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Article

Three new records and some juveniles of the genus *Copidognathus* (Acari, Halacaridae) from Türkiye

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ABSTRACT

This study reports on 10 species of the genus *Copidognathus* Trouessart, 1888 collected from sand sediment habitats and macroalgae in Muğla and Antalya, located along the eastern Mediterranean Sea, Türkiye. Three species, *C. cribosoma* (Police, 1909), *C. figeus* Bartsch, 1976 and *C. humerosus* (Trouessart, 1896) are recorded from the Turkish coasts for the first time, extending their known distribution to the Levantine Sea. Juvenile stages of *C. brachyostomus*, *C. cribosoma*, *C. gibbus*, *C. humerosus*, *C. lamelloides*, *C. magnipalpus*, *C. remipes* and *C. tabellio* were also identified and illustrated, with the nymphs of *C. cribosoma*, *C. remipes* and the larvae of *C. gibbus* and *C. humerosus* being documented for the first time. Additionally, this study provides detailed observations on the adults of *C. gibbus*, *C. majusculatus* and *C. tabellio* which were previously recorded in Türkiye.

KEYWORDS: *Copidognathus*, Halacaridae, juvenile, Levantine Sea, new records.

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INTRODUCTION

The genus *Copidognathus* Trouessart, 1888 is a cosmopolitan, eurytopic and the most diverse genus in the family of Halacaridae. *Copidognathus* species can be found in various marine environments, from the tidal zone to deep sea (Bartsch 2004, 2006). The genus includes 380 species thus far (WoRMS 2024; Lee *et al.* 2023). In previous studies, the author has reported thirteen *Copidognathus* species from Mediterranean and Aegean coasts of Türkiye (Durucan 2019, 2021): *C. brachyostomus* Viets, 1940, *C. dentatus* Viets, 1940, *C. gibbus* (Trouessart, 1889), *C. lamelloides* Bartsch, 2000, *C. longirostris* (Trouessart, 1896), *C. loricifer* André, 1946, *C. magnipalpus* (Police, 1909), *C. majusculatus* (Trouessart, 1894), *C. oculatus* (Hodge, 1863), *C. quadricostatus* (Trouessart, 1894), *C. remipes* (Trouessart, 1894), *C. septentrionalis* (Halbert, 1915), *C. tabellio* (Trouessart, 1894). The reproductive autonomy is oviparous in common, with one larval and one to three nymphal stages before reaching adult (Bartsch 2006). The fertility rates are generally low, with fewer than 20 eggs per female, often a single generation each year (Bartsch 2023). The nymphal stages last from a few weeks to several months, depending on the species.

The genus *Copidognathus* has its life cycle reduced to larva, protonymph and adults (Bartsch 2006). Protonymphs have smaller dorsal and ventral plates than adults, with the anterior epimeral plate (AE) bearing three pairs of setae and the posterior epimeral plate (PE) having one dorsal and two ventral setae. The genital plate (GP) is separated from the anal plate (AP) and features one pair of genital acetabula, none or one pair of perigenital setae (pgs), and no subgenital setae (sgs). Protonymphs have four pairs of legs, with the femur of leg IV undivided (leg I to III six segmented,

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leg IV five segmented), and incomplete leg chaetotaxy (Bartsch 2006). In the larval stage, the AE has two pairs of setae, and the PE bears one pair of ventral setae with no dorsal setae. Larvae lack a genital plate, and only the anal plate is present. Additionally, larvae have three pairs of legs (lacking leg IV), each with five segments, with undivided femurs (Bartsch 2006).

MATERIAL AND METHODS

Samples were collected either by SCUBA, snorkelling or by hand at shallow depths at localities in Türkiye (Fig. 1; see dates and localities in Table 5) by the author. Immediately after collection, sand sediments were extracted by stirring the sediment with seawater, and retained in the set of sieves (100 µm, 500 µm, 1 mm) were sorted under binocular microscope (Nikon SMZ stereo microscope). Mites were dissected in glycerine, cleared in lactic acid and mounted in Hoyer's medium or glycerine jelly. Drawings were made using microscope (Nikon Eclipse E400) with camera lucida. The pencil drawings were scanned and digitally inked using WACOM Intuos (CTL-490) graphics board in Inkscape. All measurements are given in micrometers (µm). The mite specimens are deposited at Eğirdir Fisheries Faculty, Isparta University of Applied Sciences, Isparta, Türkiye, acronym FDHAL. Terminology and abbreviations in the text and figure captions follow Bartsch (2006), as follows: **AD**, anterior dorsal plate; **AE**, anterior epimeral plate; **ap**, accessory process; **apo**, apodeme; **ba**, basifemur; **bp**, bipectinate setae; **bs**, basal setae; **ca**, canaliculi; **che**, chelicerae; **ch-cl**, cheliceral claw; **dfs**, dorsal fossary setae; **dlfs**, dorso-lateral fossary setae; **dmfs**, dorso-medial fossary setae; **ds-1 to ds-6**, dorsal setae; **ep**, epimeral pore; **epr**, epimeral process; **GA**, genitoanal plate; **GO**, genital opening; **gac**, genital acetabula; **gb**, gnathosomal base; **ge**, genua; **gg**, genital groove; **glp 1-5**, gland pore(s); **gsc**, genital sclerite; **gsp**, genital spine; **in**, integument; **L**, larva; **la**, lamellae; **l-pas**, lateral parambulacral seta; **m-pas**, medial parambulacral seta; **mc**, median claw; **mxs 1-2**, maxillary setae; **OC**, ocular plate(s); **os**, ostia; **ov**, ovipositor; **PD**, posterior dorsal plate; **PE**, posterior epimeral plate(s); **PN**, protonymph; **P1 to P4**, first to fourth segments of palp; **pa**, porose areolae; **pas**, parambulacral setae; **pc**, pore canaliculus; **pec**, pecten; **pgs**, perigenital seta; **ph-pl**, pharyngeal plate; **ro**, rostrum; **rp**, rosette pore/s; **rs**, rostral setae; **rsu**, rostral sulcus; **sgs**, subgenital seta; **spr**, spermatopositor; **T**, tectum; **ta**, tarsus; **te**, telofemur; **ti**, tibia; **tr**, trochanter; **vs**, ventral seta; **ω**, solenidia.

RESULTS

Family Halacaridae Murray, 1877

Copidognathus brachyostomus Viets, 1940 (Figs. 11A–C, Table 4)

Morphology and notes

Idiosomal lengths 275–280. Porose areolae and a pair of costae of dorsal plates with rosette pores. AD with three porose areolae and glp-1 on lateral margin of the plate. OC longer than wide, with two cornea. PD anteriorly ovate. Ds-1 on anterior edge of porose areaolae on AD. Pairs of ds-2 and ds-3 on striated integument. Glp lateral to costae of PD at the level of insertion of leg IV. Ds-4 and ds-5 on PD (Fig. 11A). AE with three setae and pair of epimeral pore. PE with one dorsal and two ventral setae. GP large almost rectangular, with a pair of genital acetabula and pair of setae (Fig. 11B). Gnathosoma longer than wide (1:0.6) with four segments (Fig. 11C). Leg chaetotaxy from trochanter to tarsus (bipectinated setae between parentheses, parambulacral setae and solenidia excluded): leg I: 1, 2, 3, 4, 5(1), 6; leg II: 1, 2, 3, 4, 4(1), 3; leg III: 1, 1, 2, 3, 5(1), 4; leg IV: 0, 1+2 (basifemur + telofemur), 3, 5(1), 3. Each of tibiae I to IV with one bipectinate setae ventromedially and one normal

ventral setae. All legs with two lateral claws with accessory process but large pectines (oil immersion) and a small bidentate median claw.

Remarks

Bartsch (2001) reported *C. brachyostomus* from the Black Sea off the coast of Sinop, Türkiye. Later, Durucan (2019) recorded this species from Antalya (Finike) among macroalgae, and from Izmir (Urla) among oysters (*Pinctata radiata*). In the present study, the protonymph stage of the species is reported for the first time from Antalya. The external morphological characteristics of the specimens match those previously described from Sinop, Türkiye.

Copidognathus cribosoma (Police, 1909) (Figs. 2A–O, 11D–G, Table 1)

Redescription – Measurements presented in Table 1.

Morphology and notes

Female – All dorsal and ventral plates divided by narrow bands of densely striated cuticle and the plates with uniformly rosette pores numerous canaliculi (Figs. 2A, B). AD longer than wide (1.10); anterior margin ovate and with small frontal lamella. Dorsal setae small. Pair of ds-1 on AD posterior to pair of glp-1; ds-2 in anteromedial margin of OC. Posterior end of OC pointed and almost extending to level of leg III. Gland pores (glp-2) small and lateral to OC. Pore canaliculus posterior to gland pore (Fig. 2C). PD wide, anteriorly truncate, posteriorly ovate. Pair of ds-3 just below the anterior margin of PD, ds-4 and ds-5 at 0.31 and 0.64 of PD's total length, respectively. Pair of ds-6 on anal cone. AE with three pairs of ventral setae and a pair of epimeral pores. Epimeral pores 3–4 wide. Epimeral processes I and II are small and lamellar (Fig. 2D). PE with one dorsolateral and three ventral setae. GA anterior part truncate with uniformly arranged with canaliculi. Ovipositor extending beyond GO but not reaching pgs-1. Three pairs of pgs arranged around GO. GO 54 long, 33 wide. Distance between edges of GA and GO 90, equalling 0.55 of GO length. Genital sclerites with a pair of sgs (Fig. 2E).

Gnathosoma (Fig. 2H) 1.35 times longer than wide. Rostrum triangular, reaching end of P2. Tectum truncate, palps are slender and consist of four segments. P1 to P4 lengths 12, 36, 9, 34 respectively. P1 and P3 without setae, P2 with single seta, P4 with three setae at basal whorl.

All legs (Figs. 2I–O) slender and long but shorter than idiosoma. On the surface of telofemora, genua and tibiae I and II foveate with rosette pores. Leg chaetotaxy from trochanter to tarsus (bipectinated setae between parentheses, parambulacral setae and solenidia excluded): leg I: 1, 2, 5, 4, 7(2), 6 5; leg II: 1, 2, 5, 4, 6(2), 3; leg III: 1, 2, 3, 3, 5(1), 4; leg IV: 0, 2, 3, 3, 5(1), 3. Tibiae I to IV with 2, 2, 1, 1 bipectinate setae. Tarsi I to IV with 3, 3, 4, 3 dorsal setae and 3, 0, 0, 0 ventral setae. All legs with two lateral claws with accessory process but large pectines (oil immersion) and a small bidentate median claw.

Male – Male is similar to female except for the genital plate. GO surrounded by 55–57 pgs (Fig. 2F). Spermatopositor large (78–85), but not extending anterior margin of GA (Fig. 2G). Genital sclerites with four pairs of sgs; anterior pairs hair-like, posterior ones spur-like. GO 40 long, 17 wide. Distance between edges of GA and GO 90, equalling 2.25 of GO length.

Protonymph – AD with three porose areolae and glp-1 on lateral margin of the plate. OC longer than wide. PD anteriorly ovate. Ds-1 on anterior edge of porose areaolae on AD. Pairs of ds-2 and ds-3 on striated integument. Ds-4 and ds-5 on PD. Ds-6 on anal cone (Fig. 11D). AE with three setae and pair of epimeral pore. GP large almost quadrangular with a pair of genital acetabula and pair of setae (Fig. 11E). Gnathosoma longer than wide (Fig. 11F). Leg chaetotaxy from trochanter to tarsus (bipectinated setae between parentheses, parambulacral setae and solenidia excluded): leg I: 1, 2, 3, 4, 5(1), 6; leg II: 1, 2, 3, 4, 4(1), 3; leg III: 1, 2, 2, 3, 5(1), 4; leg IV: 0, 1+2 (basifemur + telofemur) 3, 5(1), 3. Each of tibiae I to IV with one bipectinate setae. All legs with two lateral claws with accessory process but large pectines (oil immersion) and a small bidentate median claw.

