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Copidognathus andamanensis sp. n., a new marine Halacaridae (Acari) from Andaman Island (India)

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Résumé

Une nouvelle espèce d'Halacaridae du genre *Copidognathus*, qui a été collectée dans le sédiment entre les algues coraillères *Halimeda opuntia* à Chiriatapu (Andaman Island, Inde, Baie de Bengal), est décrite. *Copidognathus andamanensis* sp. n. est étroitement liée à l'espèce groupe *Copidognatus bairdi* et peut être assignée à ce groupe.

Le diagnostic majeur des caractéristiques de *C. andamanensis* sp. n. sont: AD avec une aréole antérieure, une médiane (dûe à la fusion de 2 aréoles médianes) et une marginale (postérieurement); PD avec 4 côtes médianes et paracôtes jointes antérieurement; côtes médianes avec trois pores en rosette et paracôtes avec deux larges pores en rosette; PD avec, postérieurement, deux pores glandulaires; EP non développé; tibia I avec trois soies ventrales dont certaines sont pectinées. Patella IV avec 4 soies; telofémur III et IV dépourvu de soie ventrale, tibia IV avec toutes les soies ventrales lisses; tarses III et IV avec 4 soies dorsales; griffes latérales de la patte II-IV avec, ventralement, 3-5 dents robustes. Chez le mâle, PGS commence un petit peu en dessous de la marge du GA.

C. andamanensis sp. n. est fortement proche de *C. ganglionatus* Newell 1984 bien que certaines dissimilarities ont été rapportées. Dans ce contexte, la description de cette dernière espèce est aussi discutée.

Mots-clés: Halacaridae marin, Andaman, India

Abstract

A new Halacaridae species of the genus *Copidognathus* that was collected among the sediment between the coral algae *Halimeda opuntia* from Chiriatapu (Andaman Island, India, Bay of Bengal) is described.

Copidognathus andamanensis sp. n. is closely related to the members of the *Copidognathus bairdi* species group and can be assigned to this group. Major diagnostic characteristics of *C. andamanensis* sp. n. are - AD with one anterior, one middle (due to fusion of two areolae medially) and one marginal areola (posteriorly); PD with four costae, middle and paracostae joined anteriorly; middle costae three rosette pores and paracostae two rosette pores wide; PD with two gland pores posterioly; EP not developed; tibia I with three ventral setae of which ones is pectinate; Patella IV with four setae; telofemora III and IV devoid of any ventral seta; tibia IV with all ventral setae smooth; tarsi III and IV with four dorsal setae; lateral claws of leg II-IV with 3-5 strong tooth ventrally. In the male PGS start a little bit below the anterior margin of GA.

C. andamanensis sp. n. is closely related to *C. ganglionatus* Newell 1984 although some dissimilaties can be reported. In this context, the description of the latter species is also discussed.

Keywords: marine Halacaridae, Andaman, India

Abbreviations

AD - anterior dorsal plate; AE - anterior epimeral plate; ds - dorsal setae of idiosoma; ds1-ds6 – dorsal setae 1 to 6; EP - epimeral process; GA - genito-anal plate; GO - genital opening; OC - ocular plate; PAS - parambulacral setae; PD - posterodorsal plate; PGS - perigenital setae; PE - posterior epimeral plate; P1-P4 - first to fourth palpal segment; SGS - subgenital setae

Introduction

Taxonomic research on marine Halacaridae from the Andaman and Nicobar Islands was done by the first author and yielded many new species and new records (Chatterjee, 1991, 1992, 1995a, b, 1996, 1997, 1999a, b; Sarma & Chatterjee, 1991, 1993). In the present paper a new species belonging to the genus *Copidognathus* is reported.

Materials and methods

Specimens have been collected during November 1987 among the sediment associated to the coral algae *Halimeda opuntia* from Chiriatapu, Andaman Island, India (Bay of Bengal).

Chiriatapu lies off the east coast of the Andaman, south of Port Blair. Geologically the Chiriatapu bed rocks belong to the serpentine group consisting of ultra-basic and basic rocks such as gabbros, periodicities, donates and serpentine suggesting an origin between late Cretaceous to Eocene (70 to 45 million years ago). The reef is leeward, being protected by the presence of islands on both sides. The beach is mainly sandy with rubbles to a certain extent and slopes gradually into the sea, forming a well-defined intertidal zone.

