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Oribatids from Switzerland III (Acari: Oribatida: Oppiidae 1 and Quadroppiidae). (*Acarologica Genavensia* XCIII)

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Oribatids from Switzerland III (Acari: Oribatida: Oppiidae 1 and Quadroppiidae). (*Acarologica Genavensia* XCIII). – Oppioid oribatids taken from soil samples in Switzerland are recorded. There are 15 species, of which 6 are new for science and one of them also represents a new genus: *Paramedioppia* gen. n. (Oppiidae). The following 5 new combinations are proposed: *Berniniella conjuncta* (Strentzke) comb. n. et stat. n. = *Oppia sigma conjuncta* Strentzke, 1951; *Berniniella hauseri* (Mahunka) comb. n. = *Oppia hauseri* Mahunka, 1974; *Berniniella serratirostris* (Golosova) comb. n. = *Oppia serratirostris* Golosova, 1970; *Dissorhina signata* (Schwalbe) comb. n. = *Oppia signata* Schwalbe, 1989; *Lauroppia maritima* (Willmann) comb. n. = *Oppia maritima* Willmann, 1929; 1 species is placed in synonymy: *Oppiella rafalskii* Opłotna & Rajski, 1983 = *Berniniella hauseri* (Mahunka, 1974): syn. n. In addition 2 species (still not recorded for Switzerland) are discussed, in this way a total of 17 oppioid species are considered. Morphological and distributional data of 11 species are provided and the nature of relationships and some additional morphological characters are discussed.

Key-words: Acari - Oribatida - Oppiidae - Quadroppiidae - taxonomy - new species - new genus - new combinations - Switzerland.

INTRODUCTION

Our revision work regarding the oribatids of Switzerland, which will eventually be incorporated into a book, has several times been mentioned (e.g. Mahunka, 1993, 1996a). For the very simple reason that at least another 4-5 years will have to elapse until the appearence of this book, we believe that all the taxonomic novelties and specific faunistic data should be published in order to complement the ever increasing number of taxonomic and zoogeographic researches. This time we propose to discuss a part of the available information gained in connection with species belonging to the superfamily of Oppioidea.

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We should stress that, in referring to the taxon superfamily, we adopt the system incorporating e.g. the following families: Oppiidae, Quadroppiidae and Suctobelbidae. In this paper we discuss especies belonging to the families Oppiidae Grandjean, 1951 and Quadroppiidae Balogh, 1983. The subfamilial division within the family Oppiidae seems quite unsuitable for further subdivisions, especially since there are many genera (see Mahunka, 1999).

List of localities

GE-4 = Switzerland: Genève: Frontenex, pieds souches chênes; 14.VII.1980; leg. C. Besuchet – (33).
GR-6 = Switzerland: Graubünden: Landquart, pieds aulne (*Alnus*); 26.IX.1983; leg. C. Besuchet – (118).
GR-8 = Switzerland: Graubünden: Samnaun, alpine Wiesen mit *Rhododendron*, Gesiebe, 2050m; 26.VIII.1968; leg. C. Besuchet – (26).
GR-9 = Switzerland: Graubünden: Santa Maria – Paß Umbrail, Gesiebe, 2000m; 5.VIII.1974; leg. C. Besuchet – (37).
GR-10 = Switzerland: Graubünden: Untervaz b. Chur, mousses; 29.IX.1983; leg C. Besuchet – (126).
LU-1 = Switzerland: Luzern: Eigenthal, près Eigenthal (village) Forenmoos, *Sphagnum*, 970m.; 2.VIII.1996; leg. C. Besuchet – (108).
NW-1 = Switzerland: Nidwald: Musenalp, oberhalb Niederrickenbach, mousses dans lappiaz, 1800m; leg. C. Besuchet – (113).
NW-2 = Switzerland: Nidwald: Pilatus, tamisage rhododendron, 1800m; 14.VI.1984; leg. I. Löbl – (123).
NW-3 = Switzerland: Nidwald: Trübsee, mousses près source, 1800m; 8.IX.1997; leg. C. Besuchet – (127).
SO-5 = Switzerland: Solothurn: Schottwill, Bucheggberg, Rindenmoos von lebendem Baum; 27.IX.1987; leg. S. Mahunka & L. Mahunka-Papp – (47).
SZ-3 = Switzerland: Schwyz: Pragelpaß, mousses sapins, 1650m; 25.VIII.1983; leg. I. Löbl – (116).
TI-5 = Switzerland: Tessin: Monadello - Moneto, im faulenden Laub, 850m; 23.IV.1992; leg. C. Besuchet – (91).
TI-9 = Switzerland: Tessin: Nufenen-Paß, Boden, dürres Laub und Baummulm aus einem Lärchenwald; 15.VI.1979; leg. S. Mahunka & L. Mahunka-Papp – (18).
TI-11 = Switzerland: Tessin: Rancate, forêt de châtaigniers, tamisages; 7.IX.1965; leg. C. Besuchet – (25).
VS-4 = Switzerland: Valais: Daubensee, mousses et herbes, 2200m; 11.VIII.1980; leg. C. Besuchet – (32).
VS-8 = Switzerland: Valais: Forêt de Finges, souches pins (*Pinus*); 14.VIII.1980; leg. C. Besuchet – (5).

LIST OF IDENTIFIED SPECIES

OPPIIDAE Grandjean, 1951

Berniniella conjuncta (Strentzke, 1951) comb. et stat. n.
Locality: NW-2.
Distribution: Germany; first record for Switzerland.

Berniniella hauseri (Mahunka, 1974) comb. n.
Localities: GR-6; TI-11.
Distribution: Europe; first record for Switzerland.

Dissorhina signata (Schwalbe, 1989) comb. n.
Locality: GR-9.
Distribution: Germany (known from the type locality only); first record for Switzerland.
Lauroppia hauseri sp. n.
Localities: TI-5; TI-11.
Lauroppia maritima (Willmann, 1929) comb. n.
Localities: SO-5; TI-9.
Distribution: Palearctic Region; first record for Switzerland.
Lauroppia obscura sp. n.
Localities: GR-8; VS-4; VS-8.
Moritzoppia incisa sp. n.
Localiy: NW-3.
Moritzoppia keilbachi (Moritz, 1969)
Locality: SZ-3.
Distribution: Europe; first record for Switzerland.
Oppiella besucheti sp. n.
Locality: SZ-3.
Oppiella propinqua sp. n.
Locality: LU-1.
Oxyoppioides decipiens (Paoli, 1908)
Locality: GE-4.
Distribution: Central and Southern Europe, Caucasus; first record for Switzerland.
Paramedioppia helvetica gen. n., sp. n.
Locality: TI-9.
Subiasella quadrimaculata (Evans, 1952)
Locality: GR-10.
Distribution: Europe; first record for Switzerland.

QUADROPPIIDAE Balogh, 1983

Quadroppia longisetosa Mínguez, Ruiz & Subías, 1985
Locality: NW-1.
Distribution: Southern Europe; first record for Switzerland.
Quadroppia michaeli Mahunka, 1977
Locality: not recorded for Switzerland.
Distribution: Greece and Spain.
Quadroppia omodeoi Mahunka & Paoletti, 1984
Locality: not recorded for Switzerland.
Distribution: Italy.
Quadroppia cf. *paolii* Woas, 1986
Locality: GR-10.
Distribution: Palearctic Region; first record for Switzerland.

DESCRIPTION AND REDESCRIPTION OF SOME OF THE OPPIOID SPECIES

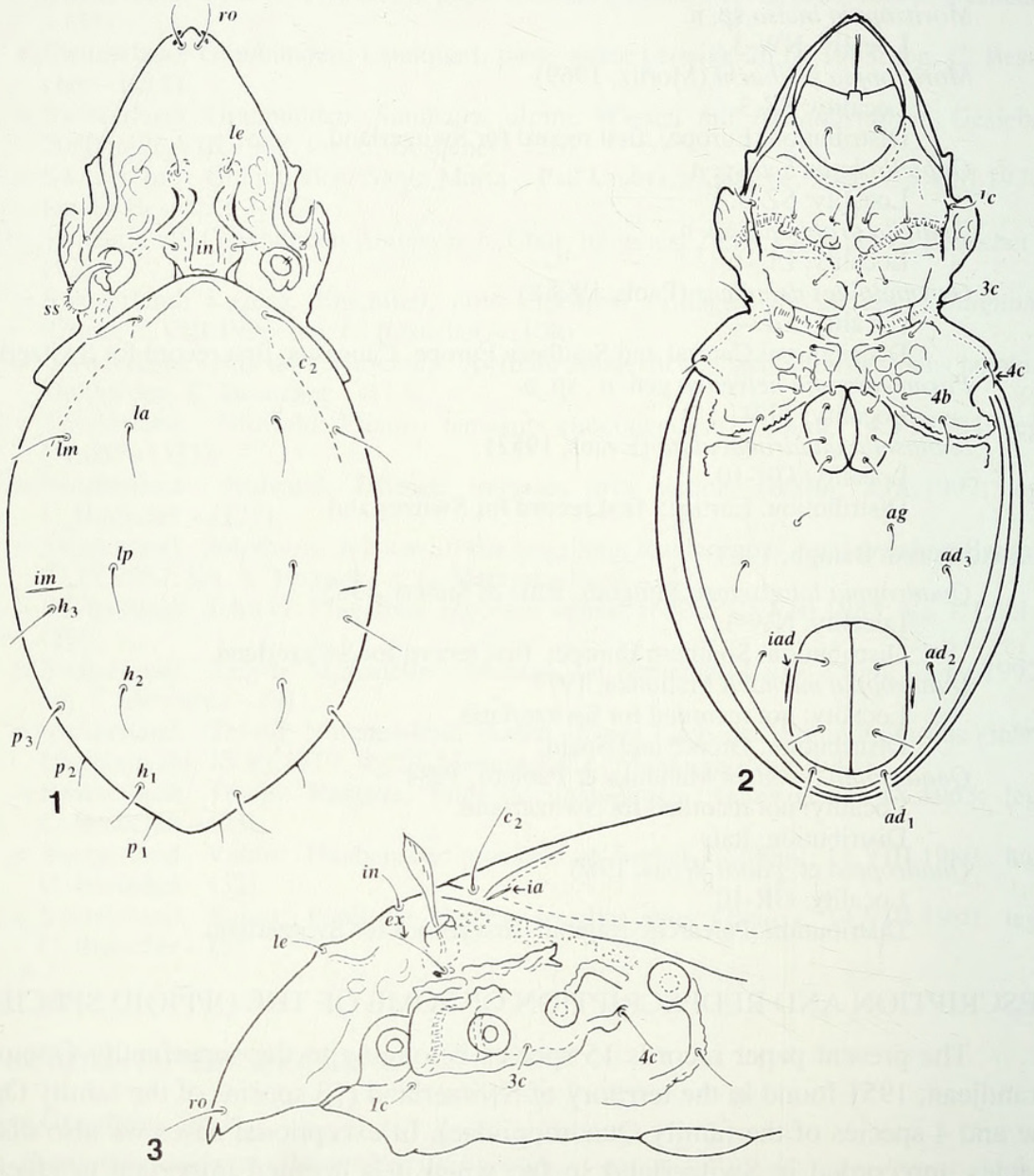
The present paper records 15 species belonging to the superfamily Oppioidea Grandjean, 1951 found in the territory of Switzerland (13 species of the family Oppiidae and 4 species of the family Quadroppiidae). In exceptional cases we also discuss species unrecorded in Switzerland so far, when it is deemed important to elucidate certain specific taxonomic questions. Among the species 6 are new for science and 1 represents a new genus (*Paramedioppia*). In addition some extremely rare species are touched upon. Morphological complementations, corrections, new combinations, the publication of synonyms and the reinterpretation of some species are also given.

Berniniella conjuncta (Strenzke, 1951) comb. et stat. n. Figs 1-3

Oppia sigma conjuncta Strenzke, 1951: 723, fig. 5.
Oppiella sigma (Strentzke, 1951): sensu Woas, 1986: 182, Abb. 88-89.

Material examined: Switzerland: NW-2.

Remarks: The recently examined soil samples harboured, in many cases, the very same species which we could readily identify with the description of Strenzke's *Oppia sigma conjuncta* published in 1951, and with Woas's redescription



Figs 1-3

Berniniella conjuncta (Strenzke, 1951) – 1: body in dorsal view, 2: body in ventral view, 3: podosoma in lateral view.

of *Oppia sigma* published in 1986. Without doubt Strenzke's description is inadequate since the description of the ventral side is missing. However, on the basis of the Swiss specimens and the redescription of Woas now we may safely conclude that *O. conjuncta* is an independent, valid species. Furthermore, we should like to point out that Woas made a mistake when preparing his redescription, since his specimens belong to *O. conjuncta* and not to *O. sigma*.

The drawings were made from the specimens originating from Switzerland which readily correspond with the figures of both Strenzke and Woas. For this reason a complete redescription would be out of place here. Nevertheless, we should like to draw the attention to some important features.

M e a s u r e m e n t s : Length of body: 208-224 µm, width of body: 102-114 µm.

D o r s a l s i d e (Fig. 1): Rostrum with wide median apex, lateral apices much smaller. Costulae S-shaped, directed to the bothridia. One pair of median laths directed outwards, not connecting with the costulae. Bothridium with posterior tubercle, behind it comparatively large pustules are evident. Sensilli with short bristles. Dorsosejugal suture protruding anteriorly, ten pairs of notogastral setae nearly equal in length.

