

New observations on the mites of the family Hemisarcoptidae (Acari: Astigmata) phoretic on Coccinellidae (Coleoptera)

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Summary

The phoretic deutonymphs (or hypopi) of two new species of Hemisarcoptidae (Acari) are described from Coccinellidae, i.e. *Congovidia benelux* n.sp. from *Adalia bipunctata* in The Netherlands and *Exochomus quadripustulatus* in Belgium, and *Divilia exigua* n.sp. from *Calvia duodecimguttata* in Poland. In addition, the deutonymphs of the following species are recorded here, for the first time, from Coccinellidae outside Britain: *C. coccinellidarum* FAIN *et al.* (1995) is recorded from Belgium and *Divilia occidentalis* FAIN *et al.* (1995) from The Netherlands. Finally, deutonymphs of *Nanacarus minutus* (OUDEMANS, 1901) were collected from Coccinellidae from Poland and Belgium.

Key words: Systematics and geographical distribution. Hemisarcoptidae (Acari). Phoretic Coccinellidae (Coleoptera)

Résumé

Les deutonymphes de deux espèces nouvelles de Hemisarcoptidae (Acari) sont décrites de Coccinellidae, ce sont: *Congovidia benelux* n.sp., ex *Adalia bipunctata* des Pays-Bas et ex *Exochomus quadripustulatus* de Belgique, et *Divilia exigua*, ex *Calvia duodecimguttata* de Pologne. En outre, les deutonymphes de deux autres espèces décrites d'Angleterre, à savoir *Congovidia coccinellidarum* FAIN *et al.* (1995) et *Divilia occidentalis* FAIN *et al.* (1995), sont signalées pour la première fois de Coccinellidae respectivement de Belgique et des Pays-Bas. Enfin, des deutonymphes de *Nanacarus minutus* (OUDEMANS, 1901) ont été récoltées sur des Coccinellidae de Pologne et de Belgique

Mots clé: Systématique et distribution géographique, Hemisarcoptidae (Acari). Phoretic. Coccinellidae (Coleoptera).

Introduction

In a previous paper dealing with phoretic deutonymphs (or hypopi) of Coccinellidae in Britain, we have described two new species of Hemisarcoptidae (Acari): *Congovidia coccinellidarum*, very common on several species of ladybirds in that country and *Divilia occiden-*

talis, only represented by the holotype (FAIN *et al.*, 1995). Until now all attempts to find the corresponding adult mites have remained unsuccessful.

During the year 1996, these investigations were extended by GH, JS & KM to other countries, i.e. The Netherlands and Poland. Moreover, A.F. examined several hundred ladybirds collected from pear trees in the areas of Gembloux and Namur by Dr C. FASSOTTE (Agronomic Research Center of Gembloux, Belgium) during the period 1985 to 1994. These new researches resulted in the discovery of two new species in this family of mites.

All the mites studied here were mounted in Hoyer medium (a variant of Berlese chloral gum medium).

All our measurements are in micrometers.

FAMILY HEMISARCOPTIDAE OUDEMANS, 1904

Genus *Congovidia* FAIN & ELSEN, 1971 (in FAIN), 1971

1. *Congovidia coccinellidarum* FAIN *et al.*, 1995

This species is very common on various ladybirds in Britain. Three deutonymphs of that species have now been collected from *Coccinella magnifica*, in the Surrey, Britain. It is a new host for that species. (Coll. G.H.).

This species had, so far, not been recorded outside Britain. We found now two deutonymphs of this species from *Exochomus quadripustulatus* taken from a pear tree from Gembloux, Belgium (A.F.).

2. *Congovidia benelux* nov.spec.

This species is known only from the deutonymph. *Deutonymph, holotype* (figs 1-7): Maximum length and width of holotype 198, 123; in five paratypes from the same host: 192, 118; 198, 124; 205, 120; 208, 130 and 213, 132, Dorsum: Anterior border of idiosoma not produced into a snout. Propodonotum 78 long, hysteronotum 120. Both shields punctate with narrow longitudinal

