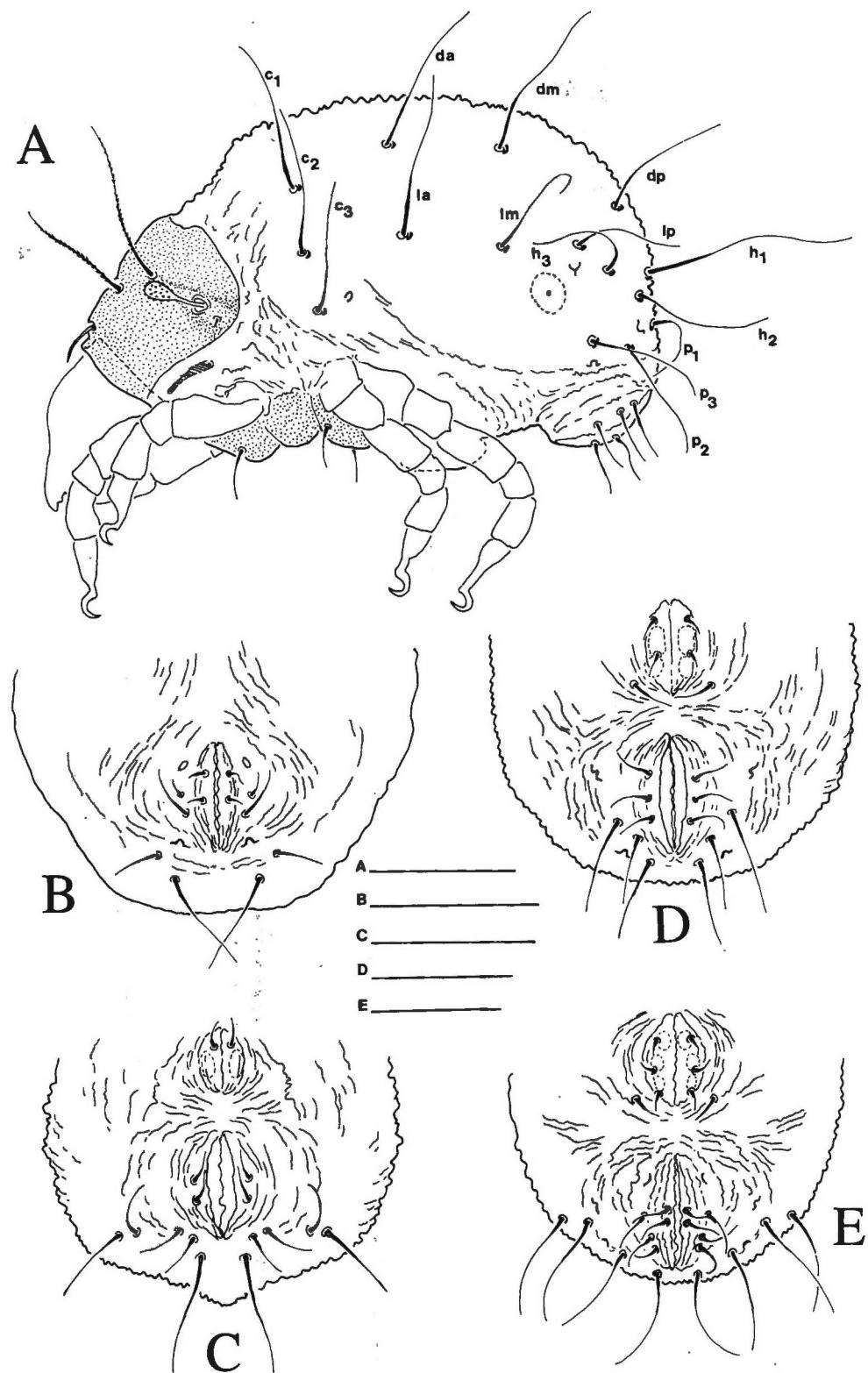


FIG. 3: *Phylloribatula xanthoparmeliae* sp. nov.

A. — Tritonymph, lateral view. B-E. — Ventroanal region of immatures. B. — Larve. C. — Protonymph. D. — Deutonymph. E. — Tritonymph. Scale bars A, E = 100 μm ; B = 60 μm ; C, D = 70 μm .

MATERIAL: Holotype female and 12 paratypes preserved in alcohol; 2 paratypes slide mounted. The holotype and 3 paratypes (2 males and one female) are kept in Laboratorio de Artrópodos, Departamento de Biología, Universidad Nacional de Mar del Plata. Two adult males and one adult female in alcohol will be deposit in the following collections: Museum of Natural History, Hungary, Laboratorio de Ecología y Sistemática de Microartrópodos, UNAM, México and Canadian National Collection, Ottawa, Canada.

ETYMOLOGY: Refers to the lichens in which this species was found.

DISCUSSION

Phylloribatula xanthoparmeliae sp. nov. clearly differs from the type species, *P. pulchella*, in the length (new species 404 versus 274 µm in *P. pulchella*). Other differences are the end of the phylliform setae rounded in the new species (not pointed) and the dorsose-jugal suture lacking the indentations seen in *P. pulchella*.

REMARKS

The family Fenichelidae was created (BALOGH & BALOGH, 1984) to put together the genera *Fenichelia*, *Brassiella*, *Plumbobates*, *Constrictobates* and *Phylloribatula*, but these were only characterized by the adult morphology (sacculi, pteromorphae, etc.), without including the morphology of the legs or the immature stases. It would be preferable to include in the diagnosis of this family characteristics of the immatures and of the legs and pedipalps of the adults in order to have a natural classification (GRANDJEAN, 1953).

We therefore propose to characterize the family as follows: Nymphs with microsclerites, unideficient. Genital setae development (1-2-3-4). Paraproctal atrichosy in proto- and deutonymphs. The four pedipalpal eupathidia are free, no association of the eupathidium *Acm* with the solenidion ω to form a "double horn". There are no dorsal setae associated with solenidia on genua and tibia. No custodium, discidium or tutorium.

Among the characteristics mentioned above, the absence of a "double horn" is an important difference between the family Fenichelidae and most of the poronotic families, such as Oribatulidae, with which this genus was first included.

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Thanks to Dr Margarita OSTERRIETH, Centro de Geología de Costas y Cuaternario, Universidad Nacional de Mar del Plata, this project on the study of soil microarthropods from Argentina became possible. Dr S. MAHUNKA (Natural History Museum of Budapest) reviewed and corrected the drawings. This work forms part of a Project of International Exchange between Universidad Nacional de Mar del Plata and Universidad Nacional Autónoma de México.

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