L a t e r a l p a r t o f p o d o s o m a (Fig. 3): Well sclerotized, longitudinal crests and pustulated or granulated fields are visible. Ratio of prodorsal setae: *ro* ≈ *ex* > *in* ≈ *le*. Setae *1c* do not arise on pedotecta I, discidium well developed bearing setae *4c*.

V e n t r a l s i d e (Fig. 2): Sternal apodemes and borders weakly developed or absent. Sejugal apodemes with longitudinal, arched lines in opposite position. Posterior margin of epimeral borders 2 and 4 undulate or denticulate. Epimeres 1 framed laterally by longitudinal crests bearing setae *1c* anteriorly. Anogenital setal formula: 4 - 1 - 2 - 3. All setae in the epimeral and anogenital region simple, setiform, without conspicuous cilia.

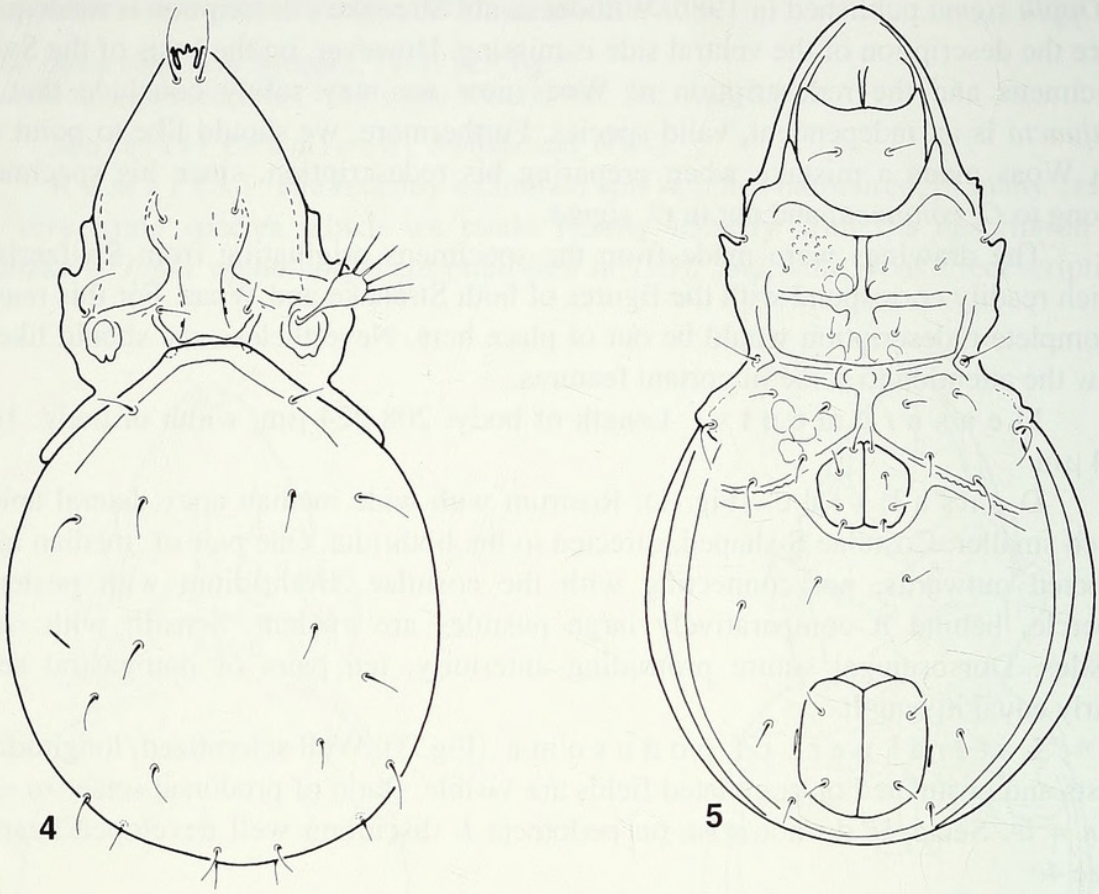
Berniniella hauseri (Mahunka, 1974) comb. n. Figs 4-5

Oppia hauseri Mahunka, 1974: 585, Abb. 34-36.
Oppiella rafalskii Opłotna & Rajski, 1983: 543, figs 1-8. Syn. n.

M a t e r i a l e x a m i n e d : Switzerland: GR-6; T-11.

R e m a r k s : The recently collected specimens are quite identical with those described from Greece (Mahunka, 1974). However, the ventral side was not described, so the relegation of the species was only provisional owing to lack of information regarding the number of genital setae and some other ventral features. After having again examined the type species we found, as it was expected from the dorsal side, that *O. hauseri* has 4 pairs of genital setae corresponding well in all other features with those of specimens collected recently in Switzerland. One of these was selected for the drawings (Figs 4-5).

T a x o n o m i c p o s i t i o n : After examining the related species, it is certain that *Berniniella serratirostris* (Golosova, 1970) comb. n. and *Berniniella*



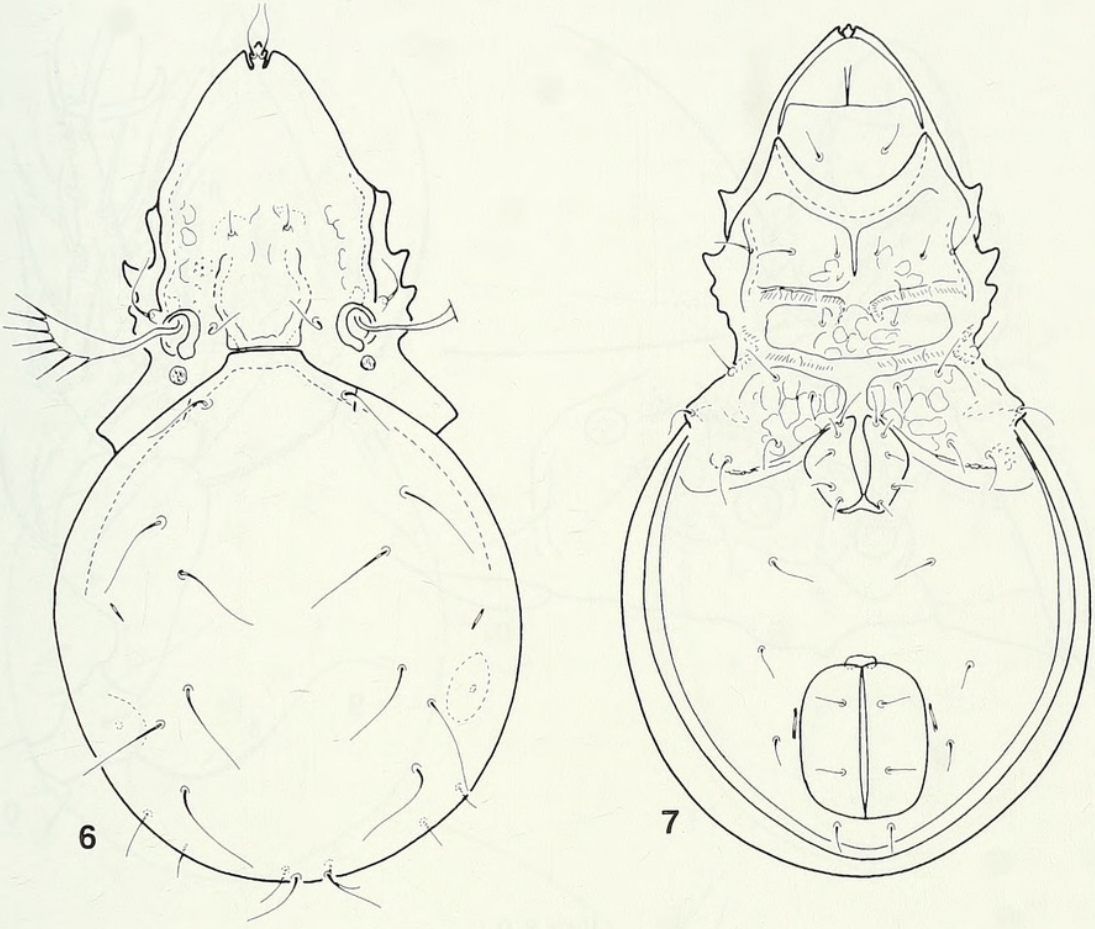
FIGS 4-5
Berniniella hauseri (Mahunka, 1974) – 4: body in dorsal view, 5: body in ventral view.

rafalskii (Opłotna & Rajski, 1983) comb. n. are its closest allies. Peculiarly enough, we could not find any differentiating character between the latter and *B. hauseri*, thus, we consider them synonyms; so the latter is a junior synonym of *B. hauseri*. The authors' description - besides the obvious mistakes - is wholly identical with the features of the Swiss specimens. The only difference we could ascertain stems from the drawing technique, due to some simplified method used by the authors. Thus, the median part of the dorsosejugal region, the costula on the basal part of the prodorsum and also the median thickening are figured to be more complicated than they in fact are. A similar problem is found with the drawing of the sejugal borders and the coxisternal region. The position of setae *2b*, *2c* and *3c* is obviously erroneously depicted. Opłotna & Rajski (1983) thoroughly evaluated the relationship of *Oppia serratirostris* with *Oppiella rafalskii*. These differences (especially the number of branches of the sensilli, the shape of the costulae and the shape of the median rostral apex) are convincing enough for us, too.

Dissorhina signata (Schwalbe, 1989) comb. n. Figs 6-9

Oppia signata Schwalbe, 1989: 99, Abb. 1.

Material examined: Switzerland: GR-9.



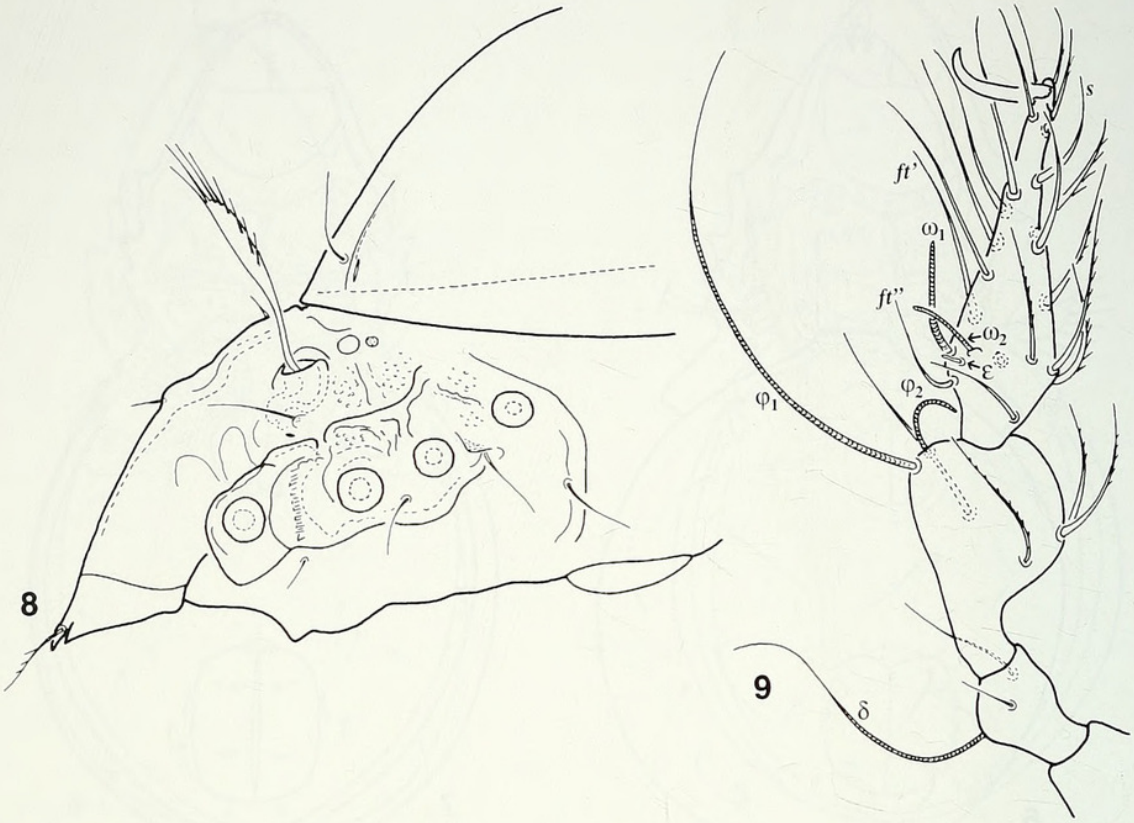
FIGS 6-7
Dissorhina signata (Schwalbe, 1989) – 6: body in dorsal view, 7: body in ventral view.

R e m a r k s : On the basis of the sensillar shape and its unilateral ciliation, the species of the genus *Dissorhina* Hull, 1916 may grouped into two. The "*ornata* species group" has bacilliform sensilli, whose distal end is spiculate or quite smooth, while the "*tricarinatoides* species group" has sensilli with very long unilaterally arranged branches. The studied species belongs to the second group.

R e d e s c r i p t i o n : The specimens of this species collected in Switzerland have been stored for some time in the Geneva collection. These specimens are easily identifiable with the description and the given figures. Some important features which deserve special attention are described below.

M e a s u r e m e n t s . – Length of body: 197-208 µm, width of body: 103-134 µm.