Remarks

This species was originally described by Police (1909) from Naples, Italy (Tyrrhenian Sea, Mediterranean). Later, Morselli and Mari (1982) reported it from Salento, Italy (Ionian Sea, Mediterranean), in sandy sediment habitats. In this study, it is recorded for the first time from Antalya, Türkiye (Levantine Sea, Mediterranean). The external morphological characteristics of the specimens align with those from Salento, Italy.

Copidognathus figeus Bartsch, 1976 (Figs. 3A–J; 4A–G, Table 2)

Redescription – Measurements presented in Table 2.

Morphology and notes

Female – All dorsal and ventral plates divided by narrow bands of striated cuticle and the plates with typical rosette pores which have central ostium surrounded by canaliculi (Figs. 3A, B). AD longer than wide (1.15); anterior margin with small frontal lamella (Fig. 3D).

AD with pair of rounded wide areolae; anterior areolae with 15–20 rosette pores, two middle areolae each with about 45–50 rosette pores (Fig. 3D). Dorsal setae small. Pair of ds-1 on AD posterior to pair of glp-1; ds-2 in anteromedial margin of OC. Posterior end of OC rounded and extending to level of leg III. Raised areolae with 20–25 typical rosette pores. OC with two corneae. Gland pores small. Pore canaliculus slightly posterior to gland pore. (Fig. 3E); ds-3 near anterior margin of PD (Fig. 3F), ds-4 and ds-5 at 0.32 and 0.61 of its total length, respectively. Pair of ds-6 on anal cone. PD have two pair of costae which are prominent, but not join anteriorly. Each medial costae with 5–7 and each lateral costae 3–4 rosette pores wide. Panels between two raised costae are very weak, cannot be seen clearly. Gland pores inconspicuous.

AE with typical rosette pores (Fig. 3H) but posterior middle part has no porose areas (Fig. 3B). AE with three pairs of ventral setae and a pair of epimeral pores. Epimeral pores 5–7 wide (see Fig. 3B). Epimeral processes I and II are large and lamellar (Fig. 3H). Posterior margin of AE and anterior margin of GA truncate. PE anteriorly extending to the level of epimeral gland pores, posteriorly almost to the level of posterior margin of GO. PE with one dorsolateral and three ventral setae, porose areolae typical rosette pores.

GA mostly with typical rosette pores but some area without pores as shown in Figure 3B. Distance from anterior pgs to GO equalling 0.72 the GO's length. Ovipositor extending beyond GO but not reaching pgs-1. Genital sclerites with a pair of sgs. Three pairs of pgs arranged around GO (Fig. 3G).

Gnathosoma (Figs. 4A–C) 0.67 times longer than wide; with a pair of basirostral setae. Gnathosomal base with pair of areolae distinctly. One pair of maxillary setae on gnathosomal base, other pair half-way along rostrum. Rostrum triangular, reaching end of P2. Tectum triangular almost reaching end of P-1, Rostrum as long as 0.44 of gnathosoma length. Rostral sulcus long, reaching up to 0.60 of rostral length. Palps are slender and consist of four segments. P1 to P4 lengths 10, 40, 10, 37 respectively. P1 and P3 without setae, P2 with single seta, P4 with three setae at basal whorl. P4 shorter than P2.

All legs (Figs. 4D–G) slender and long but shorter than idiosoma. Telfemora, genua and tibiae with articular membranes; those of tibiae distinctly triangular and pointed. On the surface of telfemora, genua and tibiae I and II foveate. Leg chaetotaxy from trochanter to tarsus (bipectinate setae between parentheses, parambulacral setae and solenidia excluded): leg I: 1, 2, 5, 4, 7(2), 65; leg II: 1, 2, 5, 4, 7(2), 3; leg III: 1, 2, 2, 3, 5(1), 4; leg IV: 0, 2, 2, 3, 5(1), 3. Telfemura I to IV 1.35, 1.56, 1.53 and 1.86 times longer than high, respectively. Tibiae I to IV with 2, 2, 1, 1 bipectinate setae. Tarsi I to IV with 3, 3, 4, 3 dorsal setae and 3, 0, 0, 0 ventral setae. All legs with two lateral claws with accessory process but delicate pectines (except for leg I) (oil immersion) and a small bidentate median claw. Fossa membrane present but small.

Male – Male is similar to female except for the genital plate (Fig. 3C). GO surrounded by 31–33 pgs. Genital sclerites with five pairs of sgs; anterior pairs hair-like, posterior ones spur-like (Fig. 3J). GO 42 long, 30 wide. Distance between edges of GA and GO 85, equalling 0.48 of GO length. Spermatopositor large (109) but not extending anterior margin of GA (Fig. 3I).

Juvenile – Unknown

Remarks

This species was described by Bartsch (1976) based on specimens collected from the upper littoral zone among sediments in the Bay of Arcachon, France. Specimens from France exhibit a sharper posterior margin on the ocular plate. In this study, the species is reported for the first time from Fethiye, Muğla, Türkiye (Levantine Sea, Mediterranean), far from its type locality.

***Copidognathus gibbus* (Trouessart, 1889) (Figs. 5A–L, 6A–H, 7A–E, Table 4)**

Redescription – Measurements presented in Table 4.

Morphology and notes

Female – All dorsal plates well developed. Porose areolae both dorsal and ventral plates with rosette pores (Fig. 5C). Idiosoma anteriorly with pointed protuberance. AD has “A” shaped internal sclerite. AD rectangular posteriorly. OC with two corneae. PD with single costae and with 3–5 rosette pores wide. Pair of ds-1 near lateral margin of AD. Setae ds-2 on OC. ds-3 to ds-5 on PD. Setae ds-5 long and stout (78 long). Ventral plates uniformly punctated. First epimeral process with prominent epimeral processes both female and male specimens. GA truncate anteriorly with three pairs of setae. Genital sclerites a pair of sgs. Ovipositor extending far beyond GO and pgs-1 (Fig. 5F).

Gnathosoma (Fig. 5J) 1.38 times longer than wide. Gnathosomal base with pair of distinct areolae. One pair of maxillary setae on gnathosomal base, other pair half-way along rostrum. Rostrum triangular, reaching end of P2. Tectum with large ridge-like process. Rostrum as long as 0.48 of gnathosoma length. Rostral sulcus long, reaching up to 0.6 of rostral length. Palps are slender and consist of four segments. P1 to P4 lengths 13, 35, 10, 40 respectively. P1 and P3 without setae, P2 with single seta, P4 with three setae at basal whorl. P4 longer than P2.

All legs with lamellae (Fig. 6A–F) Some of lamellae with reticulate patterns as illustrated. All basifemura and telofemora with ventrolateral lamellae. Genua I and II with lamellae, genua III and IV has no lamellae. All tibiae each with two lamellae ventrolaterally and ventromedially. Trochanter III and IV with triangular projection. Leg chaetotaxy from trochanter to tarsus (bipectinated setae between parentheses, parambulacral setae excluded): leg I: 1, 2, 5, 4, 7(2), 65; leg II: 1, 2, 5, 4, 7(1), 3; leg III: 1, 2, 2, 3, 5(1), 3; leg IV: 0, 1, 2, 3, 5(1), 2. Tarsi I to IV with 3, 3, 4, 3 dorsal setae and 32, 0, 0, 0 ventral setae. Delicately pectinate setae exist on basifemora 2, 2, 1, 1, telofemora 1, 1, 0, 0, genua 1, 1, 1, 1 and tibiae 1, 1, 1, 1. All legs with two lateral claws with accessory process and a small bidentate median claw. Fossa membrane well-developed in tarsi I and II, while slender in tarsi III and IV.

Male – Male is similar to female except for the genital plate (Fig. 5G). Spermatopositor large (115), extending beyond ring of pgs (Fig. 5I). GO 50 long, 38 wide. GO surrounded by 20 pgs. Four pairs of sgs are present; anterior pairs hair-like, posterior ones spur-like (Fig. 5H). Distance between edges of GA and GO 75, equalling 0.66 of GO length.

Protonymph – Dorsal and ventral plates and porose areolae on plates less developed than adults (Figs. 5B, E). AD with three areolae and glp-1 on lateral margin of the plate. Pair of ds-1 on middle areolae. OC longer than wide, not tail like and posteriorly extending to almost level of leg III insertions. PD with a pair of costae which is two rosette pores wide. AE with three pairs of setae and a pair of epimeral pores. PE with one dorsal and two ventral setae. Genitoanal plate is almost

rectangular with genital acetabula. No setae on genital plate. Gnathosoma longer than wide. Tectum triangular and with reticulate patterns. Palps four segmented (Fig. 5K).

Leg chaetotaxy (Figs. 6G–H, 7A–B): leg I, 1, 2, 3, 4, 5(1), 6; leg II, 1, 2, 3, 4, 5(1), 3; leg III, 1, 1, 2, 3, 5(1), 4; leg IV, 0, 1+2(basifemur + telofemur), 3, 5(1), 3. Each of tibiae I to IV with one bipectinate setae. All legs with two lateral claws with accessory process but large pectines (oil immersion) and a small bidentate median claw.

Larva – Dorsal plates smaller than protonymph. The larva is characterized by its distinctive big reticulate patterns on dorsal plates. AD with pair of gland pores and pair of setae. OC large with a gland pore and pore canaliculus. PD anteriorly narrow and has one costae. Ds-4 and ds-5 at 0.37 and 0.7 of its total length, respectively. Pair of ds-6 has not seen. Glp-3 on PD situated between ds-4 and ds-5 (Fig. 5A). Gnathosoma longer than wide. Palps four segmented (Fig. 5L). Leg chaetotaxy (Fig. 7C–E); leg I, 1, 1+3, 4, 5, 3; leg II, 1, 1+3, 4, 5, 4; leg III, 0, 1+2, 3, 5, 4. Lamellae not developed (Fig. 7C).

Remarks

There are several natural groups within the genus *Copidognathus*, one of which is the *gibbus* group, comprising 50 valid species (Lee et al., 2023). Three species from this group (*C. gibbus*, *C. majusculatus*, and *C. remipes*) have previously been reported from Türkiye (Durucan, 2019). *Copidognathus gibbus* was first described by Trouessart (1889) from the littoral zones of the French Atlantic and French Mediterranean. The species was later recorded from fine sand sediments at a depth of 2 m in Antalya (Yakamoz Beach), based on adult specimens (Durucan, 2019). The protonymph stage of *C. gibbus* was reported and illustrated by Morselli (1970) from Livorno, Italy (Tyrrhenian Sea). The morphological characteristics of the protonymph specimens from Türkiye correspond with those from Italy.

Copidognathus humerosus (Trouessart, 1896) (Figs. 8A–G, 11H–M, Table 3)

Redescription – Measurements presented in Table 3.

Morphology and notes

Male – All dorsal and ventral plates well developed and divided by narrow bands of densely striated cuticle and the plates with distinctly raised porose areolae with canaliculi (Figs. 8A, B). AD wider than long; anterior margin with small frontal lamella. AD has one large areolae in the middle AD has one large middle areolae with about 30–35 pores. Dorsal setae small. Pair of ds-1 on AD posterior to pair of glp-1; ds-2 in anteromedial margin of OC. Posterior end of OC pointed and extending to level of leg III. Raised areolae with 10–12 rosette pores. OC with two corneae; longer than wide. Gland pores small. Pore canaliculus slightly posterior to gland pore. Ds-3 below anterior margin of PD, ds-4 and ds-5 at 0.42 and 0.65 of its total length, respectively. Pair of ds-6 on anal cone. PD longer than wide, has only one pair of medial costae. Each costae one to four rosette pores wide. Eleven panels between two raised costae. Gland pores small, one pair immediately lateral to costae at about the level of insertion of leg IV.