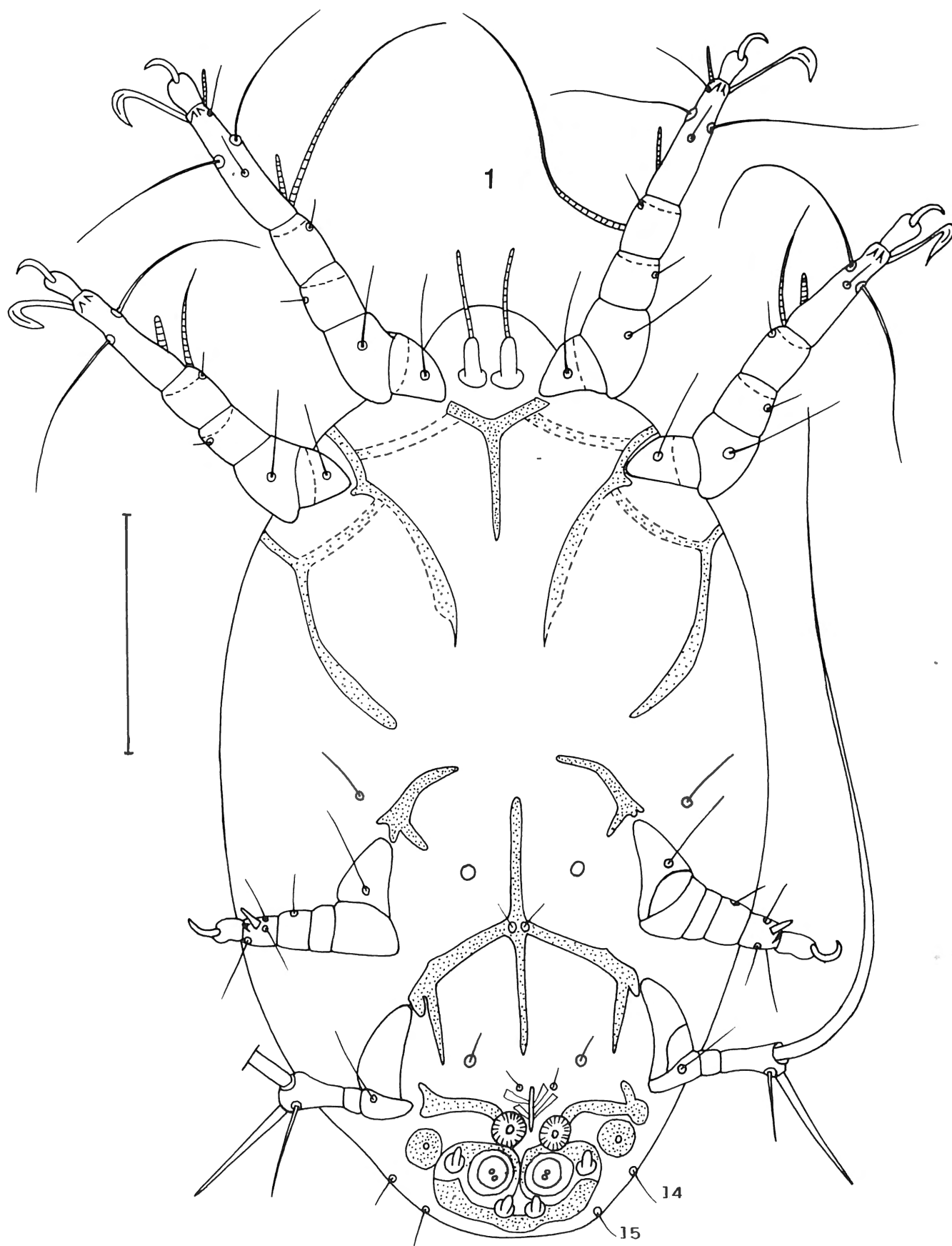
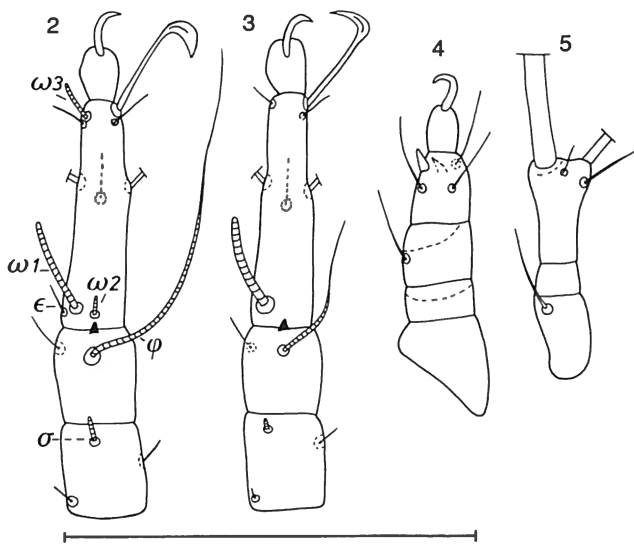


Fig. 1. – *Congovidia benelux* nov.spec. Deontonymph in ventral view (Scale line 50 μ m).