D o r s a l s i d e (Fig. 6): Rostrum tripartite, rostral setae arising exactly on the triangular, well separated median apex. Costulae casket-shaped, diverging medially and converging distally. Lamellar setae arising on small separated parts. Bothridium with a posterior tubercle, behind it a well developed, separated, round tubercle. Sensilli with 6-7 long, branches unilaterally. Dorsosejugal suture well protruding anteriorly, with a straight median part. Ten pairs of notogastral setae nearly equal in length. Setae c_2 not shorter than the others.



FIGS 8-9

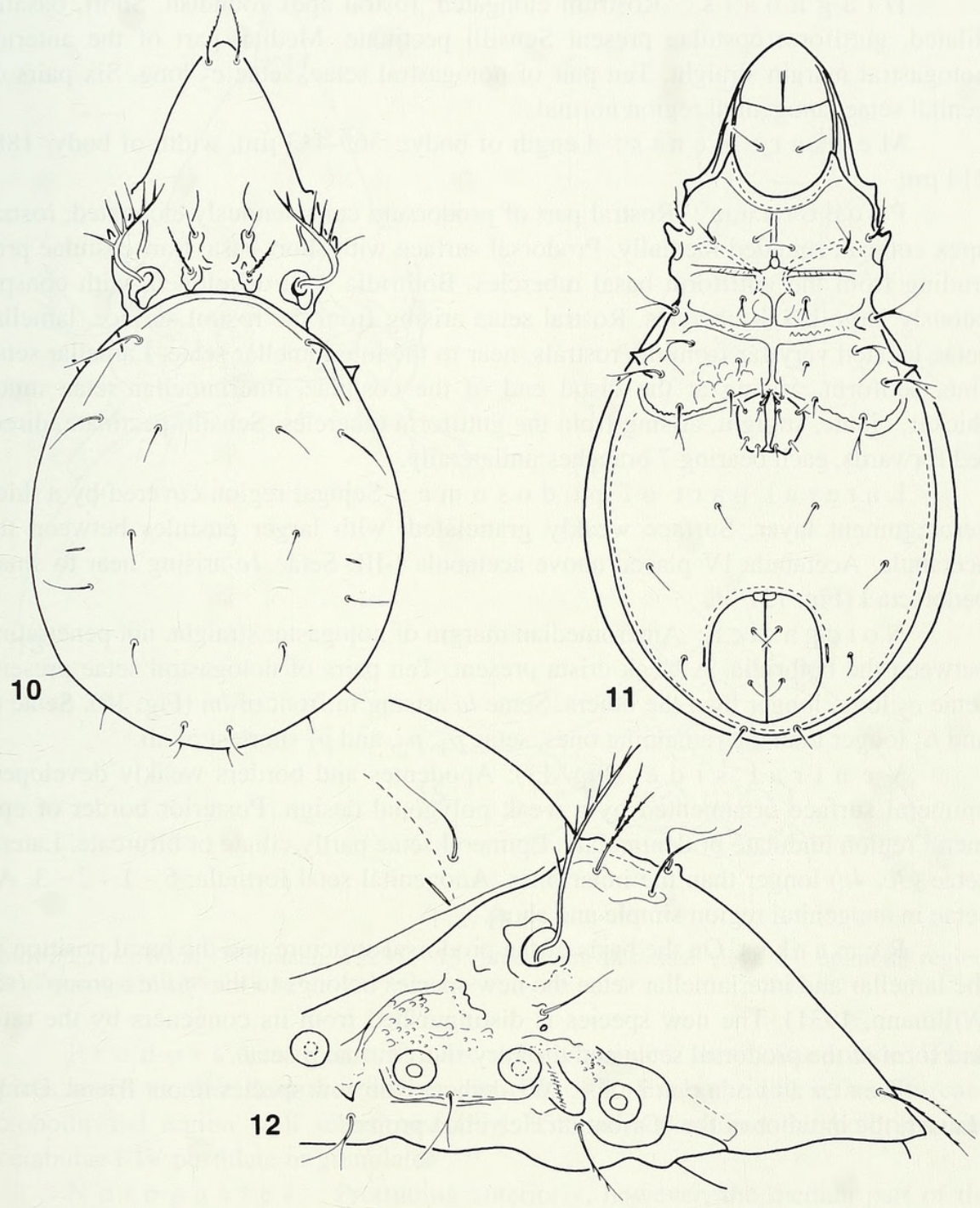
Dissorhina signata (Schwalbe, 1989) – 8: podosoma in lateral view, 9: leg I.

L a t e r a l p a r t o f p o d o s o m a (Fig. 8): Well sclerotized, longitudinal crests and pustulated or granulated fields are visible. Ratio of prodorsal setae: *ro* ≈ *ex* > *in* ≈ *le*. Setae *1c* do not arise on pedotecta I, discidium well developed and bearing setae *4c*.

V e n t r a l s i d e (Fig. 7): Sternal apodemes absent between *bo.* 2 and *bo. sej.* Sejugal apodemes with longitudinal, arched lines. Posterior margin of epimeral borders 4 undulate or denticulate. Epimeres 1 framed laterally by longitudinal crests bearing setae *1c*. Anogenital setal formula: 5 - 1 - 2 - 3. All setae in the epimeral and anogenital region simple, setiform, without conspicuous cilia.

L e g s : Form and chaetotaxy of leg I as shown in Fig. 9.

T a x o n o m i c p o s i t i o n : The species *D. signata* stands very near to *D. tricarinatoides* (Dubinina, *in* Dubinina *et al.* 1966) (see also Mahunka, 1996b). It may be distinguished by the shape of the prodorsal costulae with the auxiliary complementary ribs, which are present in *D. tricarinatoides* and absent in *D. signata*, and the position of setae ad_3 which arise nearer to the anal plates than the lateral margin of ventral plate in *D. signata* (much farther, near to the lateral margin in *D. trticarinatoides*).



FIGS 10-12. *Lauroppia hauseri* sp. n. – 10: body in dorsal view, 11: body in ventral view, 12: podosoma in lateral view.

Lauroppia hauseri sp. n. Figs 10-12

M a t e r i a l e x a m i n e d : Switzerland: Holotype: Tessin: TI-11, 1 paratype from the same sample; 6 paratypes: Tessin: TI-5. Holotype and 4 paratypes: MHNG[1], 3 paratypes (1614-PO-98): HNHM[2].

[1] MHNG: deposited in the Muséum d'histoire naturelle, Geneva.
[2] HNHM: deposited in the Hungarian Natural History Museum, Budapest, with identification number of the specimens in the Collection of Arachnida.

D i a g n o s i s : Rostrum elongated, rostral apex roundish. Short, basally dilated, guttiform costulae present Sensilli pectinate. Median part of the anterior notogastral margin straight. Ten pair of notogastral setae, setae c_2 long. Six pairs of genital setae, anogenital region normal.

M e a s u r e m e n t s : Length of body: 369-443 µm, width of body: 188-214 µm.

P r o d o r s u m : Rostral part of prodorsum conspicuously elongated, rostral apex conical, rounded medially. Prodorsal surface with short basal transcostulae protruding from the guttiform basal tubercles. Bothridia well developed, with conspicuously large basal tubercles. Rostral setae arising from the rostral surface, lamellar setae located very far from the rostrals, near to the interlamellar setae. Lamellar setae fine, setiform, arising at the distal end of the costulae, interlamellar setae much thicker, ciliate, straight, arising from the guttiform tubercles. Sensilli pectinate, directed forwards, each bearing 7 branches unilaterally.

L a t e r a l p a r t o f p o d o s o m a : Sejugal region covered by a thick cerotegument layer. Surface weakly granulated, with larger pustules between the acetabula. Acetabula IV placed above acetabula I-III. Setae *1c* arising near to small pedotecta I (Fig. 12).

N o t o g a s t e r : Anteromedian margin of notogaster straight, not penetrating between the bothridia. A weak crista present. Ten pairs of notogastral setae present, setae c_2 long, longer than the others. Setae *la* arising in front of *lm* (Fig. 10). Setae *la* and h_3 longer than the remaining ones, setae p_1, p_2, and p_3 shortest of all.

V e n t r a l s i d e (Fig. 11): Apodemes and borders weakly developed, epimeral surface ornamented by a weak polygonal design. Posterior border of epimeral region undulate or denticulate. Epimeral setae partly ciliate or bifurcate. Lateral setae (*3c*, *4c*) longer than the inner ones. Anogenital setal formula: 6 - 1 - 2 - 3. All setae in anogenital region simple and short.

R e m a r k s : On the basis of the prodorsal structure and the basal position of the lamellar and interlamellar setae the new species belongs to the "*fallax*-group" (see Willmann, 1931). The new species is distinguished from its congeners by the ratio and form of the prodorsal setae and the very short h_1 and p setae.

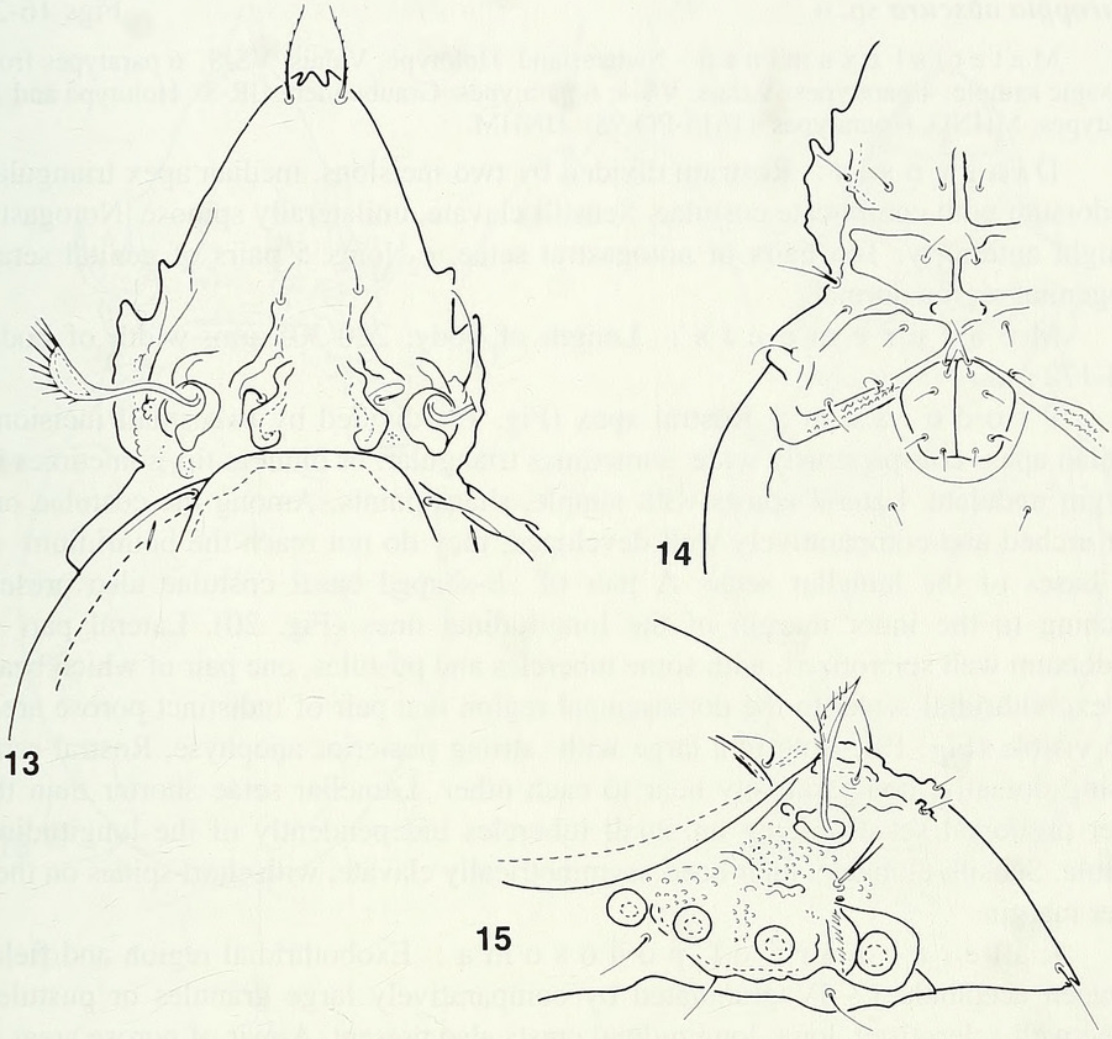
D e r i v a t i o n o m i n i s : We dedicate the new species to our friend, Dr. B. Hauser, the initiator of the "Oribatida Helvetica project".

Lauroppia maritima (Willmann, 1929) comb. n. Fig. 13-15

Oppia maritima Willmann, 1929: 45, Abb. 4.
Oppia maritima: Strenzke, 1951: 720, fig. 2

M a t e r i a l e x a m i n e d : Switzerland: SO-5; TI-9.

R e m a r k s : The species was described by Willmann (1929), and Strenzke (1951) redescribed it. Both these descriptions are inadequate and some very important features are missing. Therefore, we give herewith some drawings and a short description.



FIGS 13-15

Lauroppia maritima (Willmann, 1929) – 13: prodorsum in dorsal view, 14: epimeral region, 15: podosoma in lateral view.

P r o d o r s u m : Rostral apex sharply pointed, the incisure wide, lateral apices much smaller than the median one (Fig. 13). Exobothridial setae bifurcate. Exobothridial region well sclerotized (Fig. 15), surface around the bothridia and acetabulae I-IV pustulate or granulate.