AE with seven long setae (40–50) and a pair of epimeral pores. Epimeral II has two setae instead of one. Epimeral processes I and II are large and lamellar. Posterior margin of AE straight. PE anterior extending to the level of gland pores, posterior almost to the level of middle of GO. PE with one dorsolateral and three ventral setae. PE with canaliculi arranged in groups. Genitoanal plate with 20 pgs surrounding genital opening. Each genital sclerite bears four sgs (2:2 grouped) (Fig. 8B).

Gnathosoma (Fig. 8C) 1.66 times longer than wide. Gnathosomal base with pair of distinct areolae. One pair of maxillary setae on gnathosomal base, other pair half-way along rostrum. Rostrum triangular. Tectum truncate, Rostrum as long as 0.54 of gnathosomal length. Palps are slender and

consist of four segments. P1 to P4 lengths 20, 53, 15, 60 respectively. P1 and P3 without setae, P2 with single seta, P4 with three setae at basal whorl. P4 longer than P2.

All legs (Figs. 8D–G) slender and long but shorter than idiosoma. Leg I to leg IV lengths 341, 316, 380, 336, respectively. Telofemora, genua and tibiae with articular membranes; those of tibiae distinctly triangular and pointed. Surface of telofemora, genua and tibiae I and II foveate. Leg chaetotaxy from trochanter to tarsus (bipectinated setae between parentheses, parambulacral setae and solenidia excluded): leg I: 1, 2, 5, 4, 7(2), 65; leg II: 1, 2, 5, 4, 7(2), 3; leg III: 1, 2, 3, 3, 5(1), 3?; leg IV: 0, 2, 3, 3, 5(1), 4. Telofemura I to IV 3.33, 3.46, 3.33 and 3.4 times longer than high. Tibiae I to IV with 2, 2, 1, 1 bipectinate setae. Tarsi I to IV with 3, 3, 4?, 43 dorsal setae and 3, 0, 0, 0 ventral setae. All legs with two lateral claws with accessory process. All claws with pecten and number of pecten tines between 20–22 (oil immersion needed) and a small bidentate median claw.

Protonymph – Dorsal and ventral plates and porose areolae on plates less developed than adults (Fig 11H, I). AD with middle areolae and glp-1 near to ds-1. OC longer than wide. Ds-1 on porose areolae on AD. Pairs of ds-2 and ds-3 on striated integument. Ds-4 and ds-5 on PD. Ds-6 on anal cone. AE with three setae and pair of epimeral pore. GP rounded with a pair of genital acetabula and patterns as shown with arrow on Figure 11I. Gnathosoma longer than wide (Fig. 11J). Solenidion on tarsi I almost 20 long. Leg chaetotaxy from trochanter to tarsus (bipectinated setae between parentheses, parambulacral setae and solenidia excluded): leg I: 1, 2, 3, 4, 5(1), 6; leg II: 1, 2, 3, 4, 4(1), 3; leg III: 1, 2, 2, 3, 5(1), 4; leg IV: 0, 1+2 (basifemur + telofemur), 3, 5(1), 3. Each of tibiae I to IV with one bipectinate setae. All legs with two lateral claws with accessory process but large pectines (oil immersion) and a small bidentate median claw.

Larva – AD with pair of gland pores anterior to pair of ds-1; posterior margin truncate (Fig. 11L). Both pairs of OC more rounded than adults and protonymphs, PD and anal cone fused. Ventral side of the specimen was torned therefore not illustrated. Leg III long (195) five-segmented. Basifemura and telofemora III fused. Leg chaetotaxy from trochanter to tarsus (bipectinated setae between parentheses, parambulacral setae and solenidia excluded): leg I: 1, 4, 4, 5(1), 3?; leg II: 1, 4, 4, 5(1), 3; leg III: 1, 3, 3, 5, 4; Tibiae I to III with 1, 1, 0 bipectinate setae. Tarsi I to III with 3, 3, 4 dorsal setae and 3?, 0, 0 ventral setae. All legs with two long lateral claws with delicate accessory process and a bidentate median claw (Fig. 11M).

Remarks – *Copidognathus humerosus* was originally described by Trouessart (1896) from the French Mediterranean (Marseille, Bay of La Ciotat) at a depth of approximately 45 m depth, and from the French Atlantic (Brest) at 1–5 m depths. Later, Bartsch (1979) also reported the species from the French Atlantic (Roscoff). In this study, the species is recorded for the first time from Fethiye, Muğla (Türkiye, Levantine Sea). The external morphological characteristics of the specimens (male, protonymphs, and larva) are consistent with those from the French coasts.

***Copidognathus lamelloides* Bartsch, 2000 (Figs. 12D–F, Table 4)**

Morphology and notes

Protonymph – Idiosomal length 192 (Fig. 12D). Porose areolae and a pair of costae of dorsal plates with rosette pores. AD with three porose areolae and glp-1 near to porose areolae. OC longer than wide. PD anteriorly ovate. Ds-1 on anterior edge of porose areolae on AD. Pairs of ds-2 and ds-3 on striated integument. Glp lateral to costae of PD at the level of insertion of leg IV. Ds-4 and ds-5 on PD. AE with three long (33) setae and pair of epimeral pore (5). GP large, almost quadrangular, a pair of genital acetabula and pair of setae (Fig. 12E). Gnathosoma longer than wide (Fig. 12F). Leg chaetotaxy from trochanter to tarsus (bipectinated setae between parentheses, parambulacral setae and solenidia excluded): leg I: 1, 2, 3, 4, 5(1), 6; leg II: 1, 2, 3, 4, 5(1), 3; leg III: 1, 1, 2, 3, 5(1), 4; leg IV: 0, 1+2 (basifemur + telofemur), 3, 5(1), 3. Each of tibiae I to IV with one bipectinate setae. All legs with two lateral claws with accessory process but large pectines (oil immersion) and a small bidentate median claw.

Remarks

Copidognathus lamelloides was previously reported from Antalya (Yakamoz Beach) in fine sand at a depth of 2 m, based on adult specimens (Durucan, 2019). In this study, the protonymph stage of the species is reported for the first time from Antalya, Türkiye. The protonymph stage of *C. lamelloides*, as reported and illustrated by Bartsch (2000) from the Northeastern Atlantic (Baie de Morlaix, French Atlantic), corresponds with the specimen from Türkiye." *C. lamelloides* is reported previously from Antalya (Yakamoz beach), fine sand at 2 m depth (Durucan 2019) based on adult specimens. In this study, protonymph stage of the species reported for the first time from Antalya, Türkiye and protonymph stage of *C. lamelloides* reported and illustrated by Bartsch (2000) from Northeastern Atlantic (Bai de Morlaix, French Atlantic) accord with the specimen from Türkiye.

Copidognathus magnipalpus* (Police, 1909) (Figs. 12A–C, Table 4)Morphology and notes*

Protonymph – Idiosomal length 237–280. Porose areolae of dorsal plates with canaliculi arranged within polygons (Fig. 12A). AD with an anterior and two posterior porose areola. OC with two corneae. PD anteriorly ovate. Ds-1 on anterior edge of porose areaolae on AD. Pairs of ds-2 and ds-3 on striated integument. Ds-4 and ds-5 on PD. AE with three setae and pair of epimeral pore. GP small, ovate, a pair of genital acetabula. No setae on genital plate (Fig. 12B). Tibia I with one smooth and one dentate seta (Fig. 12C). Leg chaetotaxy from trochanter to tarsus (bipectinated setae between parentheses, parambulacral setae and solenidia excluded): leg I: 1, 2, 3, 4, 5(1), 6; leg II: 1, 2, 3, 4, 4(1), 3; leg III: 1, 1, 2, 3, 5(1), 4; leg IV: 0, 1+2 (basifemur + telofemur), 3, 5(1), 3. Each of tibiae I to IV with one bipectinate setae. All legs with two lateral claws with accessory process but large pectines (oil immersion) and a small bidentate median claw.

Remarks

Adults of *C. magnipalpus* were previously reported from several locations in Antalya (Yakamoz Beach, Bilem Beach, and Finike) in macroalgae habitats at various depths (1, 2, and 6 m) (Durucan 2019), as well as from Sinop in the Black Sea (Bartsch 2001). In this study, the protonymph stage of the species is reported and illustrated for the first time from Antalya, Türkiye. The protonymph stage, as described and illustrated by Bartsch (2001) from the Black Sea, corresponds with the specimen from the Levantine Sea, Türkiye.

Copidognathus majusculus* (Trouessart, 1894) (Figs. 9A–G, Table 4)Morphology and notes*

Female – All dorsal plates separated but very close to each other. Porose areolae both dorsal and ventral plates with rosette pores. Idiosoma anteriorly with pointed protuberance. AD has “A” shaped internal sclerite. AD rectangular posteriorly. PD with single costae and two rosette pores wide. Pair of ds-1 near lateral margin of AD. Setae ds-2 on OC. ds-3 to ds-5 on PD. Ds-6 on anal cone (Fig. 9A). Ventral plates with uniformly punctated. AE with three pairs setae and a pair of epimeral pores. PE with one dorsal and three ventral setae. GA truncate anteriorly with three pairs pgs and one pair of sgs. Ovipositor extending far beyond GO and pgs-1 (Fig. 9B).

Gnathosoma (Fig. 9D) 1.60 times longer than wide. Gnathosomal base with pair of distinct areolae. One pair of maxillary setae on gnathosomal base, other pair half-way along rostrum. Rostrum triangular. Rostral sulcus long, reaching up to 0.6 of rostral length. Palps are slender and consist of four segments. P1 to P4 13, 33, 10, 54 long, respectively. P1 and P3 without setae, P2 with single seta, P4 with three setae at basal whorl. P4 longer than P2.

Legs short (Figs. 9E–G) and with lamellae. Some of lamellae with reticulate patterns as illustrated. All basifemura and telofemora with ventrolateral lamellae. Genua I and II with lamellae,

genua III and IV has no lamellae. All tibiae with ventrolateral and ventromedial lamellae. Trochanter III (Fig. 9G) and IV with triangular projection. Leg chaetotaxy from trochanter to tarsus (bipectinated setae between parentheses, parambulacral setae and solenidia excluded): leg I: 1, 2, 5, 4, 7(2), 6 5; leg II: 1, 2, 5, 4, 7(1), 3; leg III: 1, 2, 2, 3, 5(1), 4 3; leg IV: 0, 1, 2, 3, 5(1), 4 2. Tarsi I to IV with 3, 3, 4, 3 dorsal setae and 2, 0, 0, 0 ventral setae. All legs with two lateral claws with accessory process and a small bidentate median claw. Fossa membrane well-developed in tarsi I and II, while slender in tarsi III and IV.

Male – Male is similar to female except for the genital plate (Fig. 9C). GO surrounded by 20-21 pgs. Spermatopositor large (110), extending beyond ring of pgs. Four pairs of sgs are present; anterior sgs hair-like, posterior ones spur-like. GO 50 long, 25 wide. Distance between edges of GA and GO 102, equalling 0.49 of GO length.

Remarks

Copidognathus majusculatus was originally described by Trouessart (1894) from the French Mediterranean (Marseille) (Bartsch, 2004), and has since been recorded from the North Sea (Helgoland, Germany) (Bartsch, 1977) and the Turkish Mediterranean (Antalya) in fine sand sediment at a depth of 9 m (Durucan, 2019). The specimens reported here were found at a station very close to the latter locality. *C. majusculatus* belongs to the *C. gibbus* species group, differing from *C. gibbus* in the size of its rosette pores and the number of ostia. In *C. gibbus*, each pore is large, with an ostium surrounded by up to 20 canaliculi, whereas in *C. majusculatus*, the rosette pores and ostia are smaller and surrounded by 2–4 canaliculi (Bartsch, 2004).

