

## New species of oribatids (Acari) from the neotropical region

BY  
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**Abstract.** Nine new oribatid species (Acari) are recorded from Brazil and Costa Rica. In the first part four species of the family Malaconothridae (*Malaconothrus rohri*, *Trimalaconothrus oppositus*, *T. itatiaiae* and *T. humeratus* spp. n.), in the second part five species of the family Galumnidae (*Galumna laselvae*, *G. irazu*, *G. agueroi*, *Pergalumna sura* and *P. horvathorum* spp. n.) are described.

### I. Four new Malaconothridae species from Brazil

The *Malaconothridae* are zoogeographically twofold interesting oribatids: 1) They are thelythokous, parthenogenetic oribatids. 2) Some species have so called "Gondwanan" distribution, i.e. they occur only on the late Gondwana plates. One of the new species, *Trimalaconothrus oppositus*, belongs to this type.

#### *Malaconothrus rohri* sp. n.

(Figs. 1-2)

**Measurements.** Length: 410  $\mu\text{m}$ , width: 189  $\mu\text{m}$ .

**Prodorsum.** Lamellar setae slightly widened, narrowly blade-shaped; originating between the prodorsal ridges. Rostral setae almost parallel, originated on the tip of prodorsal ridges; basally connected with a translamellar line. Interlamellar setae longer and thinner than sensillus.

**Notogaster.** All notogastral setae smooth; slightly widened; except setae  $h_2$  which are setiform and longer than the remaining notogastral setae.

Notogastral ridges well developed.

**Ventral side.** Epimeral setal formula: 3-1-3-2. Setae  $3b$ ,  $3c$  and  $4c$  much longer and stronger than the remaining epimeral setae. Five pairs of genital setae; the 1st to 4th pairs are short, the 5th extremely long, more than four times longer as the last pairs of genital setae. One pair of anal setae represented by alveoli. Three pairs of long, narrowly blade-shaped adanal setae.

Legs monodactyle.

**Material examined.** Brazil, Sao Paulo, Ilha de Sao Sebastiano, Parque Estadual de Ilhabela, tropical rain forest; moss on trees and rocks, approx. altitude 350 m, 8. May 1990. BR. 90 B. 16-17, 1 holotype, 16 paratypes. Collected by Dr. J. BALOGH.

**Remarks:** This new species belongs to the *Malaconothrus plumosus* species-group (species with 5 pairs of genital setae and with well-developed notogastral ridges); near to *Malaconothrus hauseri* MAHUNKA, 1983; but the lamellar setae of *M. hauseri* originate on

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the end of the prodorsal ridges, and the margo of notogastral setae ciliate. (*M. rohri*: notogastral setae smooth).

Derivatio nominis. Dr. RODOLFO ROHR (Campinas, Sao Paulo State, Brazil), engineer of Hungarian descent, called our attention to the remnant patches of undisturbed rainforests near Sao Paulo and offered his fazenda to serve as a research base for our studies.

***Trimalacnothrus oppositus* sp. n.**

(Figs. 3-4)

Measurements. Length: 488  $\mu\text{m}$ , width: 230  $\mu\text{m}$ . Prodorsum rostral and lamellar setae medium long, of the same length. Interlamellar setae very long: longer than distance between interlamellar and lamellar setae. Sensillus very short. Interlamellar region with evanescent, irregular large foveolae.

Notogaster. All notogastral setae of the same length, very thin, flagellate, smooth. Setae *p*, somewhat shorter. Notogaster: without sclerotized ridges.

Ventral side. Epimeral setal formula: 2-1-3-2. Setae *3b*, *3c* and *4b* much longer than the remaining epimeral setae. Five or six pairs of genital setae: posterior one originated close to the posterior border and directed forwards as in *Tr. opisthosetosa*, *platyrhynchus*, *oxyrhinus*, *angustirostrum*; the remaining 4-5 setae originated on the anterior half of genital plates and directed backwards. Anal plates with 2 setal setal alveoli; adanal plates with 3 pairs of long and thin setae.