N o t o g a s t e r : Protruding anteriorly, however, the median part of the dorsosejugal line is straight.

V e n t r a l s i d e : Posterior border of the coxisternal region with pustulate margin, pustules are in a transversal hollow on both sides (Fig. 14). Setae *1c* arising far from pedotecta I. Setae *3c* bifurcate. Anogenital setal formula: 5 - 1 - 2 - 3. Anterior pair of genital setae much longer than the others.

Lauroppia obscura sp. n. Figs 16-20

M a t e r i a l e x a m i n e d : Switzerland: Holotype: Valais: VS-8, 6 paratypes from the same sample; 4 paratypes: Valais: VS-4; 6 paratypes: Graubünden: GR-8. Holotype and 10 paratypes: MHNG, 6 paratypes (1615-PO-98): HNHM.

D i a g n o s i s : Rostrum divided by two incisions, median apex triangular. Prodorsum with complicate costulae. Sensilli clavate, unilaterally spinose. Notogaster straight anteriorly. Ten pairs of notogastral setae, c_2 long. 5 pairs of genital setae, anogenital region normal.

M e a s u r e m e n t s : Length of body: 280-305 µm, width of body: 148-172 µm.

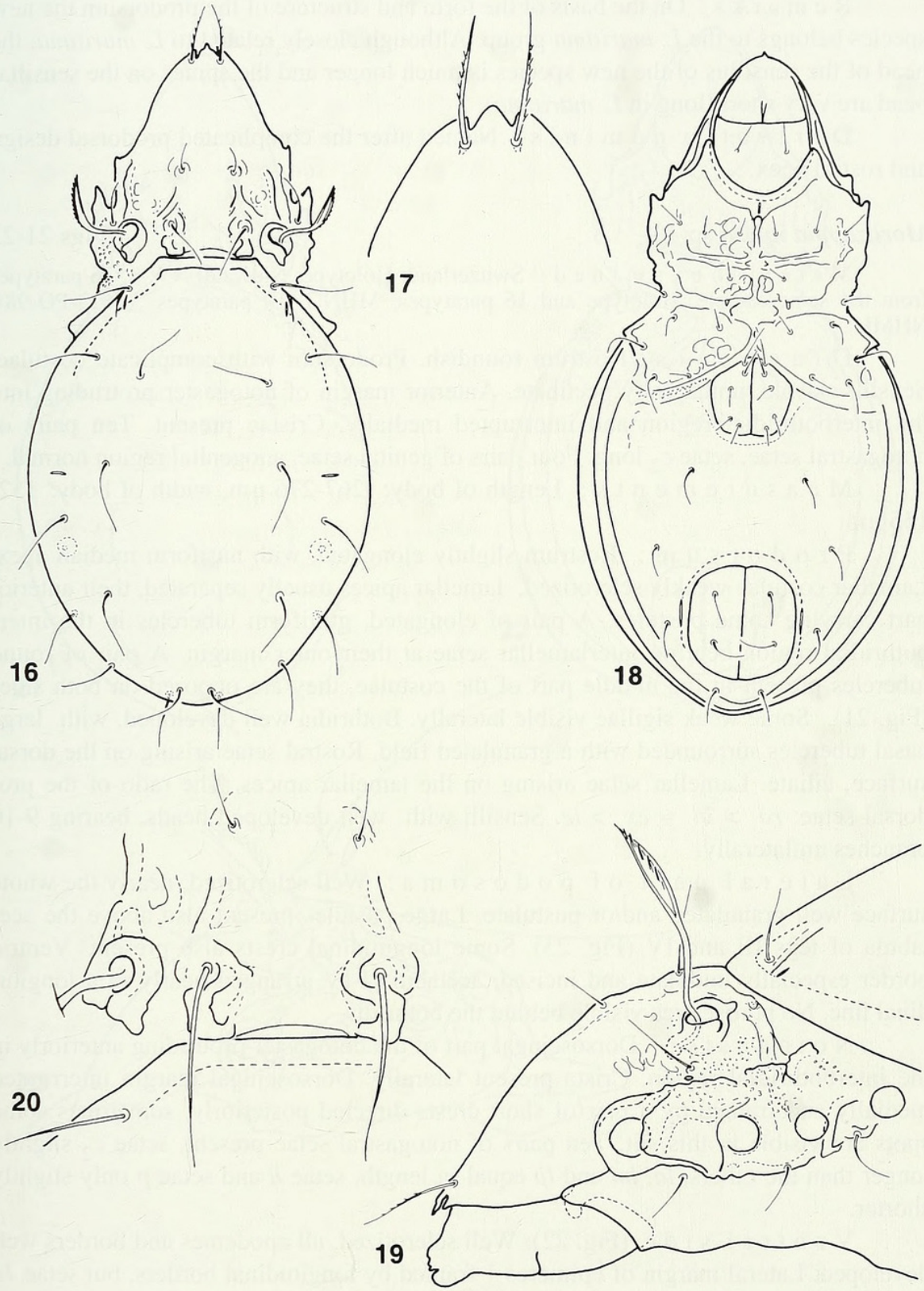
P r o d o r s u m : Rostral apex (Fig. 17) divided by two small incisions, median apex conspicuously wide, sometimes triangular, or blunt at tip, sometimes its margin undulate. Lateral apices with simple, sharp points. Among the costulae one pair arched and comparatively well developed, they do not reach the bothridium or the bases of the lamellar setae. A pair of S-shaped basal costulae also present reaching to the inner margin of the longitudinal ones (Fig. 20). Lateral part of prodorsum well sclerotized, with some tubercles and pustules, one pair of which bears the exobothridial setae. In the dorsosejugal region one pair of indistinct porose areas also visible (Fig. 19). Bothridia large with strong posterior apophyse. Rostral setae arising dorsally, comparatively near to each other. Lamellar setae shorter than the other prodorsal setae, arising on small tubercles independently of the longitudinal costula. Sensilli elongate, their head asymmetrically clavate, with short spines on their outer margin.

L a t e r a l p a r t o f p o d o s o m a : Exobothridial region and fields between acetabula I - IV granulated by comparatively large granules or pustules. Some well-sclerotised, long, longitudinal crests also present. A pair of porose areas in the sejugal region. Positions of acetabula III and IV nearly the same as those of acetabula I and II (Fig. 19). Pedotecta I small, setae *1c* arising far from its basal part. Discidium well developed, setae *4c* arising far from its lateral margin, on the epimeral surface.

N o t o g a s t e r : Elongated, dorsosejugal part straight anteriorly. Crista clearly seen. Ten pairs of notogastral setae present, setae c_2 conspicuously long, setiform, all others somewhat shorter. Setae *lm* arising in front of *la* (Fig. 16). Setae p_1, p_2 and p_3 only slightly shorter than the others.

V e n t r a l s i d e (Fig. 18): Epimeral region hardly sclerotised. Apodemes partly absent only borders visible between the borders 2 and sejugal borders or sejugal borders and borders 4. Lateral borders on epimeres 1 arched bearing setae *1c*. Sejugal borders broad, with a pair of hollows medially, with similar, but smaller ones, also present on *bo* 2. All epimeres with a polygonal pattern. Setae *4c* arising on the epimeral surface. Epimeral setae long, simple. Anogenital setal formula: 5 - 1 - 2 - 3. Among the genital setae the two anterior pairs conspicuously long, directed forwards. Position and shape of the aggenital, anal setae and lyrifissures *iad* normal.

L e g s : Solenidia of tibia IV very long and curved .



FIGS 16-20

Lauroppia obscura sp. n. – 16: body in dorsal view, 17: rostrum, 18: body in ventral view, 19: podosoma in lateral view, 20: basal part of prodorsum.

R e m a r k s : On the basis of the form and structure of the prodorsum the new species belongs to the *L. maritima* group. Although closely related to *L. maritima*, the head of the sensillus of the new species is much longer and the spines on the sensillar head are very short (long in *L. maritima*).

D e r i v a t i o n o m i n i s : Named after the complicated prodorsal design and rostral apex.

Moritzoppia incisa sp. n. Figs 21-23

M a t e r i a l e x a m i n e d : Switzerland: Holotype: Nidwald: NW-3, 26 paratypes from the same sample. Holotype and 16 paratypes: MHNG, 10 paratypes (1613-PO-98): NHMH.

D i a g n o s i s : Rostrum roundish. Prodorsum with complicate costulae. Sensilli clavate, unilaterally pectinate. Anterior margin of notogaster protruding into the interbothridial region and interrupted medially. Cristae present. Ten pairs of notogastral setae, setae c_2 long. Four pairs of genital setae, anogenital region normal.

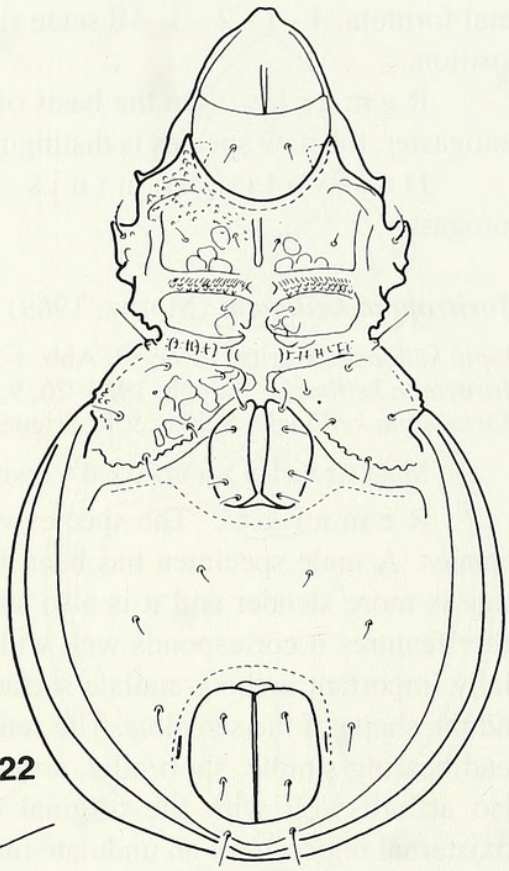
M e a s u r e m e n t s : Length of body: 267-276 µm, width of body: 152-155 µm.

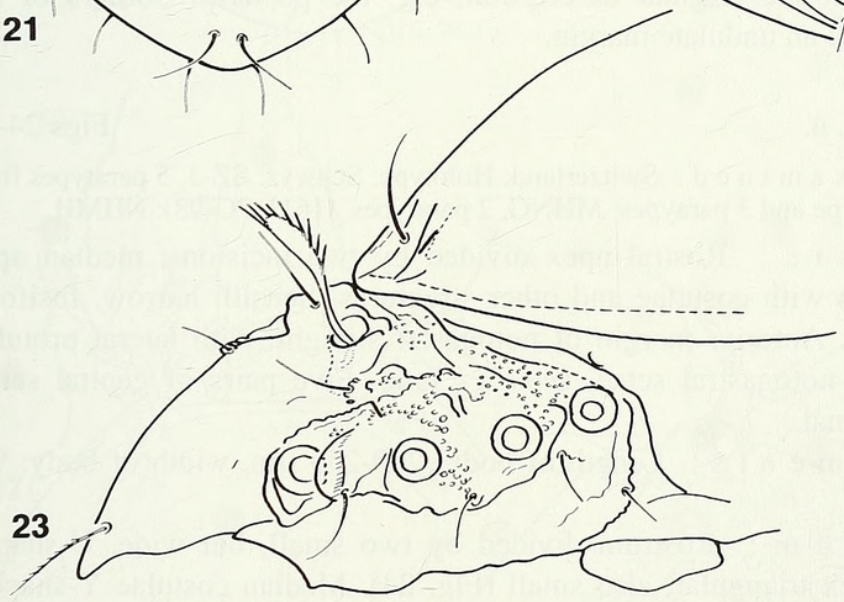
P r o d o r s u m : Rostrum slightly elongated, with nasiform median apex. Lamellar costulae weakly sclerotized, lamellar apices usually separated, their anterior part carrying some pustules. A pair of elongated, guttiform tubercles in the interbothridial region bearing interlamellar setae at their outer margin. A pair of round tubercles present in the middle part of the costulae, they are opposed on both sides (Fig. 21). Some weak sigillae visible laterally. Bothridia well developed, with large basal tubercles surrounded with a granulated field. Rostral setae arising on the dorsal surface, ciliate. Lamellar setae arising on the lamellar apices. The ratio of the prodorsal setae: $ro > in \approx ex > le$. Sensilli with well developed heads, bearing 9-10 branches unilaterally.

L a t e r a l p a r t o f p o d o s o m a : Well sclerotized, nearly the whole surface well granulated and/or pustulate. Large pustules present also above the acetabula of legs III and IV (Fig. 23). Some longitudinal crests also present. Ventral border especially undulate and incised, acetabula I-IV arranged nearly in a longitudinal line. No porose area visible behind the bothridia.

N o t o g a s t e r : Dorsosejugal part of the notogaster protruding anteriorly in the interbothridial region. Crista present laterally. Dorsosejugal margin interrupted medially and framed by a pair of short crests directed posteriorly, sometimes some spots are visible in this slit. Ten pairs of notogastral setae present, setae c_2 slightly longer than the others, *la*, *lm* and *lp* equal in length, setae *h* and setae *p* only slightly shorter.