***Copidognathus remipes* (Trouessart, 1894) (Figs. 12G–J, Table 4)**

Morphology and notes

Protonymph – Idiosoma 210 long. AD anteriorly has “A” shaped sclerite. OC longer than wide, with two cornea. Gland pores small. Pore canaliculus posterior to gland pore. PD anteriorly and posteriorly ovate with a pair of costae. Ds-1 on anterior edge of porose areaolae on AD. Pairs of ds-2 and ds-3 on striated integument. Glp lateral to costae of PD at the level of insertion of leg IV. Ds-4 and ds-5 on PD. Ds-6 on anal cone (Fig. 12G). AE with three long (33) setae and pair of epimeral pore (5). GP large, almost quadrangular, a pair of genital acetabula. No setae on genital plate (Fig. 12H). Gnathosoma longer than wide. Tectum triangular (Fig. 12I). Leg I short. Telofemura I, genua I and tibia I with lamellae (Fig. 12J). Leg chaetotaxy from trochanter to tarsus (bipectinated setae between parentheses, parambulacral setae and solenidia excluded): leg I: 1, 2, 3, 4, 5(1), 6; leg II: 1, 2, 3, 4, 4(1), 3; leg III: 1, 1, 2, 3, 5(1), 4; leg IV: 0, 1+2 (basifemur + telofemur), 3, 5(1), 3. Each of tibiae I to IV with one bipectinate setae. All legs with two lateral claws with accessory process but large pectines (oil immersion) and a small bidentate median claw.

Remarks

Copidognathus remipes is another species belonging to the *C. gibbus* species group. It was previously reported from Antalya (Yakamoz Beach) in fine sand sediment habitats at a depth of 6 m, based on adult specimens (Durucan 2019). In this study, the protonymph stage of the species is reported and illustrated for the first time from Antalya, Türkiye.

***Copidognathus tabellio* (Trouessart, 1894) (Figs. 10A–L, Table 4)**

Morphology and notes

Integument of the specimens have brown pigmentation.

Female – Porose areolae on dorsal and ventral plates with typical rosette pores. AD with three porose areolae. OC with two corneae. PD with a pair of costae two rosette pores wide. Glp-1 on AD

near anterolateral margin of the plate. Ds-1 on AD almost as same level as glp-1. Ds-2 on OC. Ds-3 in margin of PD (Fig. 10A). GA truncate anteriorly with three pairs pgs and one pair of sgs. Ovipositor extending tip levels with pgs-1 (Fig. 10B). AE with a pair of epimeral pores and three pairs of ventral setae. PE with one dorsal and three ventral setae (Fig. 10B).

Gnathosoma (Fig. 10G) 1.7 times longer than wide. Rostrum triangular, extending beyond P2. Tectum triangular, Palps are slender and consist of four segments. P1 to P4 lengths 13, 34, 10, 40 respectively. P1 and P3 without setae, P2 with single seta, P4 with three setae at basal whorl. Leg I 185 long (Fig. 10H). Telfemur I laterally reticulated. Length: height ratio 2.0. Tibia IV has five smooth setae. Tarsi IV with 3 dorsal setae (Fig. 10I). All legs (Figs. 2I-O) slender and long but shorter than idiosoma. On the surface of telfemora, genua and tibiae I and II foveate with rosette pores. Leg chaetotaxy from trochanter to tarsus (bipectinated setae between parentheses, parambulacral setae and solenidia excluded): leg I: 1, 2, 5, 4, 7(2), 6 5; leg II: 1, 2, 5, 4, 6(2), 3; leg III: 1, 2, 3, 3, 5(1), 4; leg IV: 0, 2, 3, 3, 5(1), 3. Tibiae I to IV with 2, 2, 1, 1 bipectinate setae. Tarsi I to IV with 3, 3, 4, 3 dorsal setae and 3, 0, 0, 0 ventral setae. All legs with two lateral claws with accessory process but large pectines (oil immersion) and a small bidentate median claw.

Male – Male is similar to female except for the genital plate (Fig. 10C). GO surrounded by 24 pgs. Spermatopositor large (110), extending beyond ring of pgs. Four pairs of sgs are present; anterior pairs of sgs hair-like, posterior ones spur-like. GO 50 long, 30 wide. Distance between edges of GA and GO 82.

Protonymph – Idiosomal length of only one specimen 275. Porose areolae and a pair of costae of dorsal plates with rosette pores. AD with three porose areolae and glp-1 on lateral margin of the plate. OC longer than wide. PD anteriorly ovate. Ds-1 on anterior edge of porose areaolae on AD. Pairs of ds-2 and ds-3 on striated integument. Ds-4 and ds-5 on PD. AE with three setae and pair of epimeral pore. GP small, ovate, a genital acetabula. No setae on genital plate (Fig. 10J, K). Gnathosoma longer than wide (Fig. 10G). Solenidion on tarsi I 14 long (Fig. 10L). Legs with two lateral claws (Fig. 10L) with accessory process and a small bidentate median claw. Fossa membrane well-developed in tarsi I and II, while slender in tarsi III and IV. Leg chaetotaxy from trochanter to tarsus (bipectinated setae between parentheses, parambulacral setae and solenidia excluded): leg I: 1, 2, 3, 4, 5(1), 6; leg II: 1, 2, 3, 4, 4(1), 3; leg III: 1, 1, 2, 3, 5(1), 4; leg IV: 0, 1+2 (basifemur + telfemur), 3, 5(1), 3. Each of tibiae I to IV with one bipectinate setae. All legs with two lateral claws with accessory process but large pectines (oil immersion) and a small bidentate median claw.

Remarks

Copidognathus tabellio was previously reported from Antalya (Finike) in fine sand at a depth of 6 m, based on adult specimens (Durucan 2019). In this study, the protonymph stage of the species is reported and illustrated for the first time from Antalya, Türkiye.

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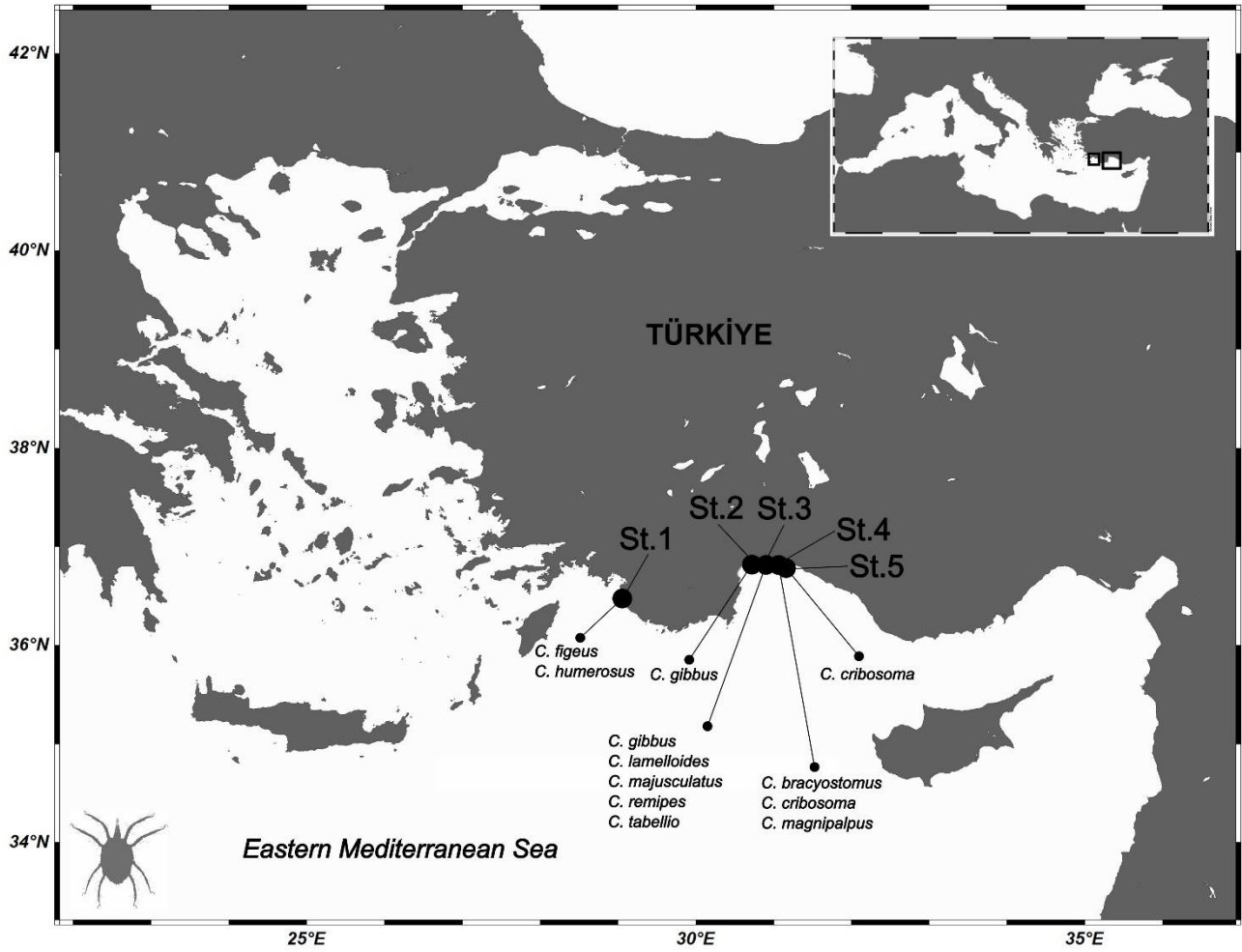


Figure 1. Map showing collecting localities for halacarid mite species in Türkiye (Map-Source: Ocean Data View).