Legs tridactyle.

Material examined. Serra do Mantiguera, Parc National "Itatiaia", Itaporani path, near to Itaporani waterfall, cca 1500 m, very wet mosses on trees and rocks, 27. May 1992, BR-92, B.8-B.11, 1 holotype, 5 paratypes. Collected by Dr. J. BALOGH.

Remarks. The genital setation is reminiscent of *Trimalacnothrus opisthoseta* group.

Derivatio nominis. Named after the opposite position of posterior genital setae.

***Trimalacnothrus itatiaiae* sp. n.**

(Figs. 5-6)

Measurements. Length: 531  $\mu\text{m}$ , width: 324  $\mu\text{m}$ .

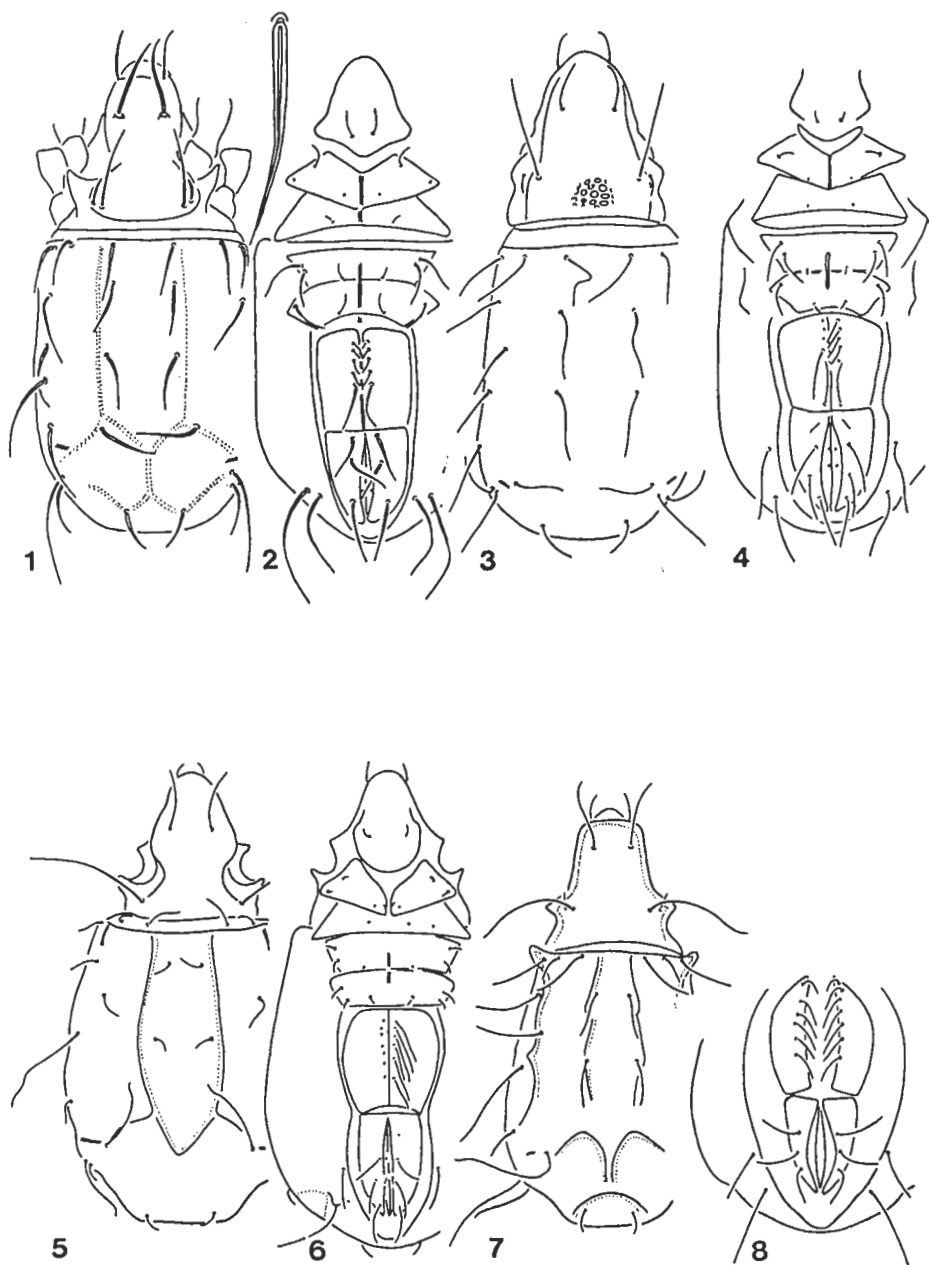
Prodorsum. Rostral setae short: shorter than the distance between their alveoli. Lamellar setae medium long: longer than distance between the lamellar and rostral alveoli. Interlamellar setae extremely long: almost as long as the length of prodorsum. Sensillus extremely short. All prodorsal setae fine smooth. Prodorsal ridgers S-shaped.

