

# Resurrection of the genus *Capitodiscus* Vitzthum, 1931 with description of *Capitodiscus admirandus* n. sp. from Croatia (Acari: Mesostigmata: Uropodina)

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**Abstract.** The genus *Capitodiscus* Vitzthum, 1931 bearing unique characters in the Uropodina mites, is resurrected. This genus is easy to recognize on the basis of the following characters: insertion of corniculi situated below level of insertions of h2; the pygidial shield bearing long setae. Diagnosis and systematic notes to this genus are given with the description of the second species, *C. admirandus* n. sp. from Croatia, which differs from *Capitodiscus venustus* (Berlese, 1884) in the position of sternal setae and the presence of a well sclerotised court around the genital opening.

**Keywords.** Acari, Uropodina, *Capitodiscus*, *Discourella*, synonymy.

## INTRODUCTION

Berlese (1884) reported on an interesting, new Uropodina mite species from Italy with unique gnathosoma and large, strongly sclerotised body which was named as *Discopoma venusta* Berlese, 1884. On the basis of the extreme characters, Berlese (1917) later established a new subgenus *Discopoma* (*Cephalodiscus*) to accommodate this species, however this subgenus name proved to be a junior homonym of the marine Hemichordata genus (*Cephalodiscus* M'Inthios, 1882), hence Vitzthum (1931) established a new replacement name *Capitodiscus* Vitzthum, 1931.

Later, Hirschmann and Zirngiebl-Nicol (1964) placed *Capitodiscus venustus* into the genus *Discourella* Kramer, 1886 on the basis of cheliceral and gnathosomal appendages. Hirschmann (1972) divided the large and heteromorphous genus into several species groups, and placed *Discourella venusta* together with the newly described *Discourella salignifolia* Hirschmann, 1972 into the *venusta*-group. It seems that Hirschmann (1993) himself was not sure about the exact systematic position of the species because in his monograph this species was discussed separately from the other *Discourella* species.

In the last decade, several collecting trips were organized to the different countries of the Balkan

peninsula (Fehér *et al.*, 2004), and several papers were published on the soil mesofauna collected in these expeditions (mites and springtails).

The springtail fauna was studied by Traser & Kontschán (2004) and Dányi (2010) resulted in description of a new species from Montenegro. Kontschán (2003 a,b, 2004, 2005, 2006, 2007 a,b, 2010) listed several Uropodina records and described a dozen of new species from the different countries of the Balkan peninsula, while Mahunka-Papp (2008, 2010) reported new occurrences and new species of Oribatid mites from the same region. The zerconid mite material was elaborated by Ujvári (2008, 2010 a,b,c, 2011) reporting several new species from the Balkan peninsula.

In 2008, a short expedition was organised to Croatia and Montenegro where soil samples were also collected, most of them in Montenegro and a few in Croatia. One of the Croatian samples contained a remarkable new species possessing several extreme characters similar to that of *Discourella venusta*.

On the basis of these unique characters which characterise the new species herewith described and present also on *Discourella venusta*, I propose to resurrect *Capitodiscus* Vitzthum, 1931 as a valid genus.

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## MATERIAL AND METHODS

The single specimen was cleared in lactic acid and was drawn with the aid of a drawing tube. After the investigation the specimen was put in alcohol and deposited in the Hungarian Natural History Museum (Budapest).

Abbreviations used: h1-h4 hypostomal setae, St1-St5 sternal setae. Measurements are given in micrometres ( $\mu\text{m}$ ), width of idiosoma was taken at level of coxae IV.

## TAXONOMY

### *Capitodiscus* Vitzthum, 1931

*Discopoma* Berlese, 1884: 5 (partim).

*Discopoma* (*Cephalodiscus*) Berlese, 1917: 12.

*Cephalodiscus*: Wiśniewski 1993: 373.

*Capitodiscus* Vitzthum, 1931: 144.