The coral algae were combed and sediment was sieved through a 63 µm sieve and the obtained sample was transferred into polyethylene vials containing 5% formalin as preservative. Samples were taken in small quantities in petridishes and carefully observed under a binocular microscope. Halacarids were sorted from the petridishes and preserved in 70% ethanol for further examination. Halacarids were cleared in lactic acid and mounted in glycerine jelly slides for taxonomic purpose.

Drawings were prepared using a camera lucida (type Sipcon SP-14, microscope type Olympus GB).

Results and discussion

Family Halacaridae

Subfamily Copidognathinae Bartsch 1983

***Copidognathus andamanensis* sp. n.**
(Figs. 1A-F, 2A-F)

Type material
Two females and one male examined. Holotype (female) is deposited in the Acari collection of the Royal Belgian Institute of Natural Science (KBIN-IRSNB, Brussels, Belgium) under number 29470. One male and one female (paratypes) are stored in the first author's personal collection.

Etymology
Named after the type locality – the Andaman Island.

Type locality
Chiriatapu, Andaman Island, India (Bay of Bengal), among the sediment associated with the coral algae *Halimeda opuntia*.

Description
Female: Idiosomal length of females ranged between 272 and 290 µm. All dorsal plates separate. AD 86 µm, PD 194 µm. AD with an anterior areola, and middle large porose areola with modified rosette pores. A few rosette pores present near the posterior margin of AD. Middle areola formed due to the fusion of two big areolae medially. AD with 1st pair of dorsal setae located anteriorly of the middle areola. ds2 on the anteromedian margin of OC. OC with two corneae, posterior cornea indistinct, and two areolae, one areola anteriorly in the close vicinity of cornea and the other posteriorly on the OC. OC tapers posteriorly, extending just beyond the insertion of leg III. PD with 4 costae. Two middle costae, three rosette pores wide. Paracostae two rosette pores wide. Middle and paracostae joins together anteriorly. ds3, ds4, and ds5 on PD distributed in the space between middle and paracostae.

Two gland pores present at the posterior portion in each of the middle two costae. The distance between two gland pores only one rosette pore wide. A pair of adenal setae present on anal papillae.

Ventral plates separate. Ventral plates porose, on the middle of AE numerous canaliculi arranged in small group, toward the margin AE uniformly porose. EP not developed. AE with three pairs of setae. PE with 3 ventral and 1 dorsal seta. GA with paragenital areolae. Three pairs of PGS and 1 pair of SGS. Ovipositor small. The distance between the anterior end of GO to the anterior end of GA about 1.4 times length of GO.

Basis gnathosome ventrolaterally porose. Ganthosoma 86 µm. Gnathosomal setae include proto-, deuto-, trito-, and basirostral setae. Rostrum tip extends up to middle of palpal patella. Palp consists of 4 segments. P1, P2, P3 and P4 are 8, 33, 8 and 30 µm long, respectively. Palpal trochanter (P1) without any setae, palpal femur (P2) with one dorsal seta. Palpal patella cylindrical, smooth without any seta. Palpal tibiotarsus (P4) with 3 basal setae and one minute distal seta.

Leg chaetotaxy: Trochanter 1-1-1-0, Basifemur 2-2-2-2, Telofemur 5-5-2-2, Patella 4-4-3-4, Tibia 7-7-5-5, Tarsus (PAS excluded) 7-4-4-4.

Telofemorae III and IV devoid of any ventral seta. Length/height ratio of telofemora I, II, III, IV are 1.8, 1.75, 2.6, and 2.8, respectively. Tibia I with 3 ventral setae of which 1 pectinate. Tibia II with 3 ventral setae of which 2 pectinate. Tibia III with 2 ventral setae (one pectinate and one smooth). Tibia IV with 2 ventral setae (both smooth). Length/height ratio of tibia I, II, III, IV are 2.36, 2.06, 3.3 and 3, respectively. Tarsus I with 3 ventral setae (one basal filiform and two distal singlet eupathidia), 3 dorsal long setae, 1 solenidion, 4 PAS (two doublets eupathidia) and a profamulus. Tarsi III and IV with 4 dorsal setae (three dorsal fossary setae and one proximodorsal) besides 2 PAS. The distance between 2 basal setae in tarsi III and IV slightly shorter than with the width of the respective tarsi. Patella IV with 4 setae.