Notogaster. Strong notogastral heterotrichy: setae *e*<sub>2</sub>, *h*<sub>1</sub>, *h*<sub>2</sub> and *ps*<sub>2</sub> flagellate, the remaining fine and short (excepting *ps*<sub>3</sub> and *c*<sub>1</sub>, which are a little longer). Notogaster with sclerotized ridges.

Ventral side. Epimeral setal formula: 3-1/2/-3-3. All epimeral setae short. Genital plates with 6-7 pairs of long setae. Anal plates with 2, adanal plates with 3 pairs of setae.

Legs tridactyle.

Material examined. Serra do Manituera, Parc National "Itatiaia", Itaporani path, near to Itaporani waterfall, cca 1500 m, very wet mosses on trees and rocks, 27. May 1992, BR-92, B. 8-11, 1 holotype, 3 paratypes. Collected by Dr. J. BALOGH.



Figs. 1-8. 1-2. *Malaconothrus rohri* sp. n. 1: dorsal aspect, 2: ventral aspect. — 3-4. *Trimalaconothrus oppositus* sp. n. 3: dorsal aspect, 4: ventral aspect. — 5-6. *Trimalaconothrus itatiaiae* sp. n. 5: dorsal aspect, 6: ventral aspect. — 7-8. *Trimalaconothrus humeratus* sp. n. 7: dorsal aspect, 8: anogenital region

Remarks. The new species belongs to the *Trimalaconothrus novus* (SELLNICK, 1931) species-group. The species of this group have sclerotized notogastral ridges and 7-11 pairs of genital setae.

Derivatio nominis. Named after the Parc National "Itatiaia".

***Trimalaconothrus humeratus* sp. n.**

(Figs. 7-8)

Measurements. Length: 488  $\mu\text{m}$ ; width: 246  $\mu\text{m}$ .

Prodorsum. Rostral setae short; lamellar setae more than twice longer than rostral setae. Interlamellar setae the longest: longer than the distance between interlamellar and lamellar setal alveoli. Sensillus very short: much shorter than rostral setae. Interlamellar area in two groups with 3-4 evanescent foveolae.

Notogaster. Well developed sclerotized ridges; the sublateral ones bearing each a protruding humeral process. Notogastral setae  $c_3$  originate at the basis of this process. Weak noto-gastral heterotrichy: setae  $e_2$ ,  $h_1$ ,  $h_2$  and  $ps_2$  long, flagellate; setae  $ps_2$  and  $c_2$  short, the remaining notogastral setae long and short.

Ventral side. Genital plates with 6-7 pairs of setae. Anal plates with one short, adanal plates possessing three long setae.

Material examined. Serra do Mar, Parc National "Caraugatatuba", mosses on trees, 9. May 1990, BR-90, B.27, 1 holotype. Collected by Dr. J. BALOGH.