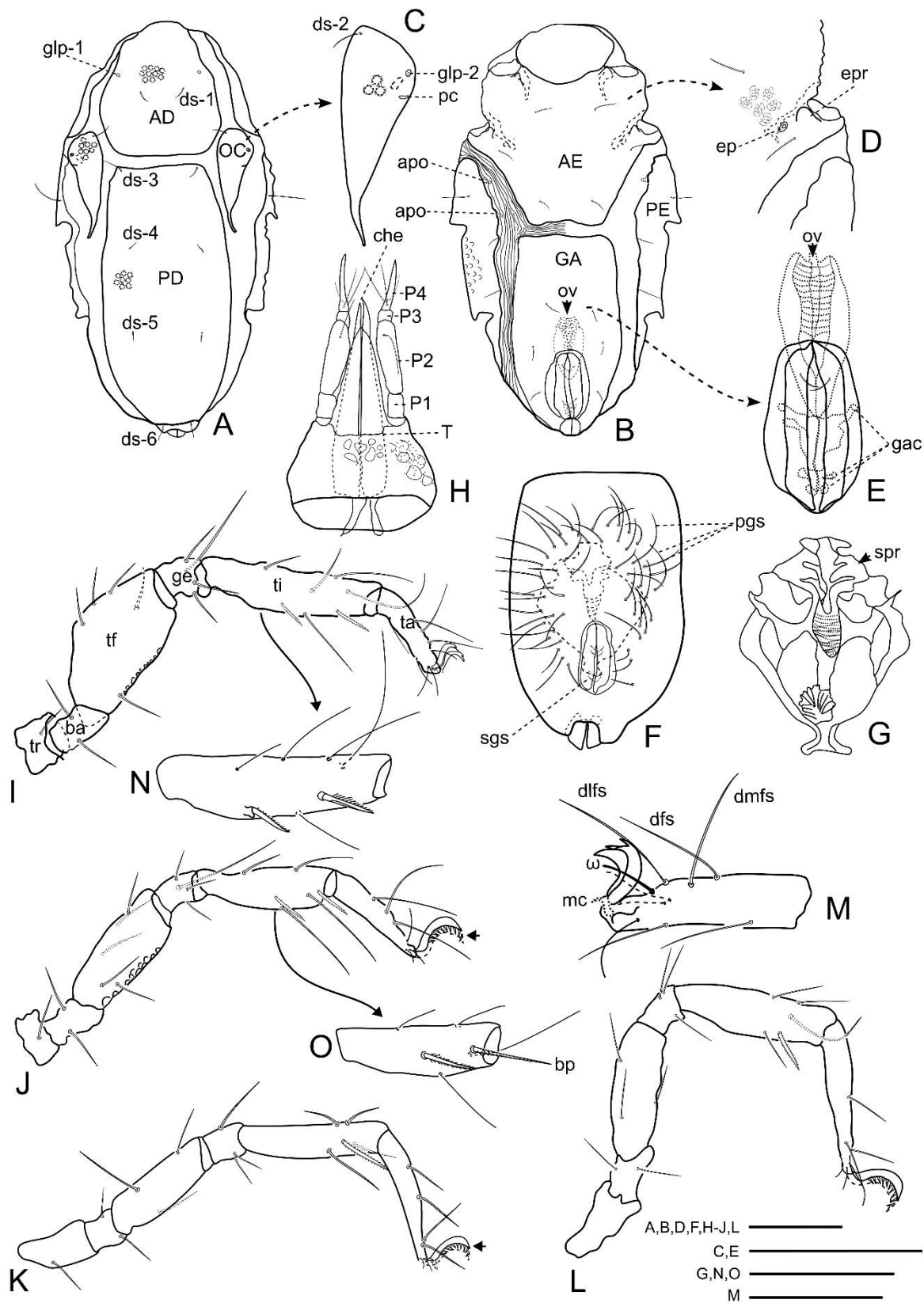


Figure 2. *Copidognathus cribosoma* (Police, 1909) (adults) – **A.** Idiosoma, dorsal view (female); **B.** Idiosoma, ventral view (female); **C.** Ocular plate; **D.** Epimera II; **E.** Ovipositor; **F.** Genitoanal plate (male); **G.** Spermatopositor; **H.** Gnathosoma, dorsal view (female); **I.** Leg I, medial view (female); **J.** Leg II, medial view (female); **K.** Leg III, medial view (female); **L.** Leg IV, medial view (female); **M.** Tarsus I, dorsomedial view (female); **N.** Tibia I, medial view (female); **O.** Tibia II, medial view (female). Scale bars: 50 μ m.

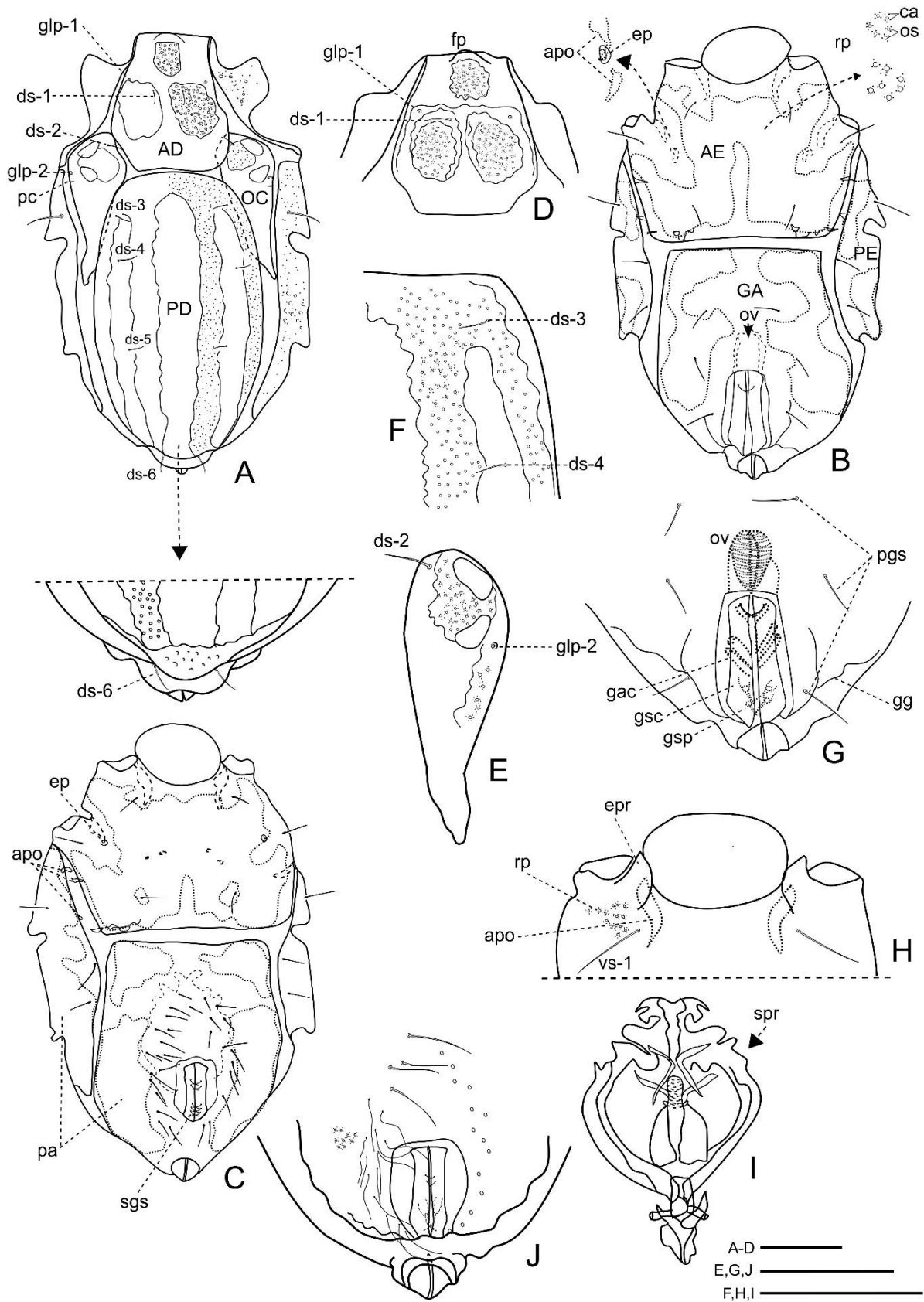


Figure 3. *Copidognathus figeus* Bartsch, 1976 (adults) – **A.** Idiosoma, dorsal view (female); **B.** Idiosoma, ventral view (female); **C.** Idiosoma, ventral view (male); **D.** Anterior dorsal plate; **E.** Ocular plate; **F.** Anterior part of posterior dorsal plate; **G.** Genital opening and ovipositor; **H.** Anterior part of epimeral plate; **I.** Spermatopositor; **J.** Genital opening (male). Scale bars: 50 μ m.

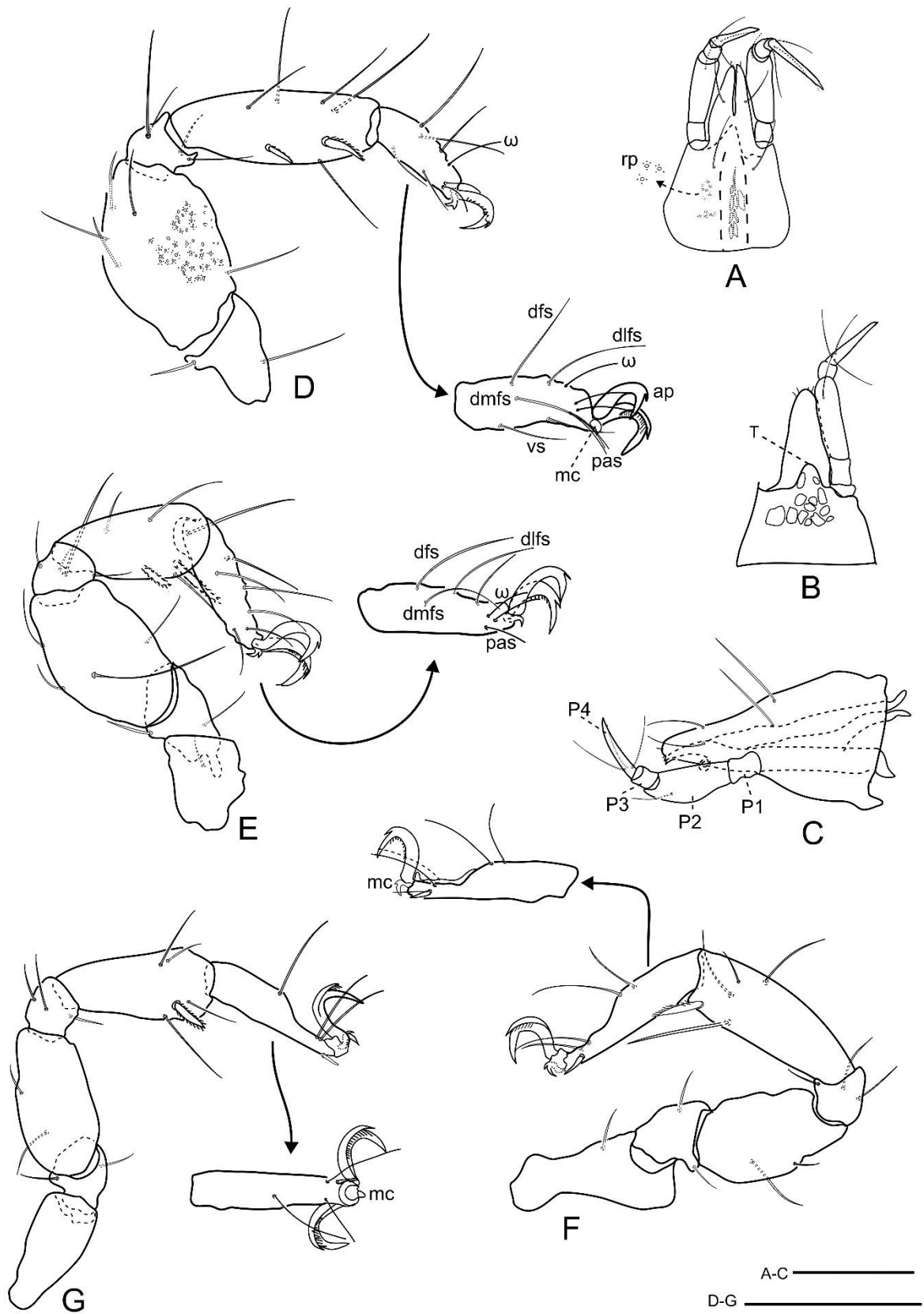


Figure 4. *Copidognathus figeus* Bartsch, 1976 (female) – **A.** Gnathosoma, ventral view; **B.** Gnathosoma, dorsal view; **C.** Gnathosoma, lateral view; **D.** Leg I, medial view; **E.** Leg II, medial view; **F.** Leg III, medial view; **G.** Leg IV, medial view. Scale bars: 50 μ m.