Figs 2-5. — *Congovidia benelux* nov.spec. Deutonymph: leg I (tarsus, tibia and genu) in dorsal view (2), leg II, in dorsal view (3), leg III in lateral view (4), leg IV in ventral view (5) (Scale line 50 μ m).

lines or grooves unequal in length, dorsal setae very short (3 to 10). Setae *sce* distinctly more anterior than *sci*, setae *scx* simple, slightly inflated in their basal part, Setae *dl* represented by small pale spots or lacking completely; setae *l4* and *l5* are ventral. Eye-lenses large. Retinal pigmented area wider than long and deeply incised laterally. *Venter*: Palposoma consisting of two cylindrocylindrical palps 9 long and 3 wide, without a common base; solenidion *alpha* 15 long. Epimera III remaining far from the longitudinal median sclerite. Suctorial plate 34 wide; diameter of anterior suckers 7 to 7,5, of posterior suckers (sclerotized ring included) 9-9,5. Setae *ga*, *gm* and *gp* less than 10 long. *Legs*: Length of tarsi I-III (ambulacra not included) 27-27-9,5; tibio-tarsus IV 11-12. Tarsus I bearing an apical foliate seta *e* with a cylindrical base 12 long, setae *la* and *ra* very thin, not foliate, 40 to 45 long, *wa* 12, *f* and *d* very thin and short; solenidion *omega 1* cylindrical, thin, 11-12, *omega 2* narrow 3, *omega 3* thin close to the apex, 6 long, *eta* (close to *omega 1*) very thin and short. Tarsus II as tarsus I but *omega 2* and 3 and *eta* are lacking and *omega 1* is thicker. Tarsus III with a subapicoventral spine and three very thin setae. Claws of tarsi I-III 6,5-6,5 and 5,5 long respectively. Tibiae I and II with a thin seta *gT* 6 long, and a long solenidion *phi*, much longer on tibia I (50) than on tibia II (20). Tibia III with a very thin ventral seta *kT*. Tibiotarsus IV 13 long, bearing 4 setae of which 2 apical strong and long (the anterior 130-140, the posterior 30) and 2 ventral subapical short and thin. Antero-dorsal border of tibiae I and II with a small triangular spurlike process. Genua I and II with two thin and very short setae and a short solenidion *sigma*, 5 and 2 long respectively. Femora and trochanters I-II with a very thin seta 20 to 25 long; femora IV with a thin seta 16 long. Trochanters III with a thin seta.

Hosts and localities:

Holotype deutonymph from *Adalia bipunctata*, from Wageningen, The Netherlands, 1996, Paratypes: 11 deutonymphs, with the same data as holotype, 1 paratype deutonymph from *Exochomus quadripustulatus* taken from a pear tree in Gembloux, Belgium (Dr C. FASSOTTE). Holotype and 3 paratypes in the Natural History Museum, London. Other paratypes in the Institut royal des Sciences naturelles de Belgique (IRSNB).

Remarks:

This new species is distinguished from all the other known species of *Congovidia* by the shape of the pigmented ocular sclerite which presents two deep lateral incisions. In addition, it differs from *C.coccinellidarum* by the much shorter length of the postero-apical seta of tibiotarsus IV, and the much less developed scutal pattern with shorter lines.