Key to these three *Trimalaconothrus* species

- 1 (2) Notogaster without sclerotized ridges. Five or six pairs of genital setae present; posterior ones originated close to the posterior border and directed forward:  
*oppositus* sp. n.
- 2 (1) Notogaster with sclerotized ridges. Six or seven pairs of genital setae present; all directed backwards.
- 3 (4) Setae  $d_1$  and  $e_1$  very short: interlamellar setae about four or five times longer than setae  $d_1$  and  $e_1$ . Sublateral sclerotized ridges weakly developed; without protruding humeral process:  
*humeratus* sp. n.
- 4 (3) Setae  $d_1$  and  $e_1$  medium long: interlamellar setae about two times longer than setae  $d_1$  and  $e_1$ . Sublateral sclerotized ridges well developed bearing each a protruding humeral process:  
*itatiaiae* sp. n.

II. New species of Galumnidae from Costa Rica

Although the Neotropical Region is relatively well-known in comparison with other tropical regions, there are areas where hardly anything is known of their oribatid mites. One of these is Costa Rica. So far only two publications have appeared on the oribatid fauna of this country. MAHUNKA (1982) mentioned 10 species from Turritalba, of which 7 were new to science. In my first publication from Costa Rica a new genus, *Bornemiszaella* P. BALOGH, 1994 was established, and three new species were described. The genus *Bornemiszaella*, together with *Varioppia* MAHUNKA, substitute in the Neotropical Region the genera *Granuloppia* J. BALOGH, 1958 and *Pocsoppia* MAHUNKA, 1984 living in the

Aethiopian Region and *Senectoppia* (= *Macrosoma* HAMMER, 1979) living in the Oriental Region.

This contribution presents the description of five new species of the family Galumnidae.

***Galumna laselvae* sp. n.**

(Figs. 9-12)

**Measurements.** Length: 381-385  $\mu\text{m}$ , width: 274  $\mu\text{m}$ .

**Prodorsum.** Lamellar and sublamellar lines almost parallel. All prodorsal setae smooth, their ratio:  $ro > le > in$ . Setae in extremely short hardly visible. Lamellar setae originate nearer to lamellar line. Sensillus asymmetrically incrassate, with 8-10 short ciliae unilaterally.

**Notogaster.** Median part of dorsosejugal suture reduced. Area porosa dorsosejugal is narrow. Ten pairs of small alveoli; four pairs of areae porosae; *Aa* the largest, slightly obliquely elongate. *A*<sub>1</sub> smaller, *A*<sub>2</sub> and *A*<sub>3</sub> the smallest, about twice longer than wide.

**Epimeral region.** Epimeral setal formula: 1-0-2-1.

**Ventral side.** All setae very short or only with their alveoli represented. Two pairs of genital setae arising at the anterior margin of genital plates. Area porosa postanal is band-shaped, almost linear, as long as the width of genital plates.

All legs tridactyle, heterodactyle.

**Material examined.** Costa Rica, Parc National "La Selva", tropical rainforest, composing litter and soil, 12. January 1992: NC-B.13, 1 holotype, 16 paratypes. Collected by Dr. J. BALOGH.

**Remarks.** The new species belongs to the "*integrae-curtipili*" group, i.e. to the species with medially interrupted dorsosejugal suture and with extremely short interlamellar setae. Farther remarks can be found following the description of *Galumna agueroi* sp. n.

Derivatio nominis: Named after Parc National "La Selva".

***Galumna irazu* n. sp.**

(Figs. 13-16)

**Measurements.** Length: 795  $\mu\text{m}$ , width: 615-672  $\mu\text{m}$ .

**Prodorsum.** Lamellar and sublamellar lines almost parallel, their ratio:  $le > ro > in$ . Setae in extremely short, hardly visible. Lamellar setae originate nearer to lamellar line. All prodorsal setae smooth. Sensillus apically gradually incrassate, without cilia.