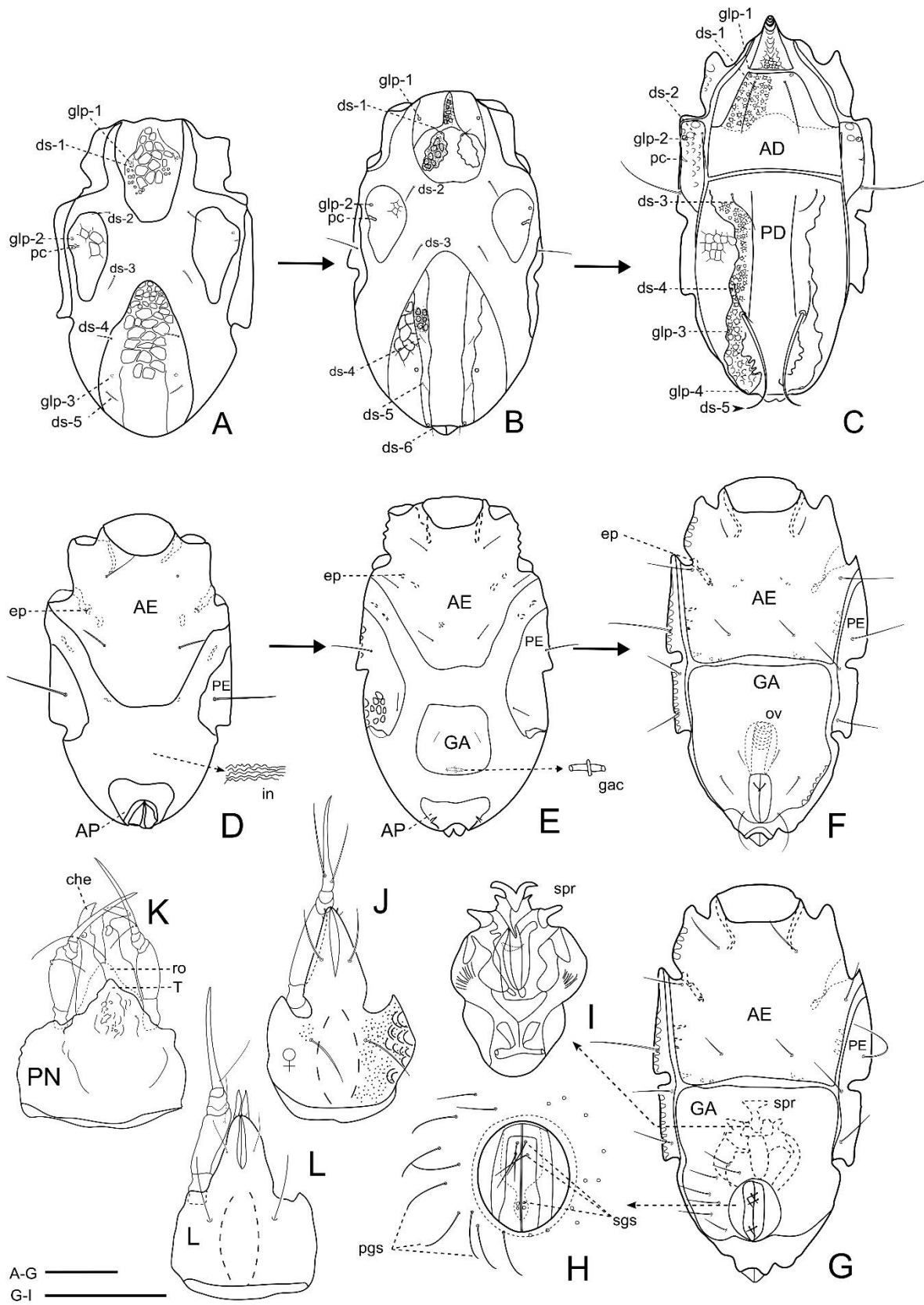


Figure 5. *Copidognathus gibbus* (Trouessart, 1889) (adults & nymphs) – **A.** Idiosoma, dorsal view (L); **B.** Idiosoma, dorsal view (PN); **C.** Idiosoma, dorsal view (female); **D.** Idiosoma, ventral view (larva); **E.** Idiosoma, ventral view (PN); **F.** Idiosoma, ventral view (female); **G.** Idiosoma, ventral view (female); **H.** Genital opening, male; **I.** Spermatopositor (male); **J.** Gnathosoma ventral (female); **K.** Gnathosoma, dorsal view (PN); **L.** Gnathosoma, ventral view (larva). Scale bars: 50 μ m.

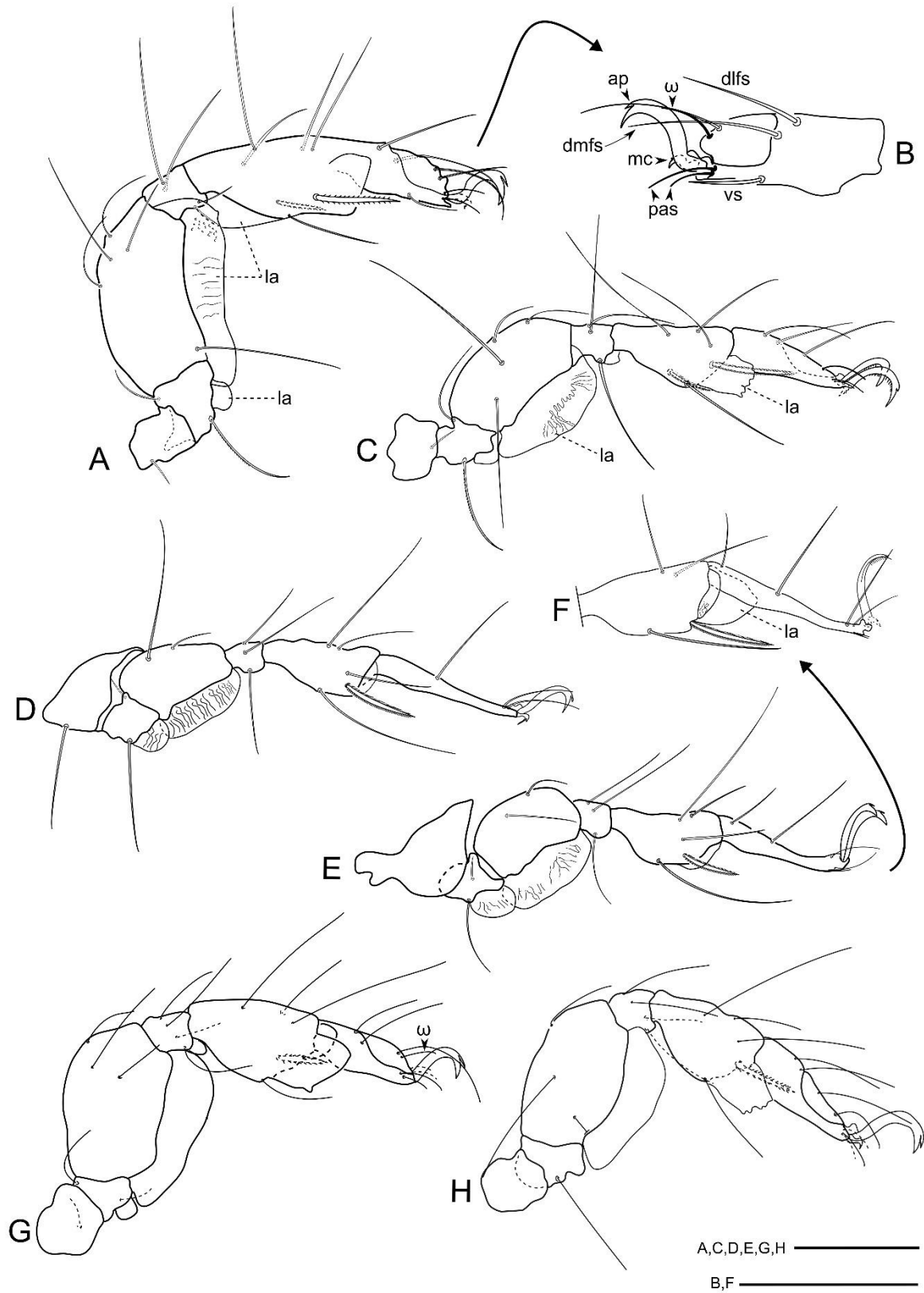


Figure 6. *Copidognathus gibbus* (Trouessart, 1889) – **A.** Leg I, medial view (female); **B.** Tarsus I, medial view (female); **C.** Leg II, medial view (female); **D.** Leg III, medial view (female); **E.** Leg IV, medial view (female); **F.** Tibia IV and Tarsus IV, lateral views (female); **G.** Leg I, lateral view (PN); **H.** Leg II, lateral view (PN). Scale bars: 50 μm.

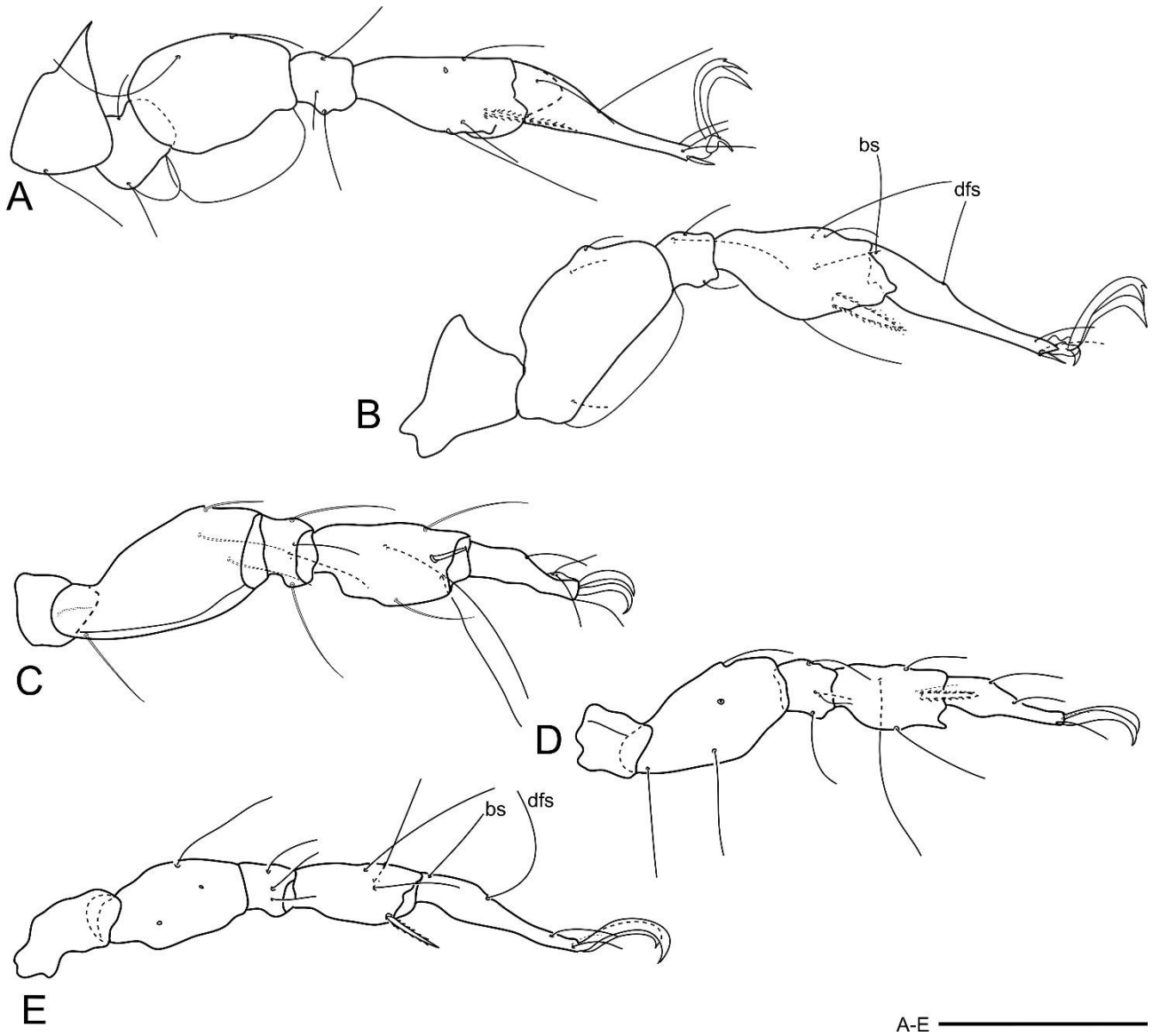


Figure 7. *Copidognathus gibbus* (Trouessart, 1889) (nymphs) – **A.** Leg III, lateral view (PN); **B.** Leg IV, lateral view (PN); **C.** Leg I, medial view (larva); **D.** Leg II, medial view (larva); **E.** Leg III, medial view (larva). Scale bars: 50 μm .