All legs with bidentate median claw and two lateral claws. Lateral claws of legs II-IV with accessory tooth dorsally and 3-5 stong teeth ventrally.

Male: Idiosomal length 271 µm. Male resembles female except for the genitoanal region. Fourteen PGS present on each side of the genital foramen. PGS starts a little bit below the anterior margin of GA and extends beyond the posterior end of GO. Four SGS present.

Differential diagnosis
Copidognathus andamanensis n.sp. comes very close with the species belonging to the *C. bairdi* groups as given in Bartsch (1984, 1986). About 25 species which were recognised by Bartsch (1996) to belong to the "*bairdi*" group contain middle areolae on AD – "pair of porose areolae being circular or ovate in form but not fused". Bartsch (1996) also assumed that *C. ganglionatus* Newell 1984 belongs to the *bairdi* group. *C. ganglionatus* consists of a fused middle areola on AD. In the present species, the middle areola on AD which has formed due to fusion of 2 large areolae medially. Characteristics of the middle areolation on AD of *C. bairdi* group should be interpreted with more flexibility and *C. andamanensis* n.sp. can also be assigned under the *C. bairdi* group.

Bartsch (1997) subdivided the *bairdi* group and recognised "*C. ornatus*" group as a subgroup under the "*bairdi*" group. Characteristics of the *C. ornatus* group are given by Otto (2001). Althought the present species comes close to *C. ornatus*, it can easily be separated from the member of that group due to the absence of ventrolateral lamella or cuticular spine on the telofemur.