*Discourella venusta*-group Hirschmann 1972: 28, Wiśniewski & Hirschmann 1993: 28.

**Diagnosis.** Idiosoma oval, dorsally domed and strongly sclerotised. Dorsal and marginal shields separated completely, dorsal shield hypertrichous, caudal margin with numerous long and smooth setae. Submarginal shield present and anteriorly fused to dorsal shield, caudally wide and forms a pygidial shield which bearing several long and smooth setae. Genital shield of female linguliform, without anterior process. St1 and St2 marginally pilose. Tritosternum with narrow basis, tritosternal laciniae subdivided into three or four branches. Corniculi smooth, narrow, horn-like. Insertion of corniculi situated below on level of in-

sertion of h2. Hypostomal setae h1 long, h2, h3 and h4 shorter than h1, every hypostomal setae marginally pilose. Epistome long, simple, or apically subdivided into two branches, basally serrate and apically pilose. Chelicerae without internal sclerotised node, digitus fixus and digitus mobilis bearing several large teeth.

**Type species.** *Discopoma venusta* Berlese, 1884 = *Capitodiscus venustus* (Berlese, 1884).

**Remarks.** Insertion of corniculi (situated below level of insertion of h2) and the presence of long setae on pygidial shield are unique peculiarities of the genera *Capitodiscus* and *Hutufeideria* Hirschmann & Hiramatsu, 1977 however, these two genera differ in several ways summarized in table 1.

**Systematic position.** I consider *Capitodiscus* as a valid, well-defined genus which easy to separate from the other similar genera (Table 1). I provisionally place the genus in the family Uropodidae on the basis of the following characters: absence of internal sclerotized node associated with levator tendon, absence of mushroom- or flower shaped sensory organ of fixed digit of chelicerae, long h1 setae and terminally smooth corniculi (Lindquist *et al.*, 2009). However the members of this family need revision.

**Biology.** On the basis of the numerous teeth on both digits of chelicerae, the *Capitodiscus* species seem to be carnivorous mites, which feed on other, weakly sclerotized mites, springtails, or other small invertebrates.

**Table 1.** Distinguishing characters between *Capitodiscus* and *Hutufeideria*

	<i>Capitodiscus</i>	<i>Hutufeideria</i>
Chelicerae		
Internal sclerotised node	absent	present
Large teeth on both digits	present	absent
Gnathosoma		
Corniculi	smooth	with one-five teeth
Idiosoma		
Membranous appendage on pygidial shield	absent	present
Submarginal shield	present	absent

***Capitodiscus admirandus* sp. nov.**

(Figs. 1–14)

*Material examined.* Holotype female. Croatia, Konavli Mts., Ljuta (near Gruda), Ljuta Potok, at the Konavoski dvori watermill, 60 m, in a gallery forest, N42°32.076' E18°22.610' leg. Dányi, L., Fehér, Z., Kontschán, J. & Murányi, D. 07.X. 2008.

*Diagnosis.* Dorsal and ventral idiosoma covered by oval pits and bearing numerous marginally pilose setae. Surface of sternal shield smooth, with a strongly sclerotized court around genital opening of female. St1–3 marginally pilose, St4–5 smooth.

*Female.* Length of idiosoma 1120 µm, width 710 µm (n = 1). Shape oval, idiosoma dorsally domed and strongly sclerotized.

*Dorsal idiosoma* (Fig. 1). Dorsal and marginal shields separated completely. Marginal shield without ornamentation and bearing pilose setae (ca. 65–70 µm), except the anterior region which bears three pairs of smooth setae (ca. 50 µm) (Fig. 2). Holodorsal shield divided into a dorsal and a submarginal shield, the latter forms the pygidial shield. Submarginal shield smooth, bearing pilose setae (ca. 60–70 µm) (Figs 4–5), lateral margin of pygidial shield strongly sclerotised and bearing numerous smooth and long setae (ca. 80–90 µm) (Fig. 3). Dorsal shield with several pilose setae (ca. 50–55 µm) and covered by oval pits, caudal margin of dorsal shield with several long and smooth setae (ca. 80–90 µm). Membranous cuticle situated between dorsal and submarginal shields.