V e n t r a l s i d e (Fig. 22): Well sclerotized, all apodemes and borders well developed. Lateral margin of epimeres 1 framed by longitudinal borders, but setae *1c* arising on pedotecta I. The surface of epimeres I pustulate, posterior borders also conspicuously covered by granules or pustules. Sejugal borders with some pairs of longitudinal crests or lines. Posterior margin of borders IV strongly undulate. Setae *4b* arising at the posterolateral corner. Surface around discidium also pustulate. Setae *4c*





FIGS 21-23

Moritzoppia incisa sp. n. – 21: body in dorsal view, 22: body in ventral view, 23: podosoma in lateral view.

stand further from the discidia. All epimeral setae simple and smooth. Anogenital setal formula: 4 - 1 - 2 - 3. All setae simple. Lyrifissures *iad* short, located in paraanal position.

R e m a r k s : On the basis of the structure of the dorsosejugal margin of the notogaster, the new species is distinguished from all congeners.

D e r i v a t i o n o m i n i s : Named after the incised anterior margin of the notogaster.

Moritzoppia keilbachi (Moritz, 1969)

Oppia keilbachi Moritz, 1969: 37, Abb. 1-3.
Moritziella keilbachi: Balogh, 1983: 26, 9: 9p-v.
Moritzoppia keilbachi: Subías & Rodriguez, 1988: 122.

M a t e r i a l e x a m i n e d : Switzerland: SZ-3.

R e m a r k s : The species was described by Moritz (1969) on the basis of females. A male specimen has been found in the Swiss material. The habitus of the male is more slender and it is also smaller (210µm x 92 µm) than the female. In all other features it corresponds well with the original description and the figures. Especially important is the granulate surface behind the bothridium and on the discidium and the shape of the sensillus. The sensillus of the studied individual is blunt at tip, its head bearing simple, short cilia, arranged in 2-3 rows. Features of the ventral region also accord well with the original description, e.g. the posterior borders of the coxisternal region have an undulate margin.

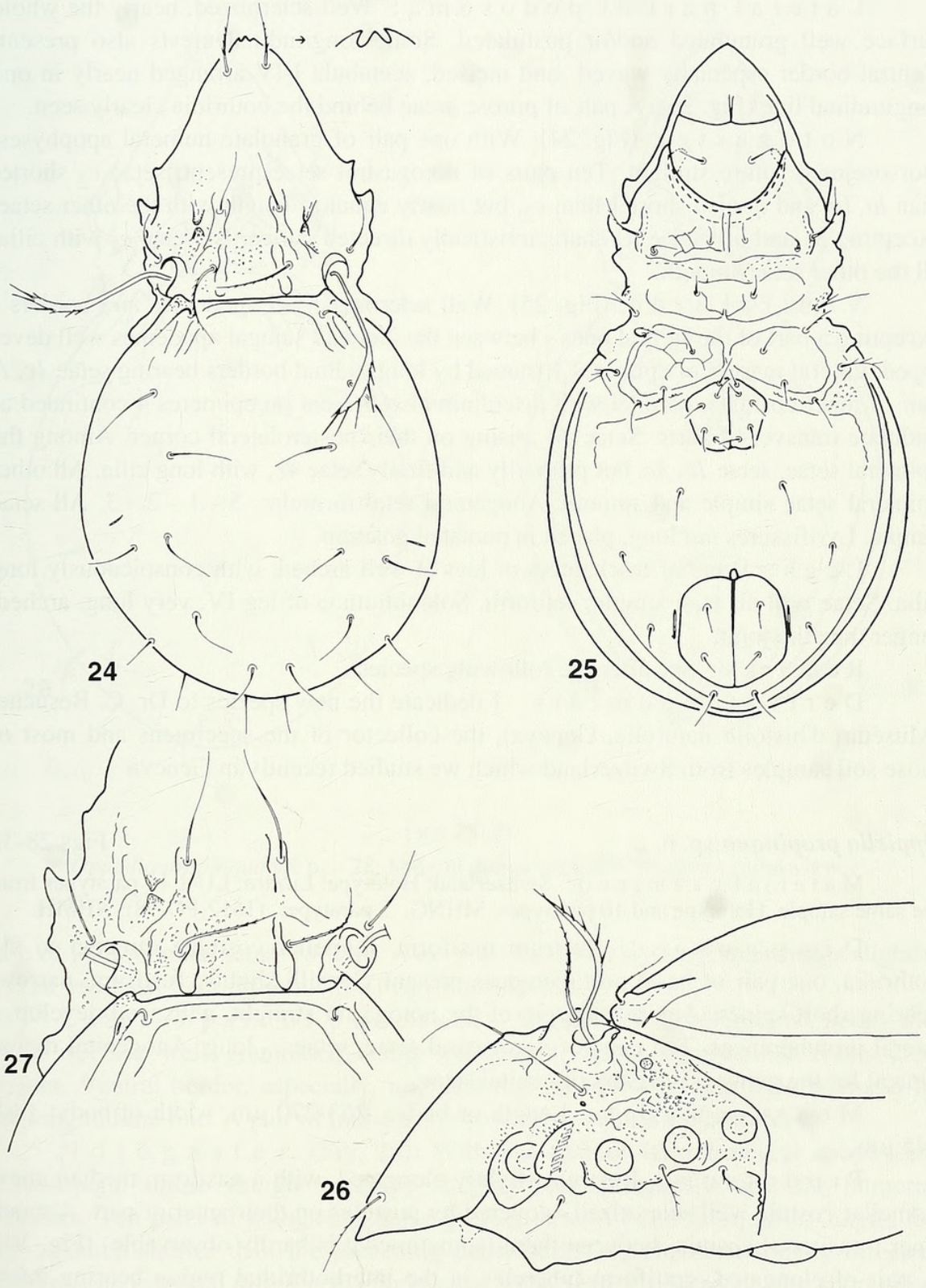
Oppiella besucheti sp. n. Figs 24-27

M a t e r i a l e x a m i n e d : Switzerland: Holotype: Schwyz: SZ-3, 5 paratypes from the same sample. Holotype and 3 paraypes: MHNG, 2 paratypes (1611-PO-98): NHMH.

D i a g n o s i s : Rostral apex divided by two incisions, median apex triangular. Prodorsum with costulae and other structures. Sensilli narrow, fusiform with lateral branches. Anterior margin of notogaster straight, with lateral protuberances. Ten pairs of notogastral setae, setae c_2 long. Five pairs of genital setae, anogenital region normal.

M e a s u r e m e n t s : Length of body: 250-259 µm, width of body: 99-105 µm.

P r o d o r s u m : Rostrum divided by two small, but wide, U-shaped incisions, median apex triangular, also small (Fig. 24). Median costulae Y-shaped, weakly developed. Behind them, in the interbothridial position, one pair of elongated, nearly guttiform tubercles. Along the lamellar costulae, at their outer side, a pair of opposed smaller tubercles present on each side. Bothridia with posterior tubercles. The whole surface of prodorsum distinctly granulated or pustulated, also in the lamellar region (Fig. 27). All four pairs of prodorsal setae long, interlamellar ones thicker and more heavily ciliated than the others. Ratio among them: $in > ro \approx ex > le$. Sensilli very long, slightly dilated medially, bearing 5-6 lateral branches of different lengths on their distal parts.



FIGS 24-27

Oppiella besucheti sp. n. – 24: body in dorsal view, 25: body in ventral view, 26: podosoma in lateral view, 27: basal part of prodorsum.

L a t e r a l p a r t o f p o d o s o m a : Well sclerotized, nearly the whole surface well granulated and/or pustulated. Some longitudinal crests also present. Ventral border especially waved and incised, acetabula I-IV arranged nearly in one longitudinal line (Fig. 26). A pair of porose areae behind the bothridia clearly seen.

N o t o g a s t e r (Fig. 24): With one pair of granulate humeral apophyses. Dorsosejugal suture straight. Ten pairs of notogastral setae present, setae c_2 shorter than *la*, *lm* and *lp* also shorter than c_2, but nearly equal in length with the other setae, excepting p_2 and p_3. Setae h_1 characteristically directed outwards. Setae c_2 with cilia, all the other setae smooth.

V e n t r a l s i d e (Fig. 25): Well sclerotized, all apodemes and borders - excepting a part of the sternal ones - between the 2nd and sejugal apodemes well developed. Lateral margin of epimeres 1 framed by longitudinal borders bearing setae *1c*. A pair of inner costulae, parallel with discidium also present on epimeres 4 continued as undulate transversal parts. Setae *4b* arising on their posterolateral corner. Among the epimeral setae, setae *1c*, *3c*, but primarily and firstly setae *4c*, with long cilia. All other epimeral setae simple and smooth. Anogenital setal formula: 5 - 1 - 2 - 3. All setae simple. Lyrifissures *iad* long, placed in paraanal position.

L e g s : Setae of trochanters of legs II well arched, with conspicuously long cilia. Setae *p* of all tarsi simple, setiform. Solenidium φ of leg IV, very long, arched, longer than the joint.

R e m a r k s : See after the following species.

D e r i v a t i o n o m i n i s : I dedicate the new species to Dr. C. Besuchet (Muséum d'histoire naturelle, Geneva), the collector of the specimens and most of those soil samples from Switzerland which we studied recently in Geneva.

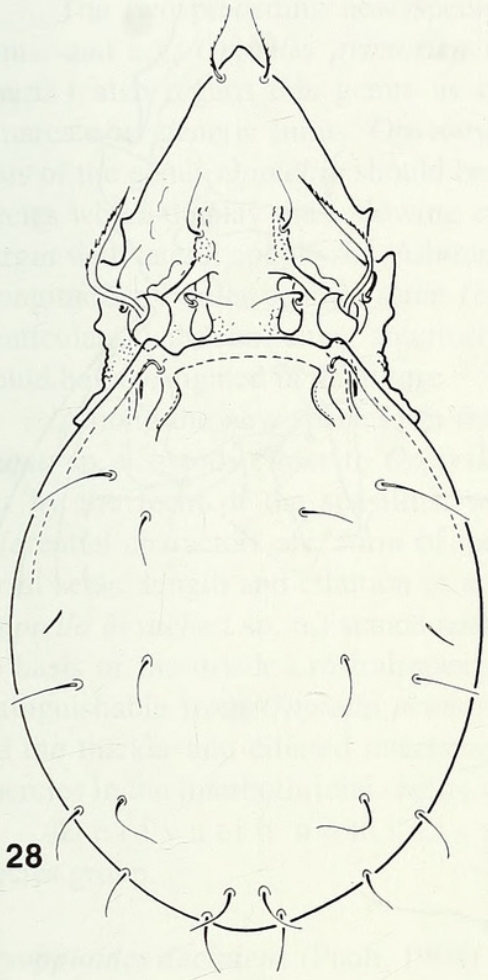
Oppiella propinqua sp. n. Figs 28-32

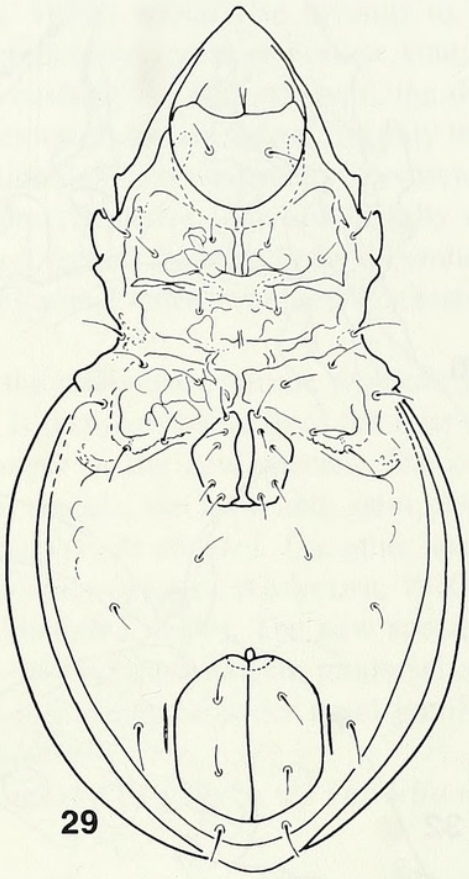
M a t e r i a l e x a m i n e d : Switzerland: Holotype: Luzern: LU-1 15 paratypes from the same sample. Holotype and 10 paratypes: MHNG, 5 paratypes (1612-PO-98): NHMH.

D i a g n o s i s : Rostrum nasiform. Lamellar costulae directed to the bothridia, one pair of basal protuberances present. Sensilli slightly fusiform, narrow, bearing short spines. Anterior margin of the notogaster straight, with well developed lateral protuberances. Ten pairs of notogastral setae, setae c_2 long. Anogenital region typical for the genus. Five pairs of genital setae.

M e a s u r e m e n t s : Length of body: 263-270 µm, width of body: 140-145 µm.