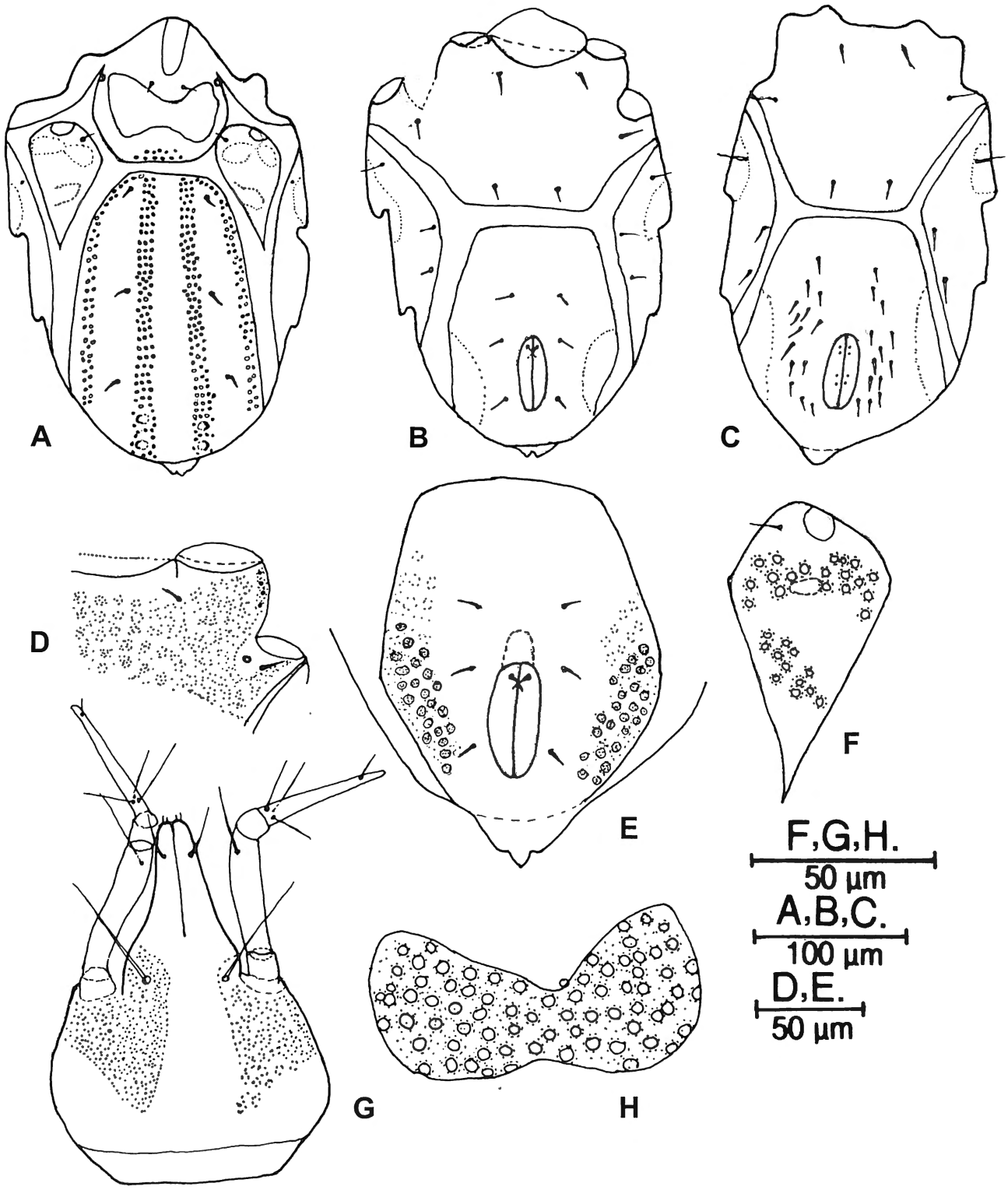

Fig. 1 — *Copidognathus andamanensis* sp. n. (A) idiosoma ♀ (dorsal); (B) idiosoma ♀ (ventral); (C) idiosoma ♂ (ventral); (D) detail of epimeral area; (E) GA (♀); (F) OC; (G) gnathosoma (ventral); (H) middle areolae of AD.