**Notogaster.** Median part of dorsosejugal suture reduced. Area porosa dorsosejugal is small, about twice longer than wide, rounded. Ten pairs of small alveoli. Three or four pairs of areae porosae. Area porosa *Aa* the largest, about twice longer than *A*<sub>1</sub> to *A*<sub>3</sub>. Aerae porosae *A*<sub>1</sub> and *A*<sub>2</sub> very near to each other, mostly fused. (Bilaterally fused, i.e. altogether 3 pairs of areae porosae: 6 exemplars; unilaterally fused: 4 exemplars; 4 pairs of areae porosae: i.e. *A*<sub>1</sub> and *A*<sub>2</sub> near to each other but well separated: 1 exemplar.) Median porus present.

**Epimeral region.** Epimeral setal formula: 1-0-2-0 (?).

**Ventral side.** Three pairs of genital setae arising at the anterior margin of genital plates. Area porosa postanal is not visible.

All legs tridactyle, heterodactyle.

Material examined. Costa Rica, vulcano Irazu, ca 3000 m, rest of an oak forest, moss on the barks, 1 holotype, 10 paratypes. Collected by Dr. J. BALOGH.

Remarks. The new species belongs to the "*integrae-curtipili*"-group. Farther remarks are found following the description of *Galumna agueroi* sp. n.

Derivatio nominis. Named after vulcano Irazu.

*Galumna agueroi* sp. n.

(Figs. 17-22)

Measurements. Length: 435  $\mu\text{m}$ , width: 318  $\mu\text{m}$ .

Prodorsum. Lamellar and sublamellar lines parallel. All prodorsal setae smooth; their ratio:  $ro > le > in$ . Setae in very short, hardly visible. Lamellar setae originate near to lamellar line. Sensillus long, smooth, apically very slightly dilated, with acuminate tip.

Notogaster. Median part of dorsosejugal suture reduced. Area porosa dorsosejugal narrow. Ten pairs of alveoli in normal position. Four pairs of areae porosae. *Aa* obliquely el-ongate, at least thrice longer than wide. Araeae porosae *A*<sub>1</sub>-*A*<sub>3</sub> much smaller: *A*<sub>1</sub> small, circu-lar, *A*<sub>2</sub> and *A*<sub>3</sub> very small, almost punctiform, hardly visible.

Epimeral region. Epimeral setal formula: 1-0-2-1.

Ventral side. Two pairs of genital setae arising at the anterior margin of genital plates. Ventral setae very short but well observable. Area porosa postanalis band-shaped, transversal, shorter than the width of genital plates.

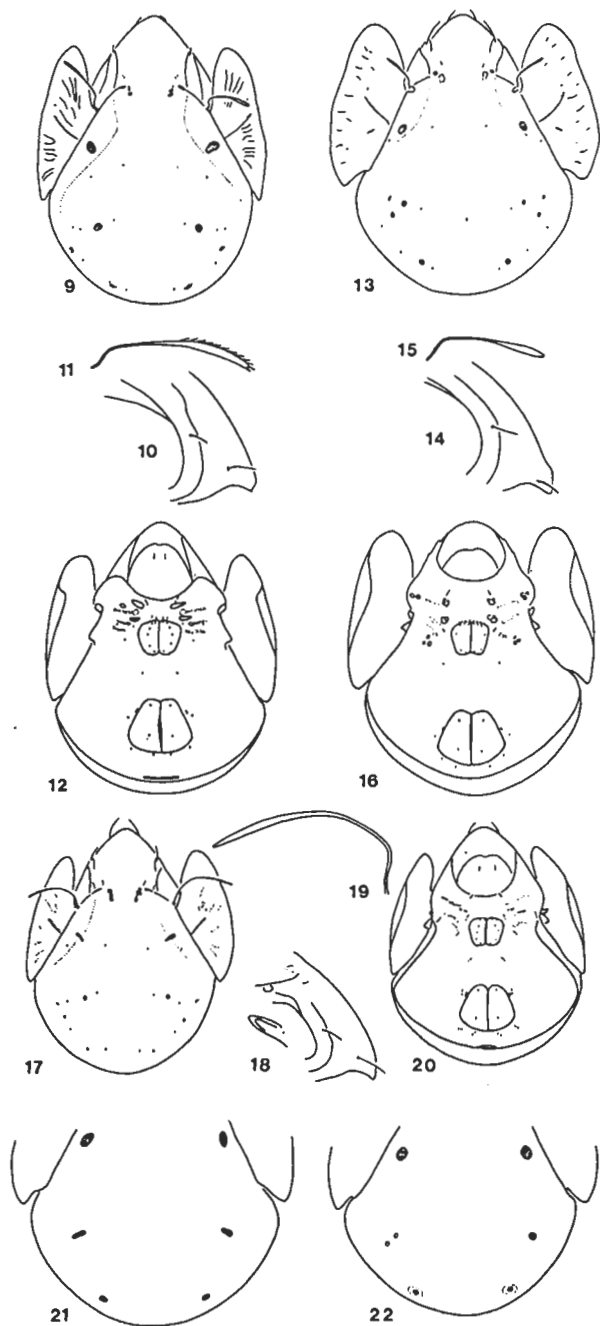
All legs tridactyle, heterodactyle.