P r o d o r s u m : Rostrum slightly elongated, with a nasiform median apex. Lamellar costula well sclerotized, covered by pustules on their anterior part. A much finer transversal costula between them (sometimes it is hardly observable) (Fig. 30). A pair of elongated, guttiform tubercles in the interbothridial region bearing interlamellar setae on their outer margin and a pair of short laths at an angle between costulae and bothridia. Some weak sigillae visible laterally. Bothridia well developed, with a basal tubercle with a granulated field around it. Rostral setae characteristically arched inwards, ciliate. Lamellar setae arising on the distal half of the costulae. The





FIGS 28-29

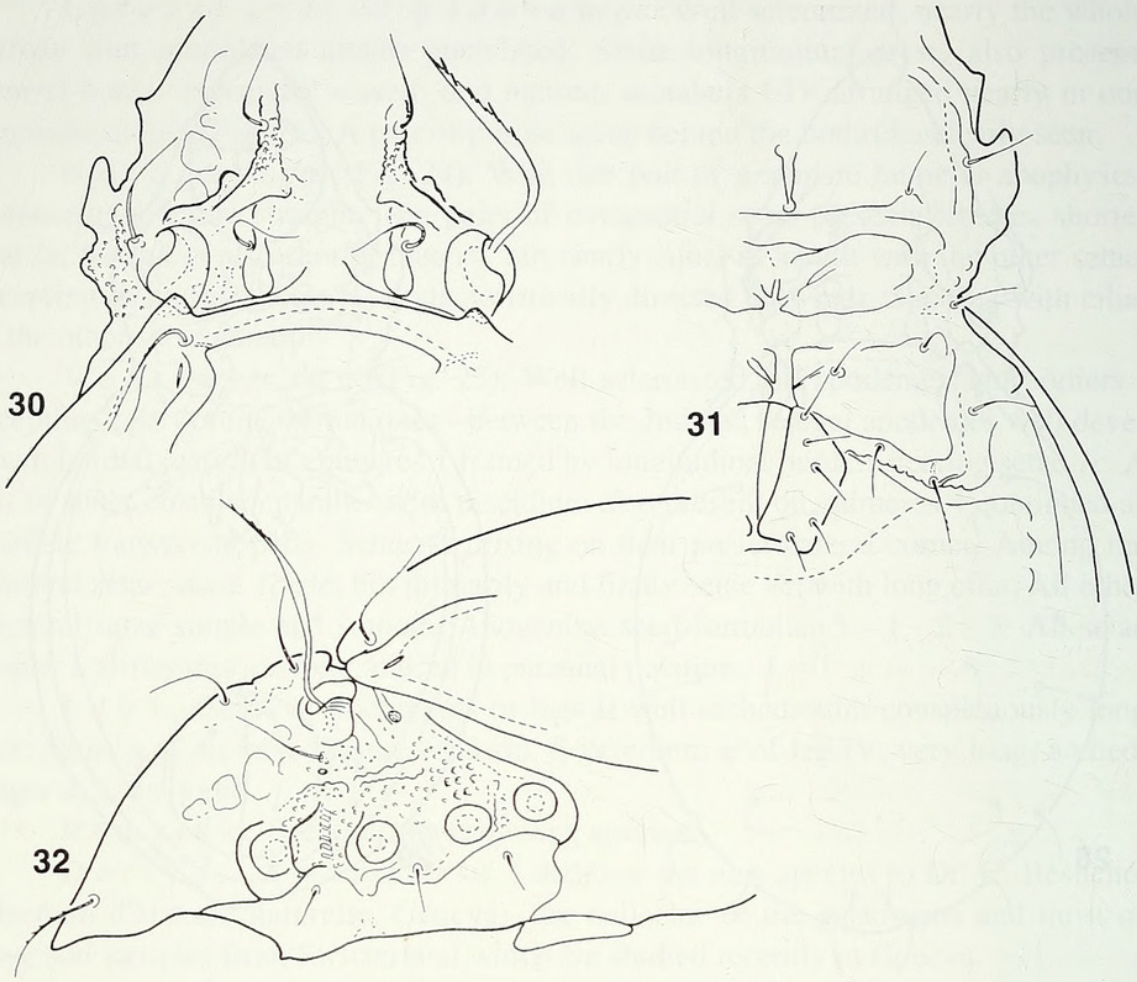
Oppiella propinqua sp. n. – 28: body in dorsal view, 29: body in ventral view.

ratio of the prodorsal setae: *ro* > *in* ≈ *ex* > *le*. Sensilli very long, their heads slightly dilated medially bearing some (5-7) very short spines.

Lateral part of podosoma (Fig. 32): Well sclerotized, nearly the whole surface well granulated and/or pustulated. Some longitudinal crests also present. Ventral border, especially, undulate and incised acetabula I-IV arranged in one longitudinal line. A pair of indistinct porose areas behind the bothridia.

Notogaster (Fig. 28): With one pair of large humeral apophyses. Dorsosejugal suture straight medially, slightly arched laterally, near the humeral tubercles. Ten pairs of notogastral setae present, setae c_2 and *la* equal in length, *lm* and *lp* much shorter than the preceding ones. Setae h_1 characteristically directed outwards, no essential difference among setae *h* and setae p_1. Setae c_2 with short cilia, all other setae smooth.

Ventral side (Fig. 29): Well sclerotized, all apodemes and borders - excepting a part of the sternal ones - between the 2nd and sejugal apodemes well developed. Lateral margin of epimeres 1 framed by longitudinal borders bearing



FIGS 30-32

Oppiella propinqua sp. n. – 30: basal part of prodorsum, 31: epimeral region, 32: podosoma in lateral view.

setae *1c*. A pair of inner costulae, parallel with the discidium also present on epimeres 4 continued as undulate transversal parts (Fig. 31). Setae *4b* arising on their posterolateral corner. All epimeral setae simple and smooth. Anogenital setal formula: 5 - 1 - 2 - 3. All setae simple. Lyrifissures *iad* long, located in paraanal position.

L e g s : Setae p of legs II - IV thick, clearly spiniform. Solenidium of tibia IV not longer than the joint.

R e m a r k s : *Oppiella nova* (Oudemans, 1902) is one of the most variable species of the genus *Oppiella* Jacot, 1937, however, it was designated as the type of the genus. Most authors consider this species as cosmopolitan, but nobody has made a comparative study on world material. Our opinion is, that this species comprises a number of closely related species. This opinion is strengthened in that some authors consider *Oppiella uliginosa* (Willmann, 1919) as a synonym of *O. nova* (e.g. Subías & Balogh, 1989). On the other hand Woas (1986) in his redescription of *O. uliginosa* quite obviously represents another species. The description and the drawings (Woas, 1986: 208, Abb. 102-103) surely do not refer to *O. nova*.

The two preceding new species stand very near to the type species of this genus, and e.g. *Oppiella primorica* (Golosova, 1970), which also belongs to this group. I also regard this genus as rather heterogeneous needing further study to demarcate its generic limits. Obviously, on the basis of the *O. nova* type, the diagnosis of the genus *Oppiella* should be complemented and restricted so that only those species which display the following characteristics should be included: Dorsosejugal margin with lateral apophyses. Among the epimeres, epimeres 1 framed laterally with a longitudinal border bearing setae *1c*, epimeres 4 framed posteriorly by an undulate (denticulate) lath, continuing anteriorly as a longitudinal inner costula. Other features should be investigated in the future.

Among the new species, on the basis of the undivided rostrum, *Oppiella propinqua* sp. n. stands closer to *Oppiella nova*. It is distinguishable from the type species by the form of the sensillus, which is longer in the new species. The other differential characters are: form of the prodorsal costula, the form and ratio of prodorsal setae, length and ciliation of epimeral setae (*1c*, *3c* and *4c*). The other species (*Oppiella besucheti* sp. n.) stands nearest to *Oppiella primorica* (Golosova, 1970) on the basis of the divided rostral apex (see also Mahunka, 1979). The new species is distinguishable from *Oppiella primorica* by the much larger median prodorsal apex and the thicker and ciliated interlamellar setae and the much wider basal guttiform tubercles in the interbothridial region in the new species.

D e r i v a t i o n o m i n i s : The new species belongs to the *Oppiella nova* species group.

Oxyoppioides decipiens (Paoli, 1908) Figs 33-37

Oppia decipiens Paoli, 1908: 69, figs 29, 48.
Oppia decipiens: Pérez-Iñigo, 1971: 297, fig. 30.
Oxyoppioides decipiens: Subías & Mínguez, 1985: 182.

M a t e r i a l e x a m i n e d : Switzerland: GE-4.

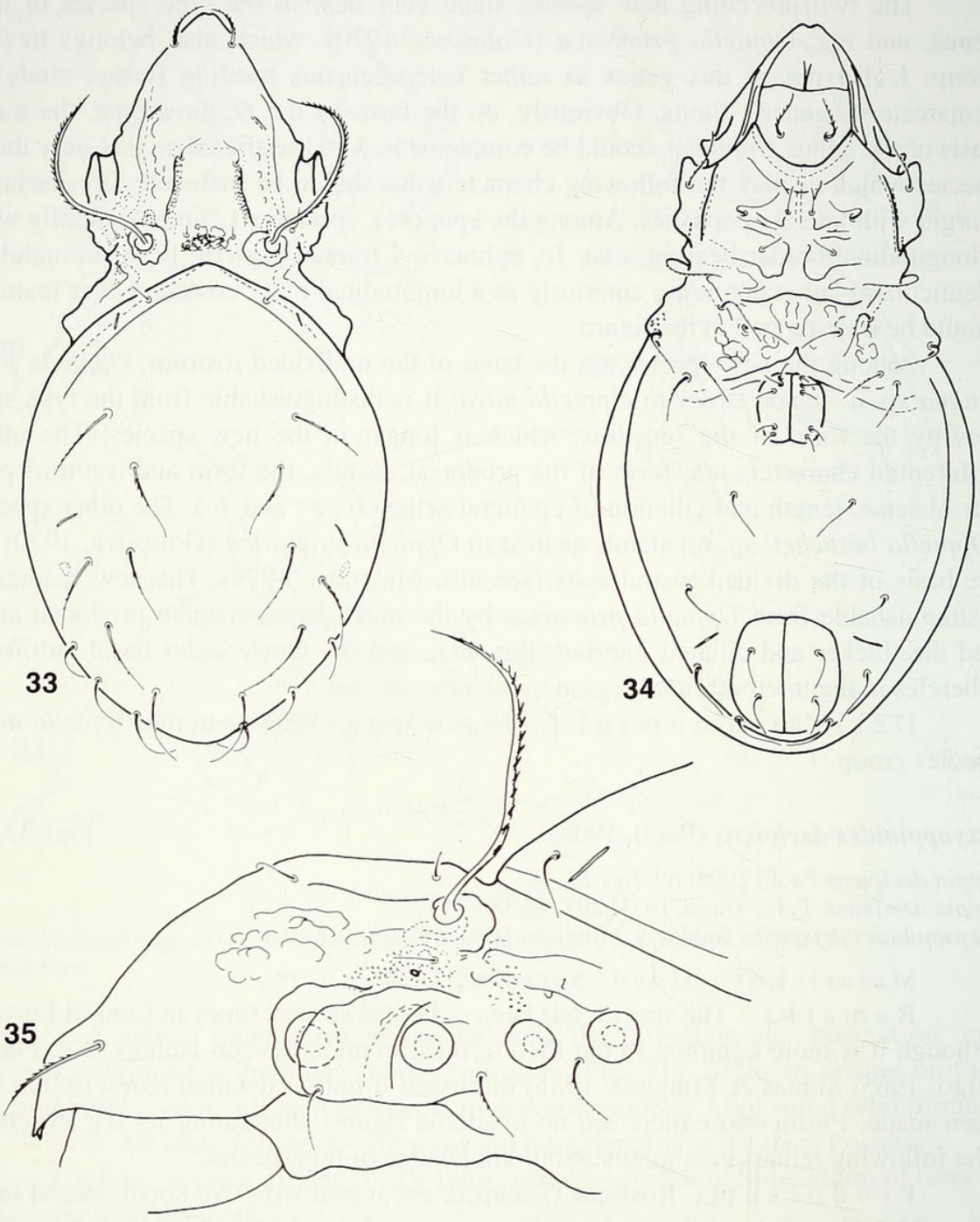
R e m a r k s : The species has been collected several times in Central Europe, although it is more common in the Mediterraenean area. Several authors (e.g. Pérez-Iñigo, 1965; Subías & Mínguez, 1985) discussed it but no detailed redescription has been made. Furthermore,there are no available figures illustrating its leg structure. The following remarks complement our knowledge of this species.

P r o d o r s u m : Rostrum U-shaped, excavated with two small, lateral teeth (Fig. 33). Costulae weak, surface densely granulate. Interbothridial region with numerous indistinct sigilla.

L a t e r a l p a r t o f p o d o s o m a (Fig. 35): Weakly sclerotized, exobothridial region with fine granulation, with only poorly developed, longitudinal laths. Exobothridial setae short.

N o t o g a s t e r : Humeral processes in the dorsosejugal region, hitherto characteristic for the genus *Oxyoppia*, entirely missing. Anterior margin of notogaster arcuate, closed in the middle.