*Ventral idiosoma* (Fig. 6). Surface of sternal shield smooth, three pairs (St1–3) of pilose (ca. 35–45 µm) and two pairs of smooth (St4–5) (ca. 30–40 µm) sternal setae present, St1 placed near anterior margin of sternal shield, St2 on level of anterior margin of genital shield, St3 on level of anterior margin of coxae III, St4 on level of posterior margin of coxae III, St5 near the basal edges of genital shield. Ventral shield covered by

oval pits and bearing pilose setae (ca. 50–60 µm) (Fig. 7), adanal setae similar in shape and length to ventral setae, postanal setae absent. Near posterior margins of coxae IV one pair of large oval pit present. Genital opening with strongly sclerotised court which possesses an anterior process. Genital shield linguliform, anteriorly curved, its surface without sculptural pattern, but near margins the surface undulate. Stigmata situated between coxae II and III, peritremes not clearly visible. Tritosternum with vase-like basis, laciniae divided into three pilose branches (Fig. 8).

*Gnathosoma* (Fig. 9). Corniculi smooth, narrow, horn-like. Insertion of corniculi situated below level of insertions of h2. Hypostomal setae h1 long (ca. 105–110 µm) marginally serrate, h2 short (ca. 40–45 µm), margins with several spines, h3 short (ca. 40 µm) and marginally serrate, h4 short (ca. 40 µm) and pilose. Epistome not clearly visible. Chelicerae without internal sclerotized node, both digits bearing several large teeth (Fig. 10).

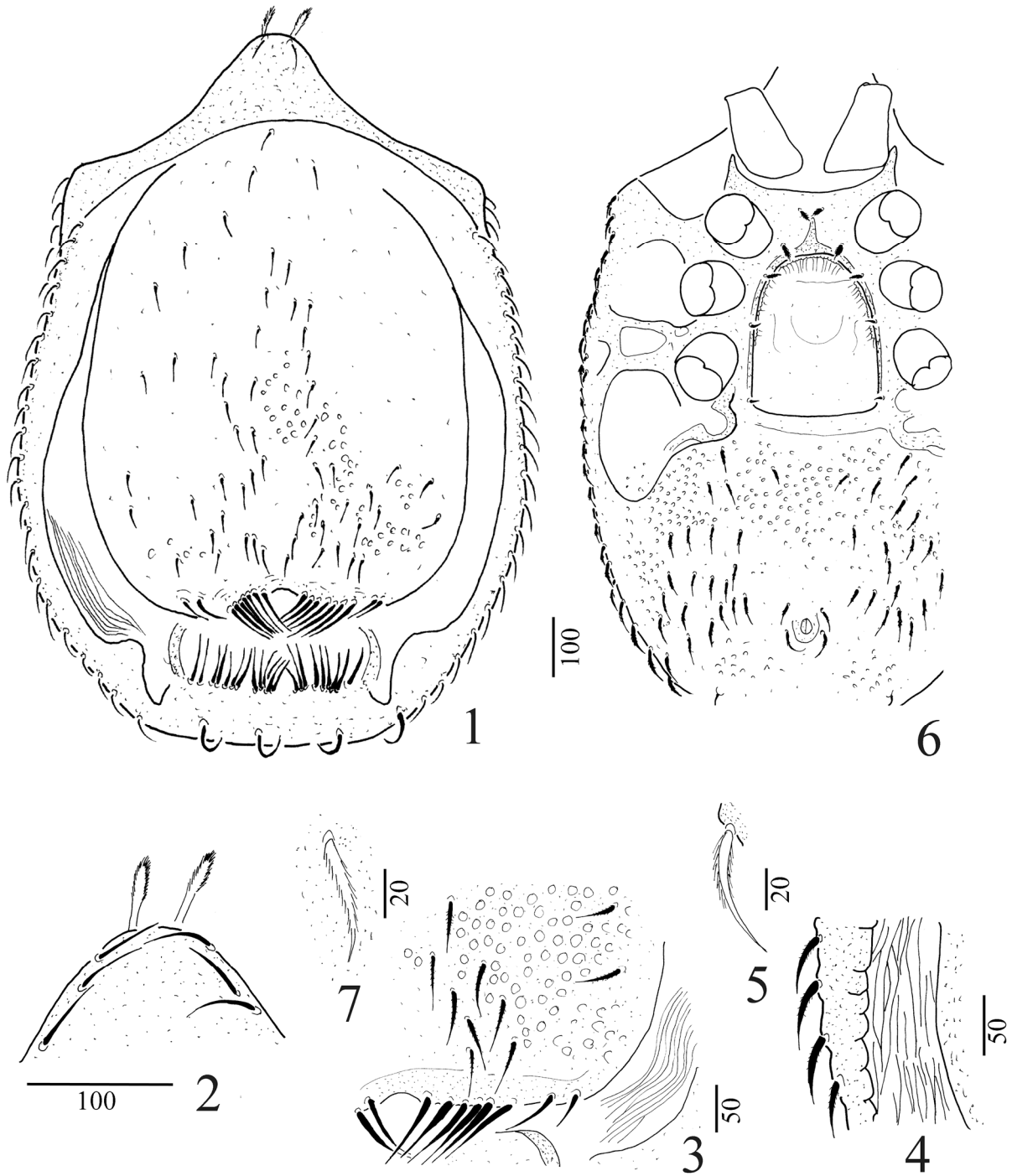
*Legs* (Figs 11–14). Leg I without ambulacral claws, all of legs with smooth and pilose setae.