Genus *Divilia* SEVASTIANOV, 1969

Divilia occidentalis FAIN *et al.*, 1995

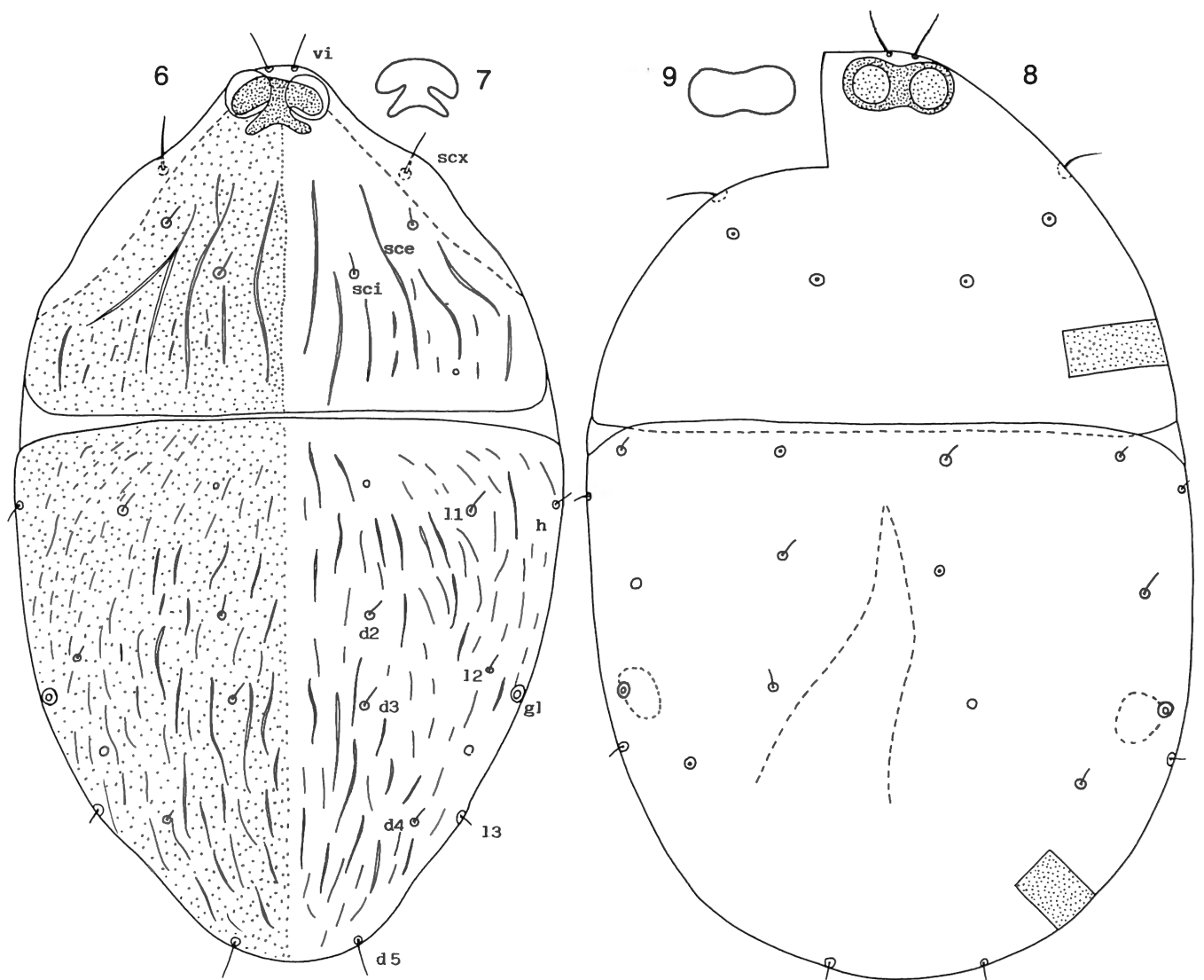
The holotype and only known specimen of this species was collected from *Chilocorus renipustulatus*, from Britain.

A second specimen, deutonymph, has now been collected from *Adalia bipunctata* from Wageningen, The Netherlands (Coll.G.H.)

Divilia exigua nov.spec.

This species is represented by a single deutonymph taken from *Calvia duodecimguttata* (PODA) from Poland.