V e n t r a l s i d e (Fig. 34): Apodemes very poorly developed. Epimeral borders hardly discernible in places. From among the sejugal and apodemes 4 and



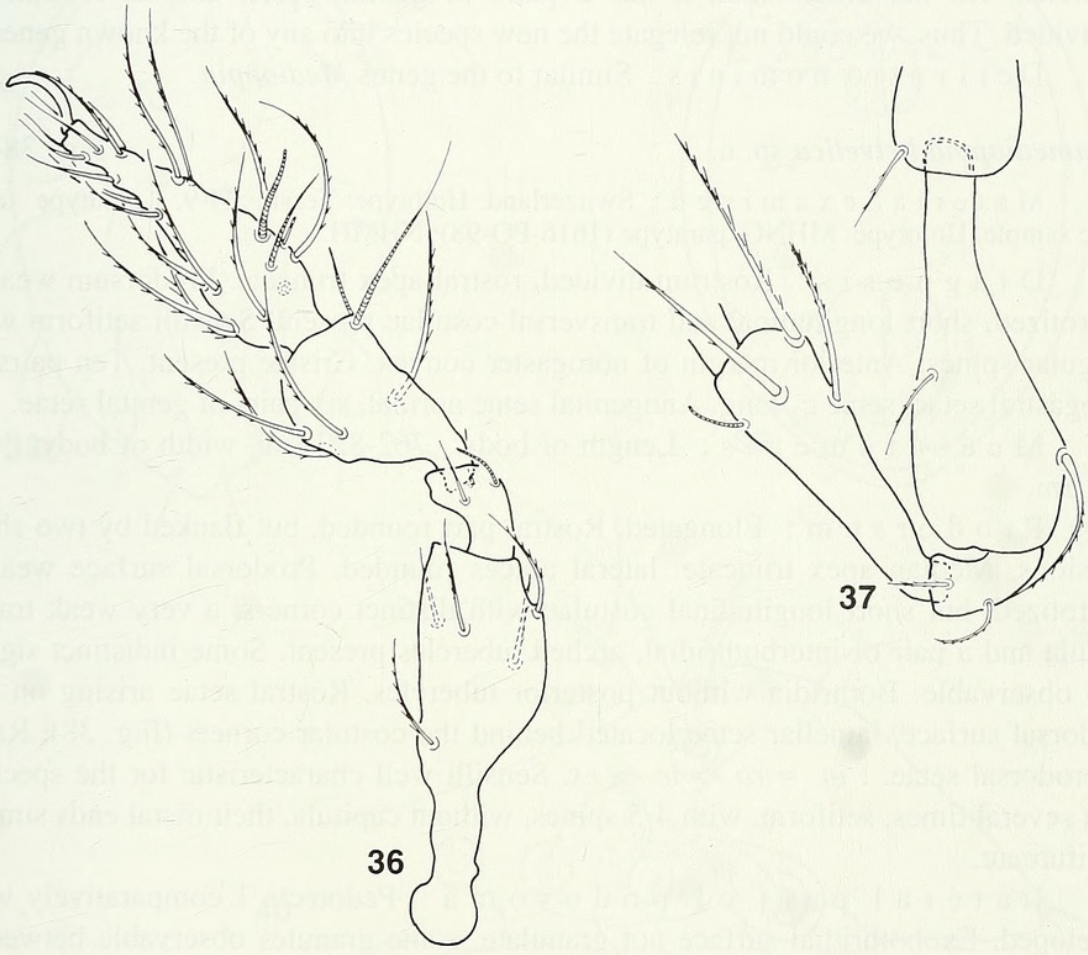
FIGS 33-35

Oxyoppioides decipiens (Paoli, 1908) – 33: body in dorsal view, 34: body in ventral view, 35: podosoma in lateral view.

borders the sternal apodeme and border are entirely missing. Surface of discidium granulate. Setae *1c* arising on pedotecta 1. Epimeral setae ciliate, setae *4a* and *4b* located strikingly close to each other. Anogenital formula 5-1-2-3. Aggenital setae arising one behind the other. Lyrifissure *iad* in inverse apoanal position, far removed from anal opening.

L e g s : Normal, oppioid type, only the tibia of leg I slightly thickened and the distal part of femur triangular (Fig. 36), solenidium of tibia of leg IV (Fig. 37) conspicuously short, and all setae characteristically long.

T a x o n o m i c p o s i t i o n : Subías & Balogh (1989) placed the genus in relationship with *Oxyoppia*. We do not agree with this opinion, although the genus is soundly based. The key published by them is unsuitable for its identification. The position of lyrifissure *iad*, said to be paraanal, is also in error in the key of Balogh & Balogh (1992).



FIGS 36-37

Oxyopioides decipiens (Paoli, 1908) – 36: leg I, 37: femur, genu and tibia of leg IV.

Paramedioppia gen. n.

D i a g n o s i s : Family *Oppidae*. Rostrum divided by two incisions. Weak costulae with a transcostula and one pair of interbothridial "tubercles" present on prodorsum. Sensilli setiform, with some irregular spines. Dorsosejugal part of notogaster gradually arched, not penetrating into the interbothridial region. Crista present, setae c_2 arising medially. Ten pairs of notogastral setae present. Among the epimeral

setae *1c* arising on the epimeral surface, epimeral borders and apodeme normally developed. Anogenital setal formula 6 - 1 - 2 - 3. Lyrifissures *iad* in paraanal position. Gnathosoma, chelicerae and palps normal. Legs very long, joints of leg IV especially elongated.

Type species: *Paramedioppia helvetica* sp. n.

Remarks: The new taxon seems to be a mixture of two genera: *Oppiella* Jacot, 1937 and *Medioppia* Subías & Mínguez, 1985. The latter is a highly heterogeneous genus, as is *Oppiella*. The type species of the genus *Medioppia*, *O. media* Mihelcic, 1956 (Pérez-Iñigo, 1965) does not have costulae but has interbothridial tubercles. On the other hand, it has 5 pairs of genital setae, and its rostrum is undivided. Thus, we could not relegate the new species into any of the known genera.

Derivatio nominis: Similar to the genus *Medioppia*.

Paramedioppia helvetica sp. n. Figs 38-42

Material examined: Switzerland: Holotype: Tessin: TI-9, 1 paratype from same sample. Holotype: MHNG, paratype (1616-PO-98): NHMH.

Diagnosis: Rostrum divided, rostral apex truncate. Prodorsum weakly sclerotized, short longitudinal and transversal costulae present. Sensilli setiform with irregular spines. Anterior margin of notogaster convex. Cristae present. Ten pairs of notogastral setae, setae c_2 long. Anogenital setae normal, six pairs of genital setae.

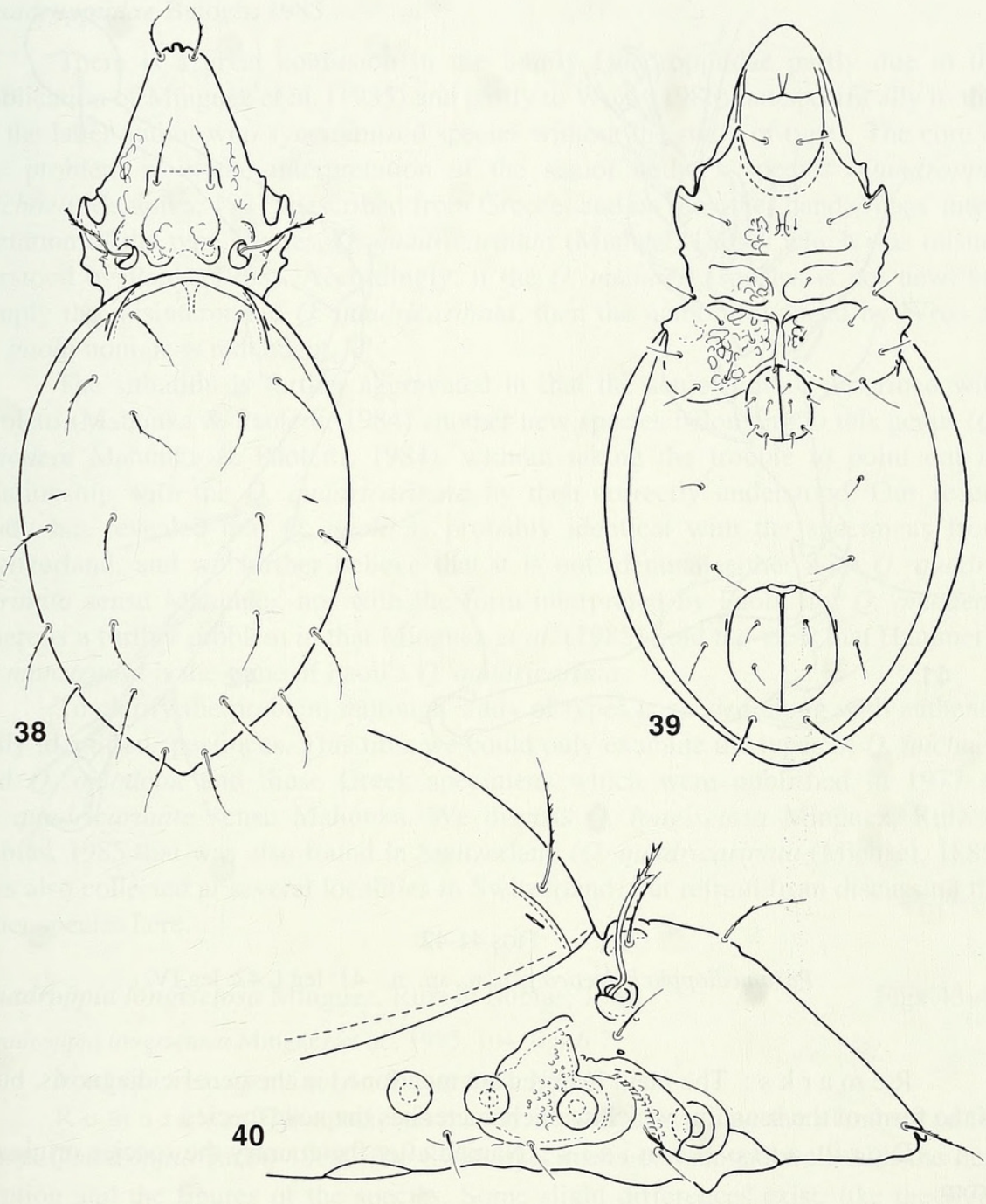
Measurements: Length of body: 762-823 µm, width of body: 369-403 µm.

Prodorsum: Elongated. Rostral part rounded, but flanked by two short incisions. Median apex truncate, lateral apices rounded. Prodorsal surface weakly sclerotized, but short longitudinal costulae with distinct corners, a very weak transcostula and a pair of interbothridial, arched tubercles present. Some indistinct sigilla also observable. Bothridia without posterior tubercles. Rostral setae arising on the prodorsal surface, lamellar setae located behind the costular corners (Fig. 38). Ratio of prodorsal setae: : $in \approx ro > le > ex$. Sensilli well characteristic for the species, bent several times, setiform, with 4-5 spines, without capitula, their distal ends simple or bifurcate.

Lateral part of podosoma: Pedotecta 1 comparatively well developed. Exobothridial surface not granulate, some granules observable betweeen the acetabula II - III. This part well framed by a lath, above the acetabula (Fig. 40).

Notogaster: Conspicuously elongated. Crista weak, but distinct also a pair of short and weak median lines present at the dorsosejugal margin of the notogaster (Figs. 38, 40). Ten pairs of notogastral setae of equal length present, all ciliate.

Ventral side (Fig. 39): Apodemes and borders weakly developed. Marginal, longitudinal lath absent on epimera 1. In anteromedian sternal apodemes a ring-like feature present on the sternal apodemes, between setae *1a*. All epimeral setae simple, thin, setiform. Epimeral surface ornamented by polygonal pattern. Six pairs of genital setae arising in two rows (4 pairs in median, 2 pairs in lateral position). Adanal setae ciliate, like the notogastral ones, other setae in the anogenital region simple.

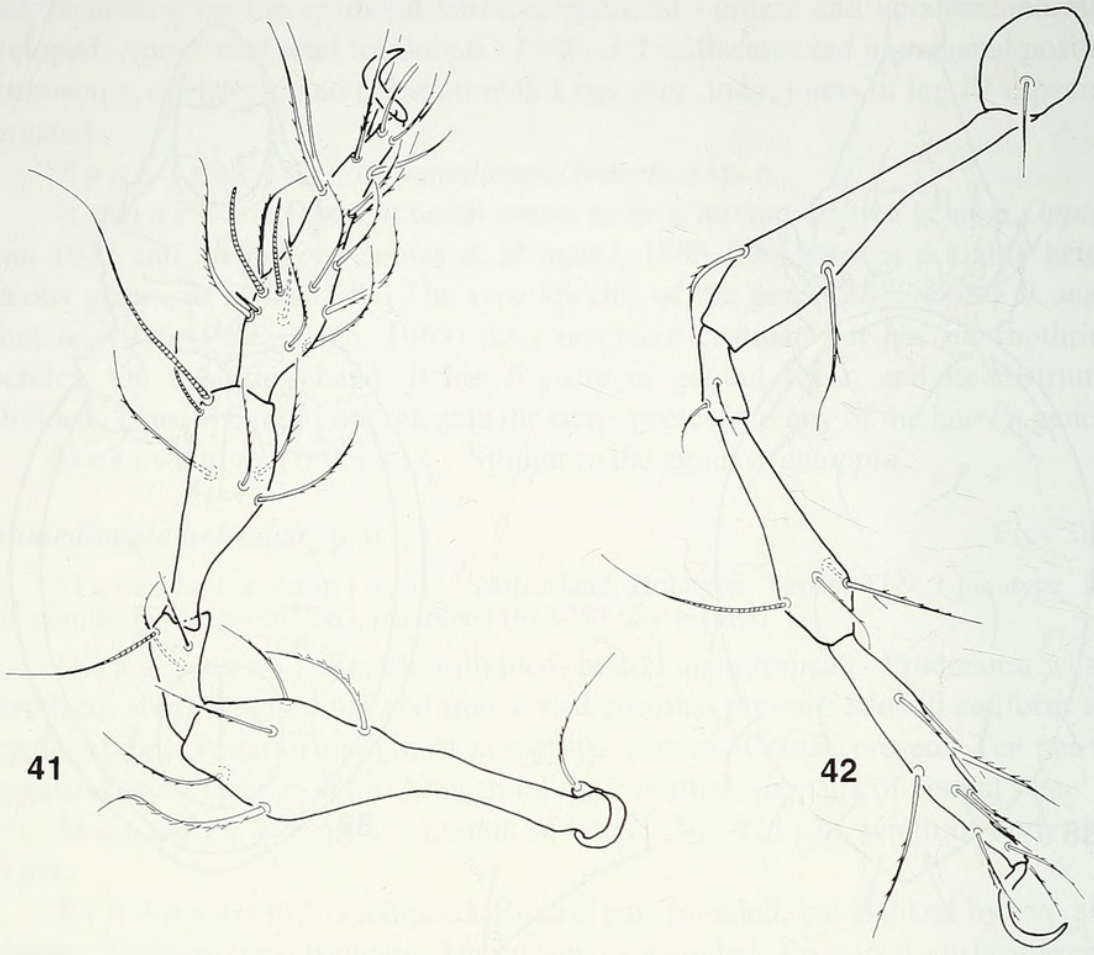


FIGS 38-40

Paramedioppia helvetica gen. n., sp. n. – 38: body in dorsal view, 39: body in ventral view, 40: podosoma in lateral view.