Material examined. Costa Rica, Cerro la Muerty, 3400 m, montane rainforest, edaphic-atmospheric association, very low soil pH, *Garrya laurifolia*-*Hesperomeles heterophylla*-*Vaccinium consanguineum*-*Pernottia coriaca*-*Ugni montana*-*Clethra gelica*-*Escallonia poosana* association, moss on barks. 24. January 1992. Collected by Dr. J. BALOGH.

Derivatio nominis. Named after Dr. RENAN AGUERO, Director CIPROC, Escuela de Fitotecnia, Universidad de Costa Rica, San José, Costa Rica.

Key to these three species of the genus *Galumna*

- 1 (2) Sensillus slightly incrassate; unilaterally with 8-10 short ciliate. Two pairs of genital setae arising at the anterior margin of genital plates. Length: 381-385  $\mu\text{m}$ .— Costa Rica, tropical rainforest: *laselvae* sp. n.
- 2 (1) Sensillus slightly incrassate, smooth, without setae.
- 3 (4) Three pairs of genital setae arising at the anterior margin of genital plates. *A*<sub>1</sub> and *A*<sub>2</sub> mostly fused: therefore 3 pairs of areae porosae present. Araeae porosae *A*<sub>3</sub> well observable. Median pore present. Length: 795-887  $\mu\text{m}$ . — Costa Rica, Vulcano Irazu 3000 m, paramo: *irazu* sp. n.
- 4 (3) Two pairs of genital setae arising at the anterior margin of genital plates. *A*<sub>1</sub> and *A*<sub>2</sub> always separated; *A*<sub>2</sub> and *A*<sub>3</sub> very small, punctiform. Median pore absent. Length: 435  $\mu\text{m}$ . — Costa Rica, Serra do Muerte, 3400 m, paramo: *agueroi* sp. n.



Figs. 9-22. 9-12. *Galumna laselvae* sp. n. 9: dorsal aspect, 10: podosoma, lateral aspect, 11: sensillus, 12: ventral aspect. — 13-16. *Galumna irazu* sp. n. 13: dorsal aspect, 14: podosoma, lateral aspect, 15: sensillus, 16: ventral aspect. — 17-22. *Galumna agueroi* sp. n. 17: dorsal aspect, 18: lateral aspect, 19: sensillus, 20: ventral aspect, 21: notogaster with the area porosae (variant), 22: notogaster with the area porosae (variant)

*Pergalumna sura* sp. n.

(Figs. 19–21)

Measurements. Length: 443–463  $\mu\text{m}$ , width: 336–377  $\mu\text{m}$ .