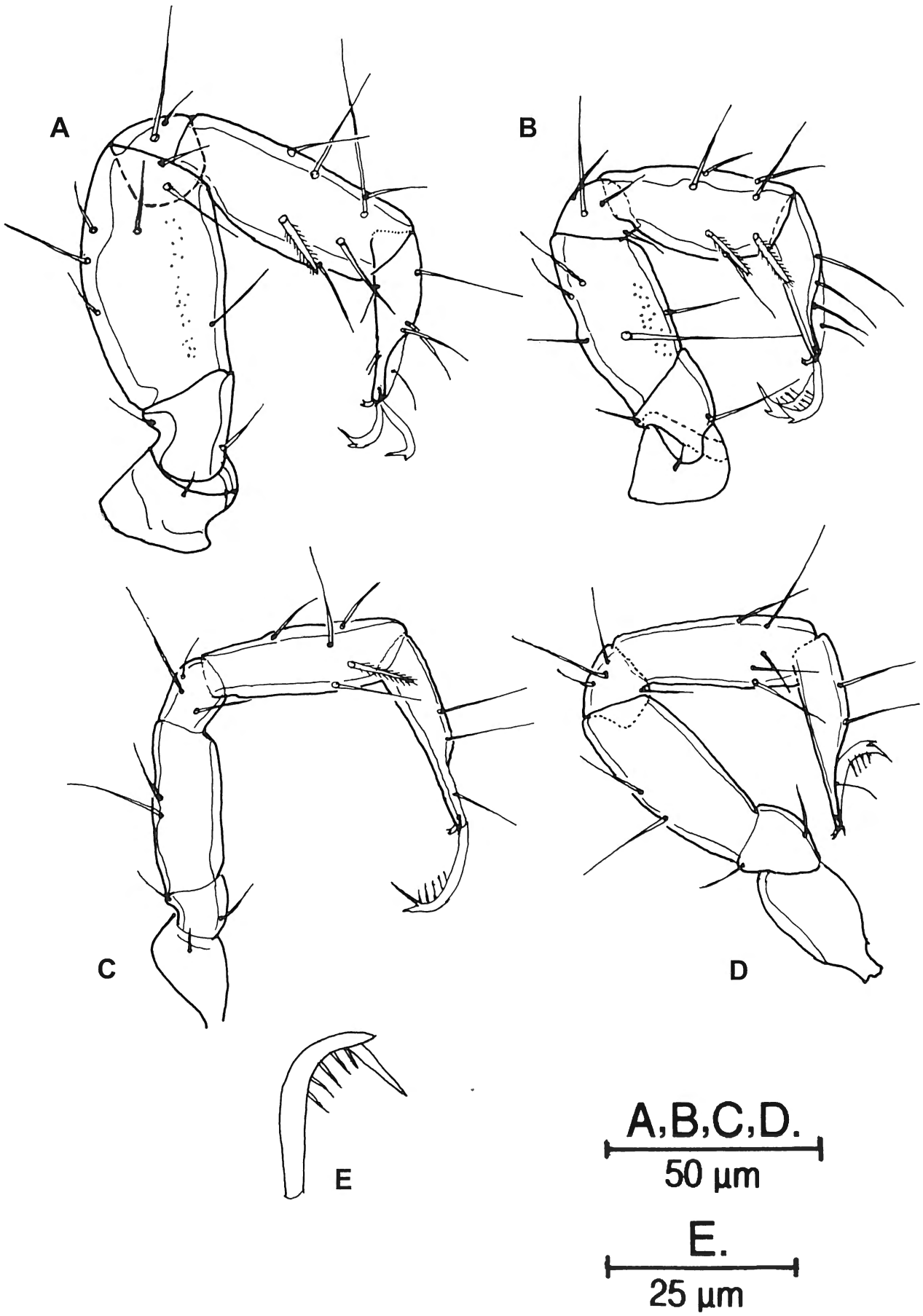

Fig. 2 — *Copidognathus andamanensis* sp. n. (A) leg I; (B) leg II; (C) leg III; (D) leg IV; (E) detail of a lateral claw of leg II.

C. andamanensis sp. n. differs from *C. ganglionatus* NEWELL by the following points:

Telofemorae III and IV of *C. andamanensis* devoid of ventral setae, but in *C. ganglionatus* 0:1 ventral setae are present on telofemorae III and IV.

In *C. ganglionatus* anterior gland pore on PD near the level of insertion of leg IV, where the anterior gland pore present on the middle costae. The costa is swollen on that particular place. In present case, there is no such swollen portion on the middle costae near the level of insertion of leg IV. In the present case, anterior and posterior gland pore on PD placed just very close to the posterior end of middle costae. Distance between anterior and posterior gland pores on middle costae only one rosette pore wide in present case. But in *C. ganglionatus* the anterior and posterior gland pores are wide apart from each other (NEWELL 1984, Fig. 487). ds4 in *C. ganglionatus* below the anterior gland pore, but in the present case ds4 placed above the level of the anterior gland pore of PD.

The idiosomal length of the female of *C. ganglionatus* is 405 µm but the idiosoma is relatively smaller (268-272 µm) in the present form. Shape of PD oval in *C. ganglionatus* but in the present case it is not like that; posterior portion of AD in *C. ganglionatus* almost ovate but in the present form almost truncated.

In *C. ganglionatus* PGS in males on each side starts almost halfway on the GA; but in the present case the PGS in male on each side of GA starts a little below the anterior margin and extends beyond the posterior end of GO.

The description of *C. ganglionatus* given by NEWELL (1984) is rather short and without illustrations of legs and claws, which are needed for a detailed comparison.

Some observations on the inconsistencies between the cited characteristics of *C. ganglionatus* placed under key group 7700 (NEWELL 1984), and the described characteristics of *C. ganglionatus* in the text are worth to be mentioned. The key states that in group 7700 of NEWELL (1984, p. 181) the tarsi III and IV have 4:3 dorsal setae, but contrary to this, the description of *C. ganglionatus* portrays tarsi III and IV with 4:4 dorsal setae. Likewise, there is no cohesion between the text and figures of *C. ganglionatus* regarding PGS and areolae on PE. The text cites the presence of 13-14 pairs of PGS on GA (NEWELL 1984, p. 185), while the figure depicts 23 PGS on the left and 24 PGS in the right side of GA (NEWELL 1984, p. 184, fig. 486). In the text, it is stated that AE and PE are without any ventral areolae (NEWELL 1984, p. 185) but the figure shows ventral areolae present on PE (NEWELL 1984, p. 184, fig. 485).

Owing to these discrepancies in the posthumously published work of NEWELL (1984), a fruitful discussion of the affinities and differences between the present specimen and *C. ganglionatus* cannot be made. However, the characteristics cited and discussed in the text warrant the description of the present specimen as a new species.

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