Deutonymph, holotype (figs. 8-15): The cuticle of the holotype is torn at both extremities of the idiosoma. However all the important characters are perfectly observable and the species is easily recognizable. Length and width of idiosoma 189, 105. *Dorsum*: Pigmented ocular area normally shaped, without lateral incisions. *Propodonotum* 66 long, *hysteronotum* 123. Dorsal shields finely punctate without lines or depressions. Setae *scx* simple, 8 long. Setae *vi* 10. Length of dorsal setae less than 10. Distances between setae: *d1 - d1* 27, *d1 - l1* 27,6; *d1 - d2* 22; *d2 - d3* 21; *l2 - d2* 35; *l1 - l2* 24; *l2 - l3* 24; *d1 - d4* 56; *d2 - l2* 35. Setae *l4*, *l5* and *d5* ventral, the *d5* and *l5* very close to each other. *Venter*: Epimera III long arriving close to the longitudinal median sclerite. Palps almost cylindrical, 4,5 long with a common base 12 wide. Suctorial plate 27 wide, diameter of anterior and posterior suckers 7,2 and 8,3 respectively. *Legs*: Antero-dorsal border of tibiae I and II with a well-developed triangular spurlike process. Length of tarsi I to III 19-18-9,5; length of tibio-tarsus IV 12. Tarsi I-II with a claw 6 long. Tarsus III missing at one side, on the other side the claw is missing and probably lost. Tarsus I with an apical foliate



Figs 6-9. – *Congovidia benelux* nov.spec. Deutenymph in dorsal view (6), ocular sclerite (7). *Divilia exigua* nov.spec. Deutenymph in dorsal view (8), ocular sclerite (9).

seta with a base 10 long; setae *la*, *ra* and *wa* very thin, incomplete. Setae *f* and *d* very thin and short. Solenidia: *omega 1* thick, cigar-like 8, *omega 2* is lacking, *omega 3* is close to the apex of tarsus and 7,2 long. Tarsus II differs from tarsus I by the longer (9) and thicker *omega 1*. Tarsus III with a subapico-ventral spine and three thin setae. Tibio-tarsus IV with four setae, of which two apical long and strong but incomplete setae (anterior 60, posterior 75) and two small and short ventral setae 4 to 6 long, Tibiae I-II with a thin seta and a *solenidion phi* 30 and 25 long respectively. Genua I-II with a short solenidion *sigma* and two very short and thin setae. Trochanters I to III and femora IV devoid of setae.

Host and locality:

Holotype and only known specimen from a coccinellid *Calvia duodecimguttata* (PODA) Torun, Poland (Coll. GH, JS & KM). Holotype deposited in NHM, London.

Remark:

This new species is distinguished from the other described species in the genus by the following characters:

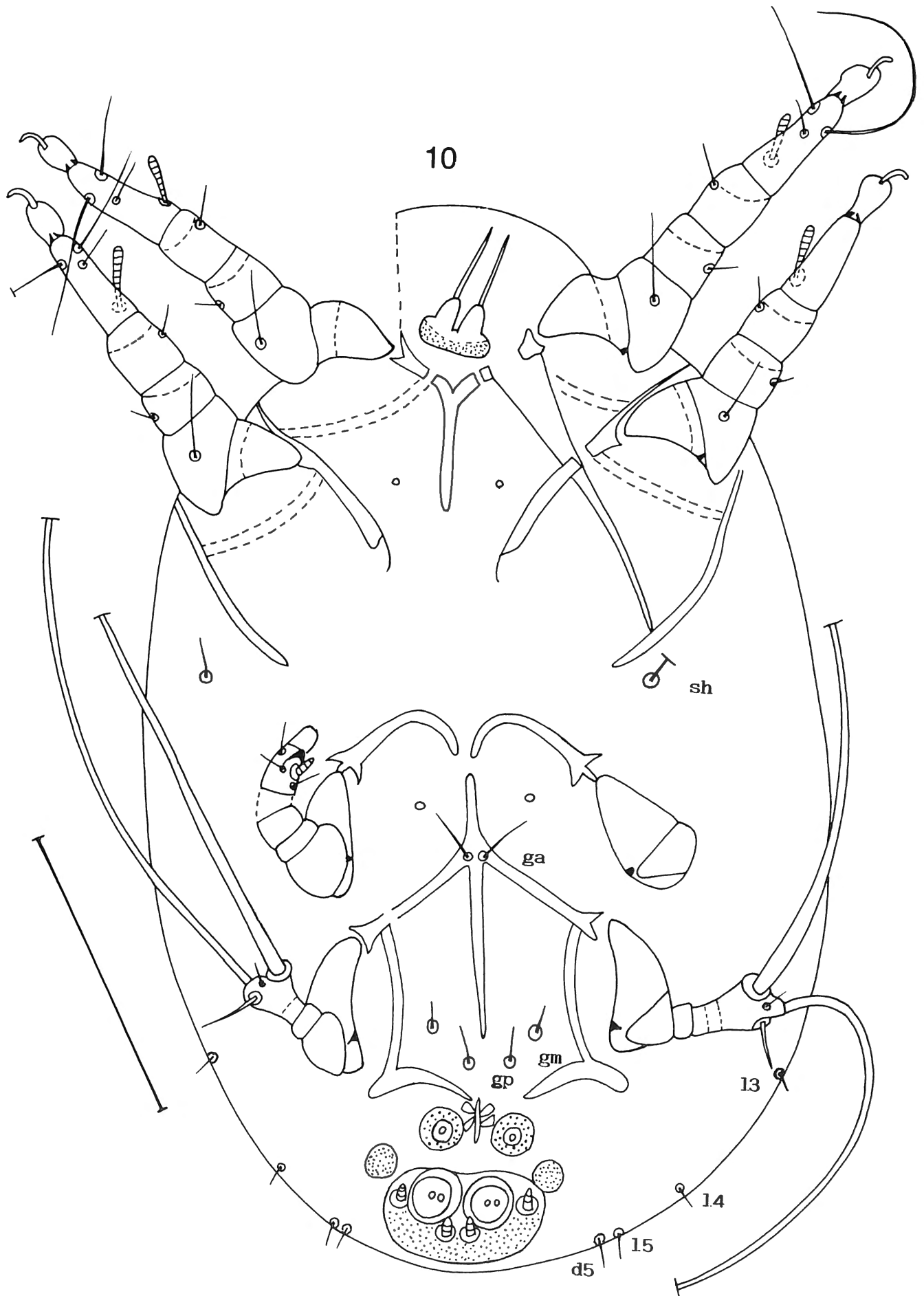
1. Very small size of the body and the legs
2. Dorsal shields finely punctate without lines or depressions