Prodorsum. Lamellar and sublamellar lines almost parallel. Interlamellar setae on the apical half with some short ciliae. Lamellar and rostral setae smooth. Ratio of the prodorsal setae:  $ro > le = ro$ . Lamellar setae originate near to lamellar line. Sensillus very long, densely ciliate; with 25–30 very short ciliate.

Notogaster. Dorsosejugal suture absent. Areae porosae dorsosejugalis obliquely elongate, almost band-shaped. Ten pairs of alveoli; 3 pairs of areae porosae. Areae porosae  $Aa$  transversal, much longer than wide; inner (=paraxial) part broadly rounded, outer (=antaxial) part pointed. Areae porosae  $A_1$  rounded with an obscure parabolic elongation posteriorly;  $A_2$  absent,  $A_3$  almost rounded.

Ventral side. Epimeral setal alveoli evanescent, hardly visible. Genital setae very short; at the anterior margin 2 pairs of genital setae. Aggenital adanal and anal setae only with their alveoli represented.

All legs tridactyle, heterodactyle.

Material examined. Costa Rica, Parc National "La Selva", tropical rainforest, composing litter and soil, 12 January 1992: NC-B. 13, 1 holotype, 13 paratypes. Collected by: Dr. J. BALOGH.

Remarks. The new species belongs to the "integrae-longipili" group, i.e. *Pergalumna* without dorsosejugal suture and with long interlamellar setae. In this group there is a subgroup: species with transversal, band-shaped  $Aa$  and with 3 pairs of areae porosae. In this subgroup only *Pergalumna sura* sp. n. has peculiar  $A_1$  with an obscure parabolic elongation.

Derivation nominis. "Sura" is the name of a path in the Parc National "La Selva".

*Pergalumna horvathorum* sp. n.

(Figs. 23–26)

Measurements. Length: 394–410  $\mu\text{m}$ , width: 295  $\mu\text{m}$ .

Prodorsum. Lamellar and sublamellar lines divergent. Prodorsal setae smooth. Ratio of prodorsal setae:  $in > le > ro$ . Lamellar setae originate near to lamellar line. Sensillus medium long, setiform, sparsely ciliate, with 14–15 short ciliae.