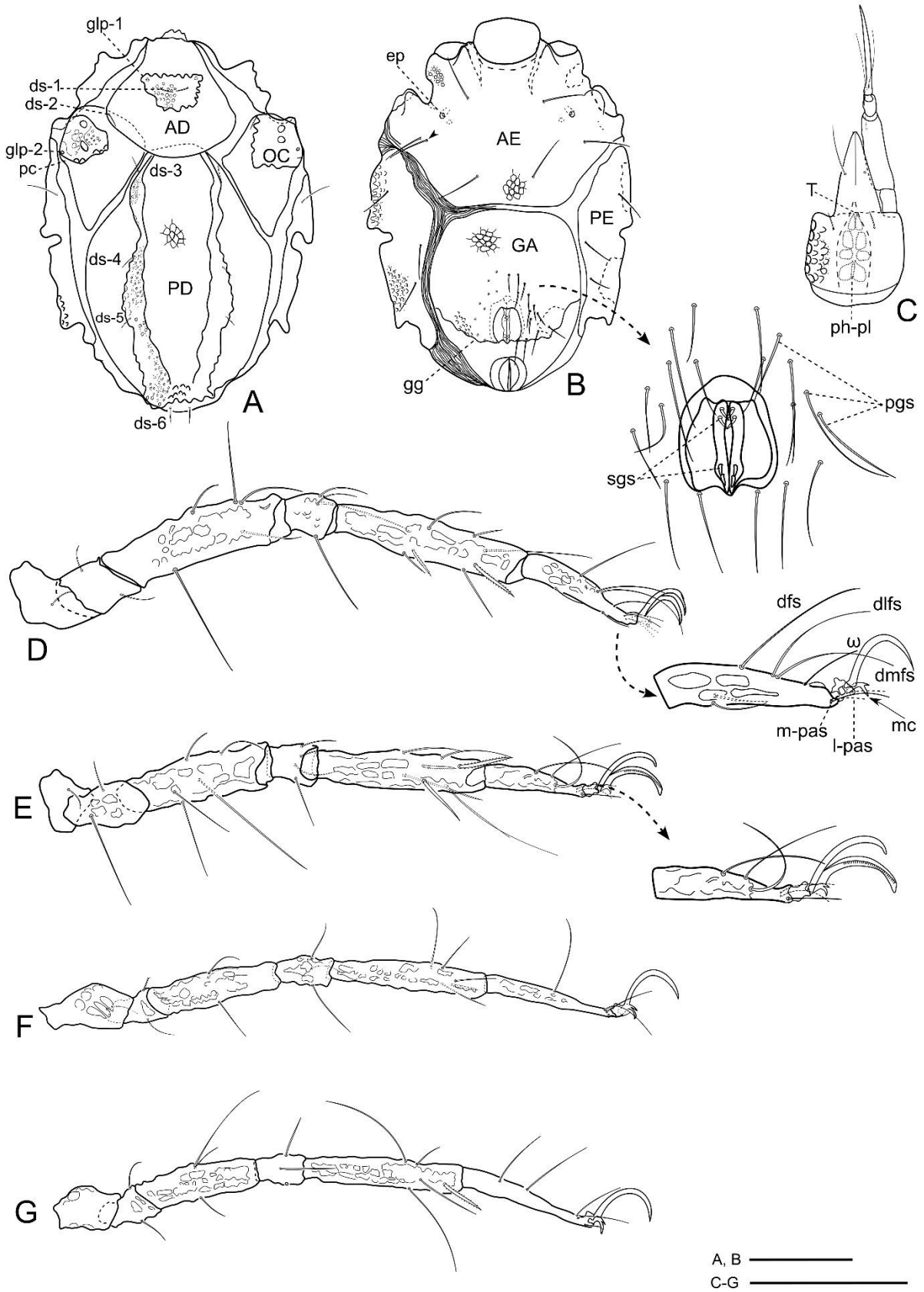


Figure 8. *Copidognathus humerosus* (Trouessart, 1896) (male) – **A.** Idiosoma, dorsal view; **B.** Idiosoma, ventral view; **C.** Gnathosoma, ventral view; **D.** Leg I, medial view; **E.** Leg II, ventromedial view; **F.** Leg III, lateral view; **G.** Leg IV, lateral view. Scale bars: 100 μ m.

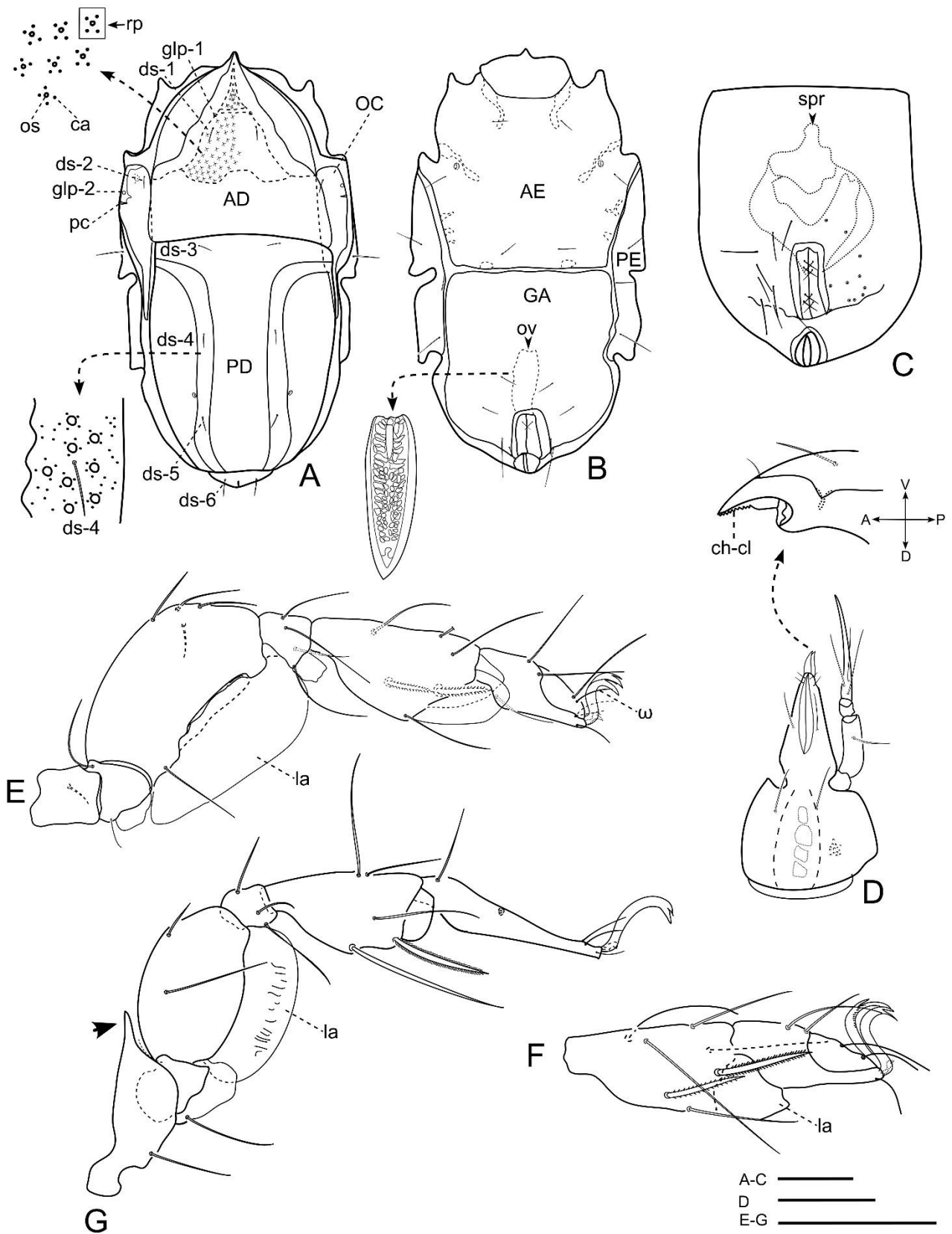


Figure 9. *Copidognathus majusculatus* (Trouessart, 1894) (adults) – **A.** Idiosoma dorsal view (female); **B.** Idiosoma, ventral view (female); **C.** Genitoanal plate (male); **D.** Gnathosoma, ventral view (female); **E.** Leg I, lateral view; **F.** Tibia and tarsus II, lateral view; **G.** Leg III, lateral view. Scale bars: 50 µm.

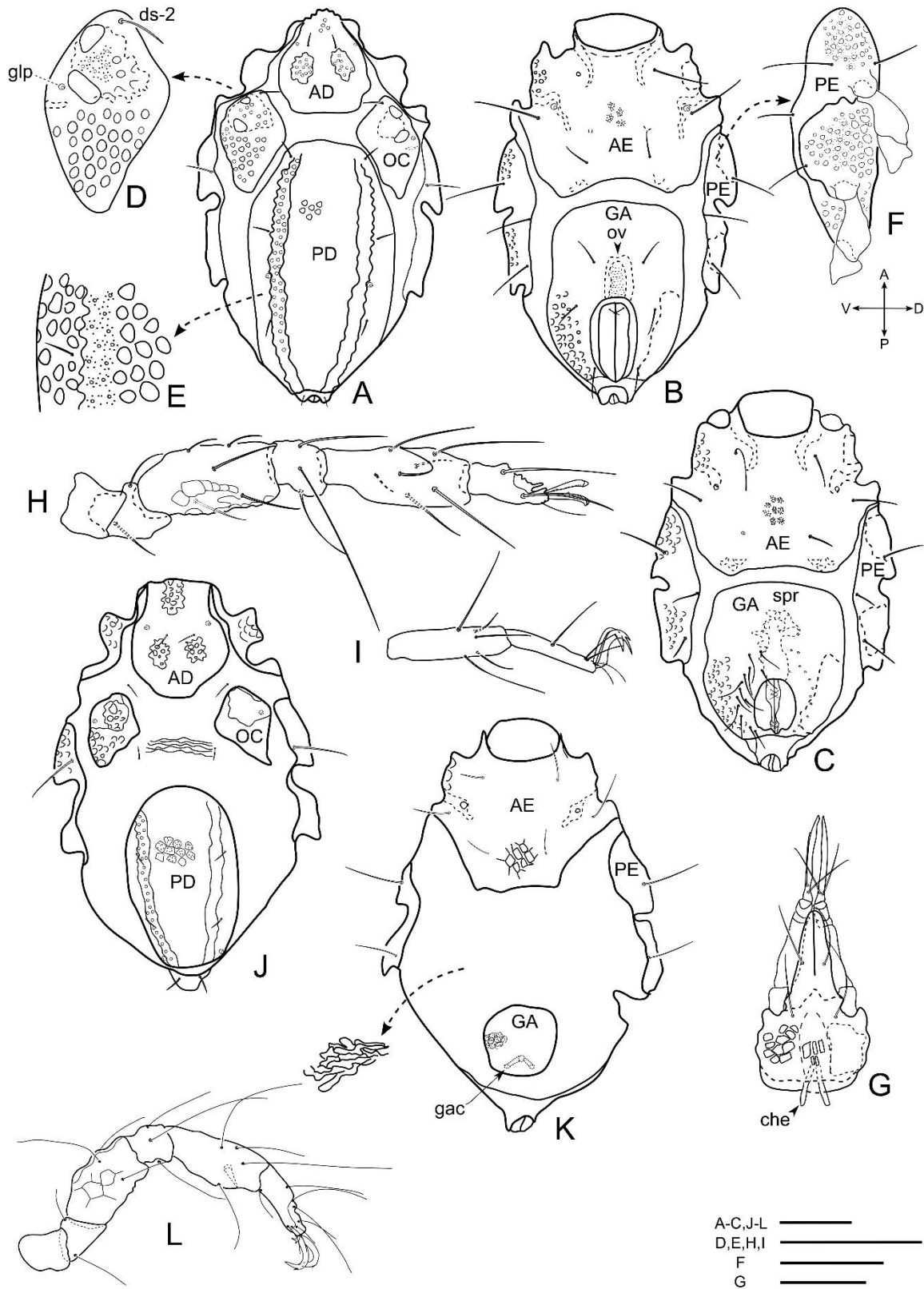


Figure 10. *Copidognathus tabellio* (Trouessart, 1894) – **A.** Idiosoma, dorsal view (female); **B.** Idiosoma, ventral view (female); **C.** Idiosoma, ventral view (male); **D.** Left ocular plate; **E.** Part of posterior dorsal plate; **F.** Posterior epimeral plate, lateral view; **G.** Gnathosoma, ventral view; **H.** Leg I, lateral view; **I.** Tarsus and tibia IV, lateral view **J** Idiosoma, dorsal view (PN) **K** Idiosoma, ventral view (PN) **L** Leg I, lateral view (PN). Scale bars: A-C, J-L=50 μ m; D, E, F, H, I = 50 μ m; G = 100 μ m.