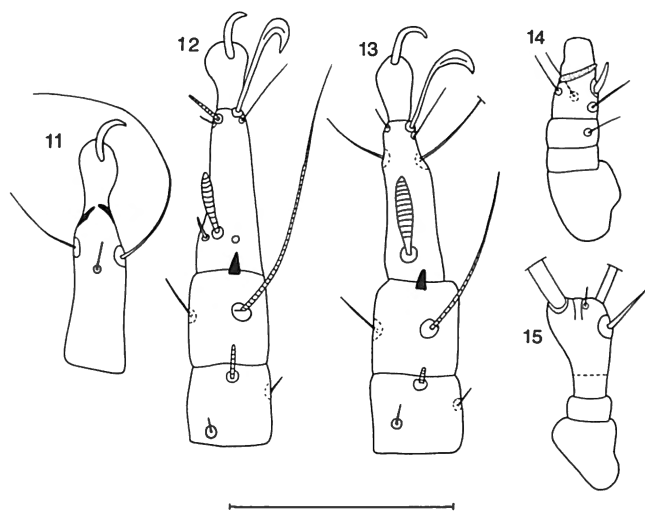
Genus *Nanacarus* OUDEMANS, 1902
= *Congovidiella* FAIN & ELSEN, 1971

This genus differs from the other genera of Hemisarcoptidae by the absence of a ventro-subapical spine on tarsus III and the absence of setae on tibiae I and II. In the genus



Fig 10. – *Divilia exigua* nov.spec. Deutenymph in ventral view (Scale line 50 μ m).





Figs 11-15. – *Divilia exigua* nov.spec. Deutonymph: Tarsus I in ventral view (11), leg I (tarsus, tibia, genu) in dorsal view (12), leg II in dorsal view (13), leg III in lateral view (14), leg IV in ventral view (15) (Scale line 25 μ m).

Espeletiacarus FAIN, 1987, described from Colombia, the tarsus III is also devoid of a ventral-subapical spine but the tibiae I and II have a seta and the tarsal claws are vestigial.

The genus *Nanacarus* is represented in Britain by the species *Nanacarus collembolicola* (FAIN & JOHNSTON, 1974), described from *Sminthurus fuscus*.

Nanacarus minutus (OUDEMANS, 1901)

Hypopus minutus OUDEMANS, 1901: 85

Nanacarus minutus (OUDEMANS, 1901); FAIN, 1985: 280; 1988: 126

This species has been collected by the authors from Coccinellidae from Poland, from *Calvia duodecimguttata* (PODA) (three deutonymphs) and *Exochomus quadripustulus* (one deutonymph) and from Belgium (Namur), from *Adalia* sp.

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