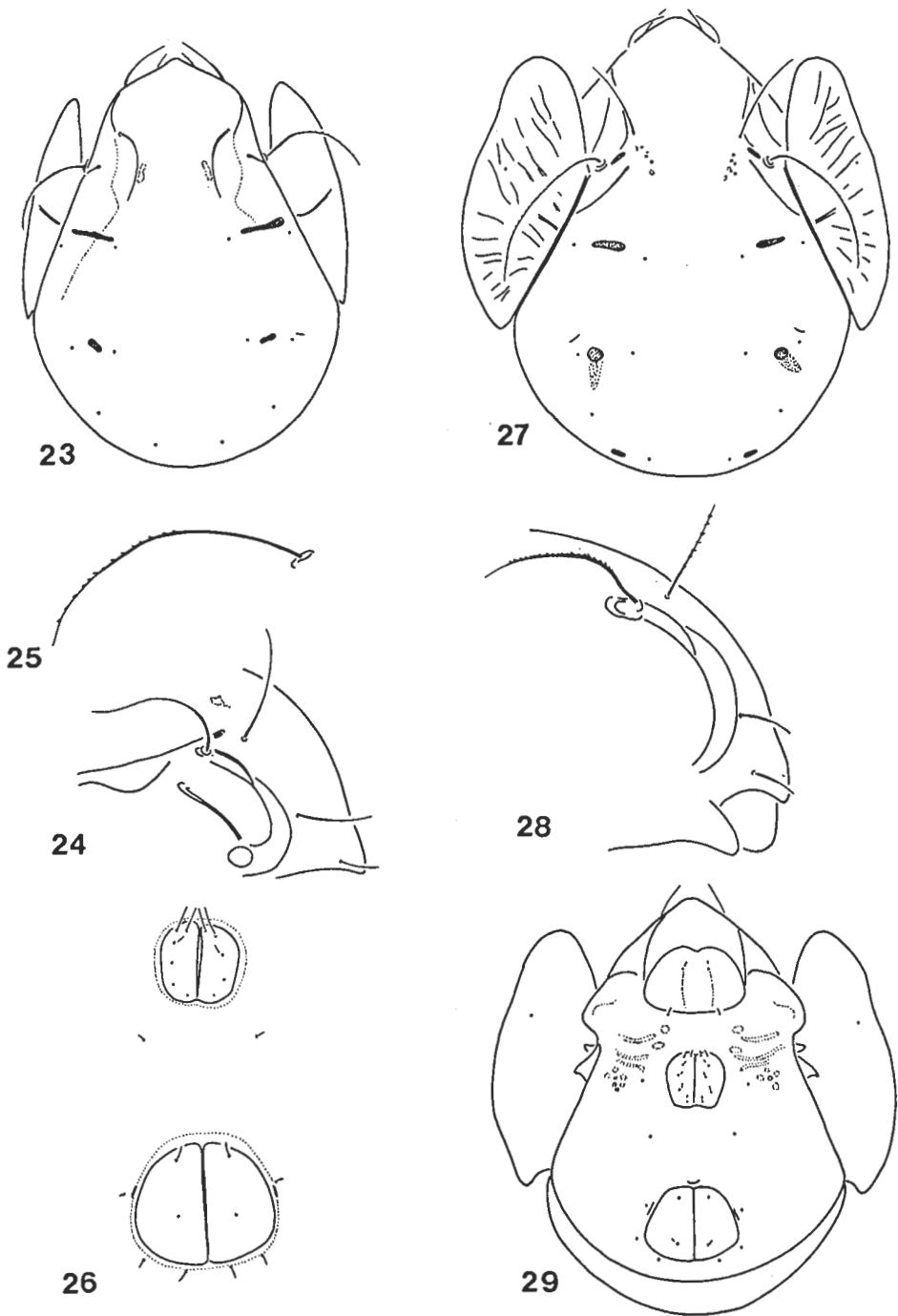
Notogaster. Dorsosejugal suture absent. Only 2 pairs of areae porosae observable:  $Aa$  and  $A_1$ . Areae porosae  $Aa$  band-shaped, long, transversal, between the alveoli  $te$  and  $ti$ ; areae porosae  $A_1$  small, irregularly kidney-shaped; margins of areae porosae irregularly undulated.

Ventral side. Ventral setae short but well discernible. At the anterior margin of genital plates 2 pairs of genital setae.

All legs tridactyle, heterodactyle.

Material examined. Costa Rica, Cerro la Muerty, 3400 m, montane rainforest; edaphic-atmospheric association, very low soil pH, *Garrya laurifolia*-*Hesperomeles heterophylla*-*Vaccinium consanguineum*-*Pernottia coriacea*-*Ugni montana*-*Clethra gelica*-*Escallonia poasana*





Figs. 23–29. 23–26. *Pergalumna horvathorum* sp. n. 23: dorsal aspect, 24: podosoma, lateral aspect, 25: sensillus, 26: genital and anal plates. – 27–29. *Pergalumna sura* sp. n.: 27: dorsal aspect, 28: podosoma, lateral aspect, 29: ventral aspect

association, moss on barks, 24. January 1992. CR. 92, B.67,1 holotype, 1 paratype. Collected by Dr. J. BALOGH.

Remarks. The new species belongs to the "*integrae-longipili*" group. Only *Pergalumna sura* sp. n. and *Pergalumna horvathorum* sp. n. have band-shaped, transversal Aa, but *horvathorum* sp. n. has no third pair of areae porosae and A<sub>1</sub> without obscure parabolic elongation.

Derivatio nominis. We wish to express our gratitude to His Excellency Dr. ZSOLT HORVÁTH for his labours in establishing scientific cooperation between Hungary and Costa Rica, and for personally providing assistance during the expeditions. This new species is named in honour of him and his family.

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