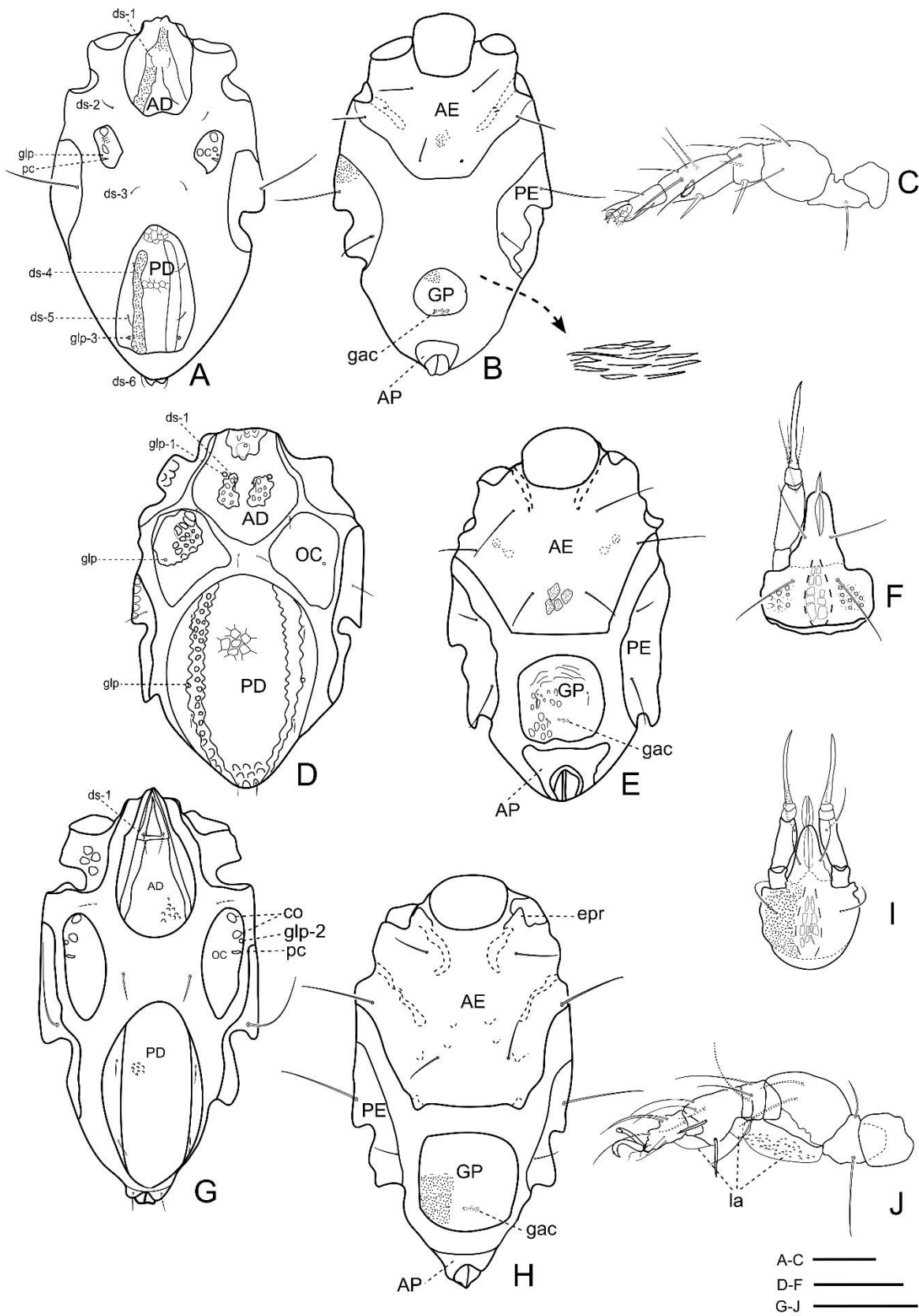


Figure 12. Line art illustrations of juveniles of *Copidognathus* species (A–C. *C. magnipalpus*, PN; D–F. *C. lamelloides*, PN; G–J. *C. remipes*, PN) – A Idiosoma, dorsal view; B. Idiosoma, ventral view; C. Leg I, medial view; D. Idiosoma, dorsal view; E. Idiosoma, ventral view; F. Gnathosoma, ventral view; G. Idiosoma, dorsal view; H. Idiosoma, ventral view; I. Gnathosoma, ventral view; J. Leg I, medial view. Scale bars: 50 μm.

Table 1. Measurements for *Copidognathus cribosoma* specimens.

<i>Copidognathus cribosoma</i> (Police, 1909)	Females		Males		Protonymph	
	Length	Width	Length	Width	Length	Width
Idiosoma	260–310	175–180	280–290	165–170	265	137
Gnathosoma	105	74	100	72	69	41
AD	102	95	100	90	67	55
OC	80	27	80	25	47	20
PD	200	100	198	98	115	72
AE	106	150	104	145	82	100
PE	162–170	35–37	160–167	35	75	25
GA	155	80	150	90	50	50
GO	53	33	40	20	-	-
AP	-	-	-	-	23	50

Table 2. Measurements for *Copidognathus figeus* specimens.

<i>Copidognathus figeus</i> Bartsch, 1976	Females		Males	
	Length	Width	Length	Width
Idiosoma	295–315	180–185	295–320	180–190
Gnathosoma	85	60	83	60
AD	95	82	93	80
OC	109	40	105	38
PD	207	120	205	118
AE	100	160	100	162
PE	125	33	123	35
GA	150	125	162	125
GO	57	40	42	30

Table 3. Measurements for *Copidognathus humerosus* specimens.

<i>Copidognathus humerosus</i> (Trouessart, 1896)	Male		Protonymphs		Larva	
	Length	Width	Length	Width	Length	Width
Idiosoma	362	282	300–375	300–325	212	150
Gnathosoma	116	68	93	57	72	44
AD	107	132	75	82	60	56
OC	105	87	80	60	40	38
PD	250	192	135	75	75	33
AE	125	262	100	200	-	-
PE	182	75	135	63	-	-
GA	175	164	58	70	-	-
GO	45	36	-	-	-	-

Table 4. Idiosomal lengths of *Copidognathus* species (*C. brachyostomus*, *C. gibbus*, *C. lamelloides*, *C. magnipalpus*, *C. majusculatus*, *C. remipes* and *C. tabellio*).

Species	Idiosoma length (μm)
<i>Copidognathus brachyostomus</i> Viets, 1940	PN (3): 275–280
<i>Copidognathus gibbus</i> (Trouessart, 1889)	♀♀ (6): 320–325; ♂♂ (2): 310, 312; PN (3): 300–304; L (1): 183
<i>Copidognathus lamelloides</i> Bartsch, 2000	PN (1): 192
<i>Copidognathus magnipalpus</i> (Police, 1909)	PN (2): 237, 260; L (1): 220
<i>Copidognathus majusculus</i> (Trouessart, 1894)	♀♀ (4): 370–382; ♂ (1): 365
<i>Copidognathus remipes</i> (Trouessart, 1894)	PN (1): 210
<i>Copidognathus tabellio</i> (Trouessart, 1894)	♀ (1): 287; ♂ (1): 305; PN (1): 275

Table 5. Summary of data on stations, species identities.

Station	St1	St2	St3	St4	St5
Date	13 Sep. 2019	18 Jun. 2020	6 Jul. 2020	2 Sep. 2019	27 Jul. 2020
Locality	Fethiye, Muğla	Erenkuş, Antalya	İnciraltı, Antalya	Yakamoz, Antalya	Kundu, Antalya
Position	36° 36' 09.0" N 29° 01' 51.4" E	36° 51' 54.7" N 30° 43' 25.6" E	36° 51' 35.8" N 30° 43' 42.8" E	36° 50' 49.5" N 30° 48' 17.2" E	36° 50' 57.7" N 30° 50' 20.4" E
Depth	8 m	7 m	3 m	2 m	2m
Substrate	medium coarse sand	fine sand sediment	fine sand sediment	fine sand sediment, <i>Jania rubens</i>	fine sand sediment
Species, No. of specimens, sstages and catalogue numbers	<i>C. figeus</i> 2♀♀ 3♂♂ FDHAL-24/49 <i>C. humerosus</i> 1♂ 5PN 1L FDHAL-24/63,64	<i>C. gibbus</i> 1♂ 1PN FDHAL- 24/60-62	<i>C. gibbus</i> 6♀♀ 1♂ 2PN 1L FDHAL-24/50-59 <i>C. lamelloides</i> 1PN FDHAL- 24/65 <i>C. majusculatus</i> 4♀♀ 1♂ FDHAL-24/69-73 <i>C. remipes</i> 1PN FDHAL- 24/74 <i>C. tabellio</i> 1♀ 1♂ 1PN FDHAL-24/75-77	<i>C. brachyostomus</i> 3PN FDHAL- 24/40,41 <i>C. cribosoma</i> 7♀♀ 6♂♂ FDHAL-24/42-47 <i>C. magnipalpus</i> 2PN 1L FDHAL- 24/66-68	<i>C. cribosoma</i> 1PN FDHAL- 24/48

سه گزارش جدید و تعدادی مراحل نابالغ از جنس *Copidognathus* (Acari, Halacaridae) از ترکیه

فورکان دوروجان

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چکیده

این بررسی ۱۰ گونه از جنس *Copidognathus* Trouessart, 1888 را گزارش می‌دهد که از زیستگاه‌های رسوب شن و ماکروجلبک‌ها در مولا و آنتالیا، واقع در امتداد شرق دریای مدیترانه، ترکیه جمع‌آوری شده‌اند. سه گونه *C. figeus* Bartsch, *C. cribosoma* (Police, 1909) و 1976 و *C. humerosus* (Trouessart, 1896) برای نخستین بار از سواحل ترکیه گزارش می‌شوند، که محدوده پراکندگی آنها را به دریای شام گسترش می‌دهد. مراحل نابالغ *C. brachyostomus*, *C. cribosoma*, *C. gibbus*, *C. lamelloides*، *C. humerosus* و *C. gibbus* و *C. remipes magnipalpus* و *C. tabellio* شناسایی و ترسیم شده‌اند و همچنین پوره‌های *C. cribosoma*، *C. remipes* و *C. gibbus* و *C. humerosus* برای نخستین بار گزارش می‌شوند. افزون بر این، این مطالعه مشاهدات دقیقی را در مورد بالغ‌های *C. gibbus*، *C. majusculatus* و *C. tabellio* را ارائه می‌دهد که پیش‌تر از ترکیه گزارش شده‌اند.

واژگان کلیدی: *Copidognathus*, Halacaridae، مراحل نابالغ، دریای شام، گزارش‌های جدید.

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