L e g s : All joints long, not widened, setae conspicuously ciliate/spinose. Leg setal formulae are normal for the family:

I: 1 - 5 - 2+1 - 4+2 - 20+2 - 1 (Fig. 41)
IV: 1 - 2 - 2 - 3 +1 - 10 - 1 (Fig. 42)



FIGS 41-42
Paramedioppia helvetica gen. n., sp. n. –41: leg I, 42: leg IV.

R e m a r k s : The main features are mentioned in the generic diagnosis, but it is the form of the sensillus which well characterises the new species.

D e r i v a t i o n o m i n i s : Named after the country the species originates from.

Subiasella* (*Lalmoppia*) *quadrimaculata (Evans, 1952)

Oppia quadrimaculata Evans, 1952: 37, fig. 2.
Subiasella (*Lalmoppia*) *quadrimaculata*: Subías & Rodriguez, 1986: 114, figs 1-3.

M a t e r i a l e x a m i n e d : Switzerland: GR-10.

R e m a r k s : The species is known from several localities (from England to Poland) of Europe, but it is not frequent anywhere. This is its first record from Switzerland. The prodorsum of these specimens, as it is the case in the Hungarian ones, has neither costula nor lamellar line.

Quadroppiidae Balogh, 1983

There is a great confusion in the family Quadroppiidae partly due to the publication of Mínguez et al. (1985) and partly to Woas (1986) but specifically to that of the latter author who synonymized species without the study of types. The core of the problem is in the interpretation of the senior author's species (*Quadroppia michaeli* Mahunka, 1977) described from Greece, and on the other hand, Woas' interpretation of the type species, *Q. quadricarinata* (Michael, 1885[3]) which was misunderstood by Paoli (1908). Accordingly, if the *Q. michaeli* species is not new, but simply the misinterpreted *Q. quadricarinata*, then the name introduced by Woas as *Q. paolii* nom. n. is redundant.

The situation is further aggravated in that the senior author described with Paoletti (Mahunka & Paoletti, 1984) another new species belonging to this genus (*Q. omodeoi* Mahunka & Paoletti, 1984), without taking the trouble to point out its relationship with the *Q. quadricarinata* by then correctly understood. Our recent study has revealed that *Q. paolii* is probably identical with the specimens from Switzerland, and we further believe that it is not identical either with *Q. quadricarinata* sensu Mahunka, nor with the form interpreted by Paoli, nor *Q. omodeoi*. There is a further problem in that Mínguez *et al.* (1985) hold the view that Hammer's *Q. monstruosa* is the same of Paoli's *Q. quadricarinta*.

To clarify the problem thorough study of types is needed along with authentically identified specimens. This time we could only examine the types of *Q. michaeli* and *Q. omodeoi*, and those Greek specimens which were published in 1977 as *Q. quadricarinata* sensu Mahunka. We discuss *Q. longisetosa* Mínguez, Ruiz et Subías, 1985 that was also found in Switzerland (*Q. quadricarinata* (Michael, 1885) was also collected at several localities in Switzerland) but refrain from discussing the other species here.

Quadroppia longisetosa Mínguez, Ruiz & Subías, 1985 Figs 43-44

Quadroppia longisetosa Mínguez *et al.*, 1985: 104, figs 6-7.

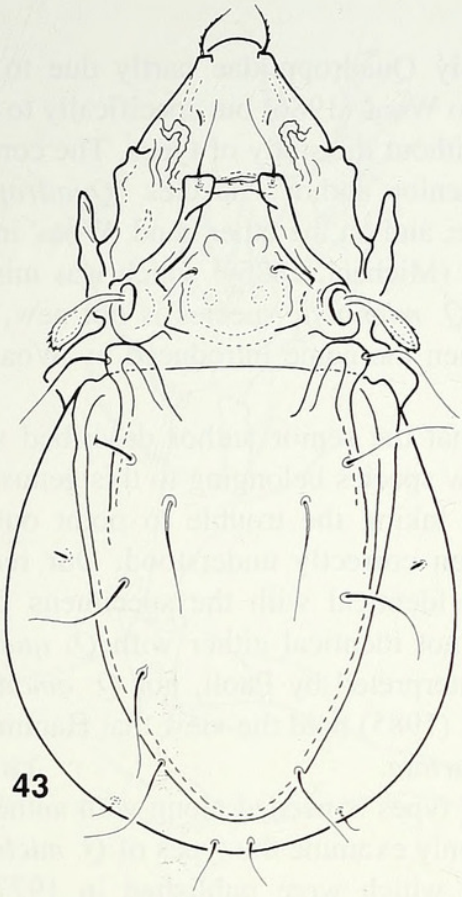
Material examined: Switzerland: NW-1.

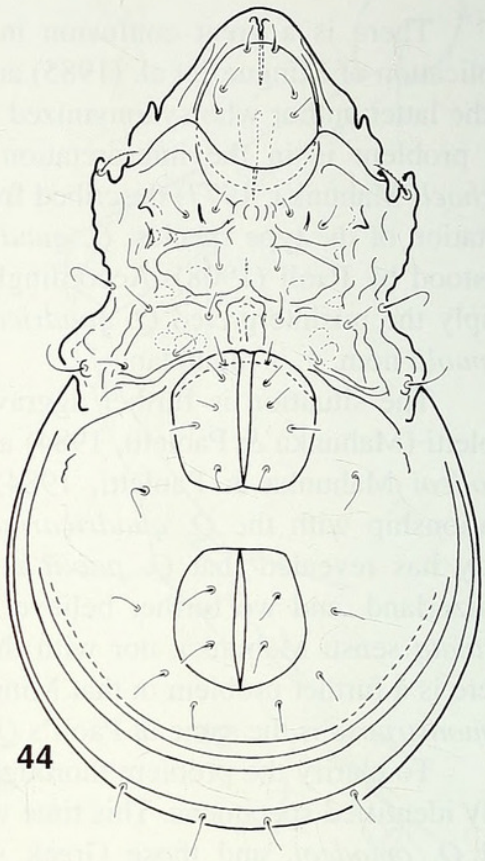
Remarks: This species is readily identifiable among the members of the genus *Quadroppia* Jacot, 1939. The Swiss specimens correspond well with the description and the figures of the species. Some slight differences exist, like the weak longitudinal lath in the interlamellar region parallel with the costulae, and the notogastral setae are somewhat more rigid than depicted in the drawing. We provide some figures obtained from specimens taken in Switzerland .

Quadroppia michaeli Mahunka, 1977 Fig. 45

Quadroppia michaeli Mahunka, 1977: 914, Abb. 12.
Quadroppia michaeli: Mínguez *et al.*, 1985: 114, figs 17-18.
Quadroppia michaeli: Mahunka, 1977 sensu Woas, 1986: 215.

[3] The original description appeared in 1885 and not in 1887 as mentioned by Woas (1986).





FIGS 43-44

Quadroppia longisetosa Mínguez, Ruiz & Subías, 1985 – 43: body in dorsal view, 44: body in ventral view.

R e m a r k s : In spite of Woas' opinion, this is a valid, independent species. It cannot be brought into close relationship with any of the so far described species. Its characteristics are:

P r o d o r s u m : Oval crest in the rostral region undivided and gradually becoming narrower basally. On both sides an arcuate, well separated crest present. Intercostular region with a short, transverse lath directly behind the distal end of costulae.

N o t o g a s t e r : The posteriorly running ribs emanating from the humeral processes are not weaker than the ones beside them, length of ribs is the same.

V e n t r a l s i d e : Epimeral borders are shown in Fig. 45. The median pattern directly in front of the genital opening is highly characteristic, it comprises two touching parts, both are rounded.

L e g s : Tarsus of leg II bears 2 solenidia.

Quadroppia omodeoi Mahunka & Paoletti, 1984 Figs 46-47

Quadroppia omodeoi Mahunka & Paoletti, 1984: 114, figs 1-2.

R e m a r k s : All the known species are distant relatives only. Its characteristics are:

P r o d o r s u m : Oval crest in the rostral region is undivided, not strongly narrowing basally. Intercostular region with a short, concave, transverse lath directly behind the distal end of costulae. Behind this transverse lath 2 pairs of sigillae and one pair of lateral laths are present, the latter are not connected in the middle. Sensilli conspicuously long (Fig. 47), much longer than in the other species.

N o t o g a s t e r : The posteriorly running ribs emanating from the humeral processes are much longer than the lateral ones. Notogaster completely enframed by a rib.

V e n t r a l s i d e : Fig. 46 depicts the epimeral borders.

L e g s : Tarsus of leg II bears 2 solenidia.

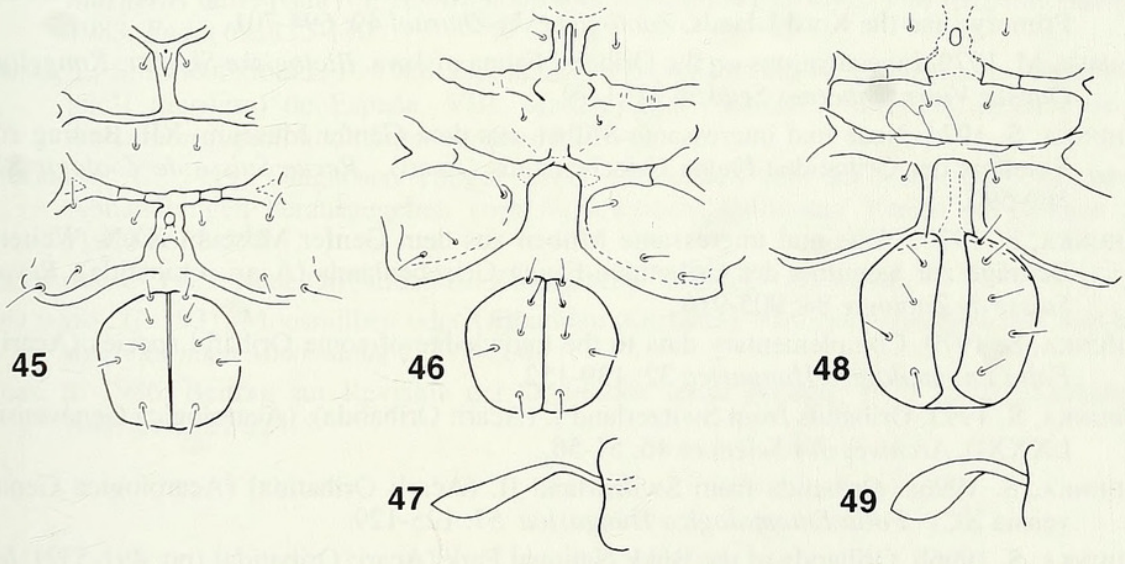
Quadroppia cf. ***paolii*** Woas, 1986 Fig. 48-49

Quadroppia paolii Woas, 1986: 78, figs 30-32.

M a t e r i a l e x a m i n e d : Switzerland: GR-10.

R e m a r k s : Without studying the type the relegation of this species is impossible. It is highly probable that this species may be identical with *Q. monstruosa* Hammer, 1979 sensu Mínguez *et al.* (1985). Fundamental differences are obvious:

P r o d o r s u m : Oval crest in the rostral region is either entirely divided basally or much variegated. Intercostular region with a long, robust, arcuate lath directly before the end of costulae. Just behind this 2 pairs of sigillae and one pair of lateral laths, the latter frequently connected in the middle with a weak, transverse lath. Sensillar capitula oval (Fig. 49).



FIGS 45-49

Quadroppia michaeli Mahunka, 1977 – 45: epimeral region.
Quadroppia omodeoi Mahunka & Paoletti, 1983 – 46: epimeral region, 47: sensillus.
Quadroppia cf. *paolii* Woas, 1986 – 48: epimeral region, 49: sensillus.

N o t o g a s t e r : The posteriorly running ribs emanating from the humeral processes are shorter than the lateral ones.

V e n t r a l s i d e : as shown in Fig. 48.

L e g s : Tarsus of Leg II bearing 2 solenidia.

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