*Etymology.* The name of the new species refers to the Latin word “admirandus” means admirable in English. The discovery of the second species of this genus was really admirable.

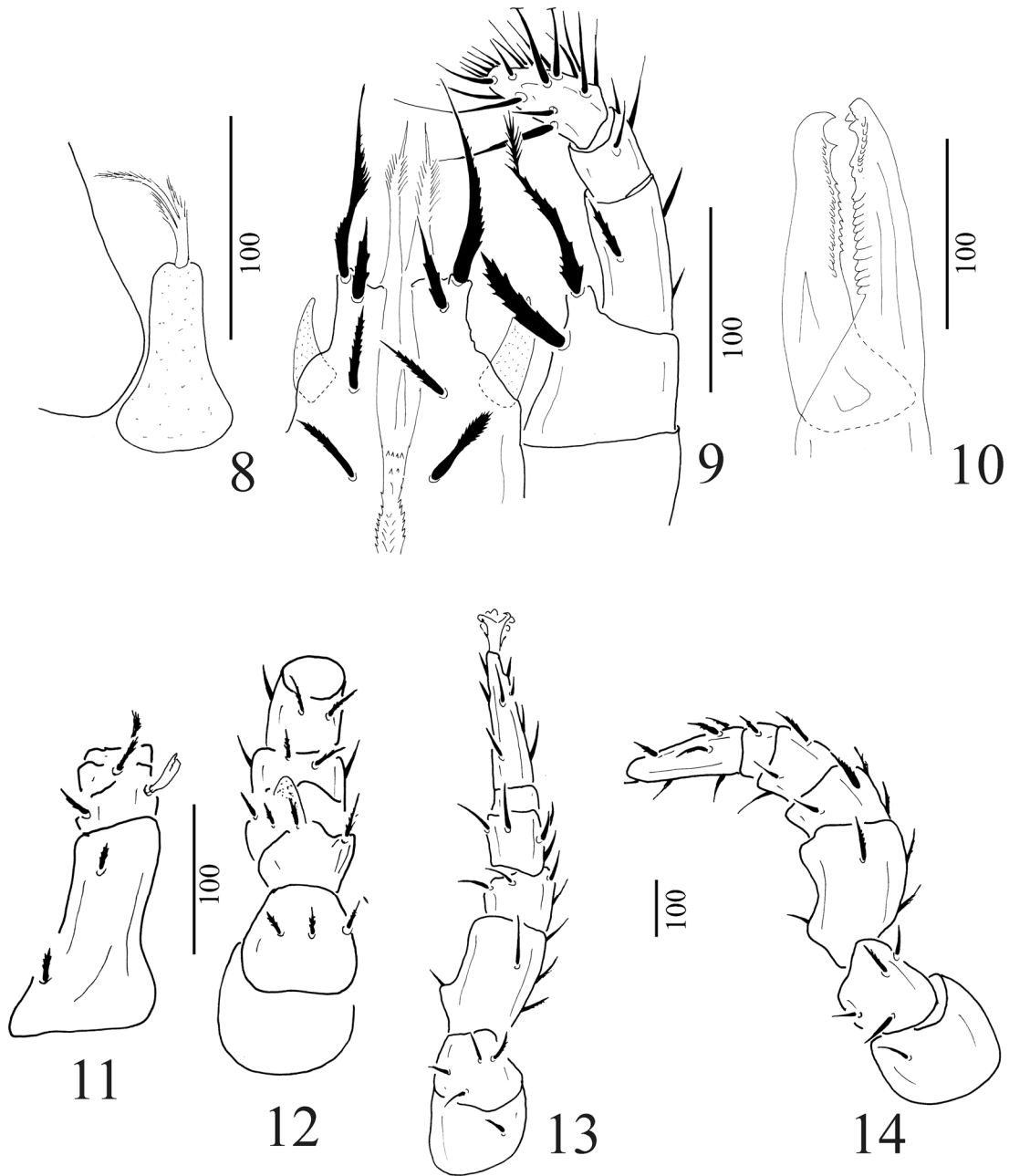
*Remarks.* The new species is easy to distinguish from *C. venustus* by the strongly sclerotized court around the genital opening which is missing in the latter species. Moreover, St1 and St2 are situated in the central region of the sternal shield in the new species. In contrary, these two sternal setae are placed near to the lateral margins of the sternal shield in *C. venustus*. The idiosoma is covered by irregular pits in the known species but the new species possesses oval pits on its body surfaces.

## DISCUSSION

The extreme position of corniculi on the gnathosoma and the presence of long setae on the pygidial shield are synapomorphic characters



Figures 1–6. *Capitodiscus admirandus* sp. nov. 1 = dorsal view, 2 = apical region, 3 = caudal area of dorsal shield, 4 = margins of idiosoma, 5 = marginal seta, 6 = ventral view, 7 = ventral seta



Figures 8–14. *Capitodiscus admirandus* sp. nov. 8 = tritosternum, 9 = ventral view of gnathosoma and palp, 10 = chelicerae, 11 = first segments of leg I, 12 = leg II, 13 = leg III, 14 = leg IV (ambulacrum not illustrated)

states, which can only be found on these two species. These characters are missing from the other species of the former *venusta* species-group (*D. salignifolia* Hirschmann, 1972) hence this species remains in the genus *Discourella* but without an exact species group position. *Capitodiscus* is similar to the genus *Hutufeideria*, however this similarity can be result of convergent evolution, because the genus *Hutufeideria* belongs to the family Dinychidae (Lindquist *et al.*, 2009) which is characterized by the presence of internal sclerotized node on chelicerae. However, the internal sclerotized node is missing in *Capitodiscus* species therefore according to the present classification it belongs to the family Uropodidae.

The two *Capitodiscus* species occur in the Mediterranean region of Europe (Italy and Croatia). According to my supposition, other unknown species may inhabit this region as well; however these species seem to be very rare. Intensive collecting work need to be carried out in other regions of Southern Europe to find more species of this genus.

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