

# HALACARIDAE (ACARI) FROM THE GREAT BARRIER REEF. DESCRIPTION OF A NEW SPECIES OF *COPIDOGNATHUS*

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*Copidognathus glandulifer* sp. nov. is described. The species is closely related to *C. curassaviensis* Viets, recorded from the Caribbean area, but differs from the latter in that the porose panels of the dorsal plates are larger, the costae of the posterodorsal plate are curved posteriorly, and the spur of telofemur I is shorter. Both species belong to the *curassaviensis* species group.

NUMEROUS studies deal with marine macro- and meiofauna of the Great Barrier Reef (Cameron et al. 1974; Choat et al. 1988), but marine mites are not recorded. This paper presents a description of a halacarid species that belongs to the *curassaviensis* species group of the genus *Copidognathus*.

## METHODS

The mites were cleared in lactic acid and mounted in glycerine jelly. Drawings were prepared using a camera lucida. The holotype is lodged in the Museum of Victoria (MV), other material in the MV and the author's halacarid collection.

Abbreviations used in the description: AD, anterior dorsal plate; AE, anterior epimeral plate; ds, dorsal seta(e) of idiosoma; ds-1 to ds-6, first to sixth pair(s) of dorsal setae; GA, genitoanal plate; GO, genital opening; OC, ocular plate(s); P, palp; P-2 to P-4, second to fourth palpal segment(s); PD, posterior dorsal plate.

Genus *Copidognathus* Trouessart, 1888

*Copidognathus glandulifer* sp. nov.

Figs 1, 2

*Type material.* Holotype female: MV K-3762, from Mac Gillivray Reef, NE of Lizard Island, 14°39'S, 145°29'E, 2 m depth, coarse sand, March 1994, coll. C. Erséus.

One female: MV K-3763, from Lizard Island (ca 240 km N of Cairns), north end of Second Beach, 14°40'S, 145°26.5'E, 1 m depth, coarse sand and gravel, March 1994, coll. C. Erséus.

One female: author's collection, from Heron Reef, off Gladstone, at the Bommi SW of Heron Island, 12 m depth, heterogeneous fine to medium sand, April 1994, coll. C. Erséus.

## Diagnosis

*Female.* Idiosomal length 360–384  $\mu$ m. Raised areolae of dorsal plates with porose panelled areolae. AD with pair of large lateral and two small median porose areolae; OC with two elongate areolae; PD with pair of longitudinal, posteriorly curved costae and small lateral areolae. PD with single pair of large glands. Palps slender, only slightly surpassing the stout rostrum. Leg I larger than succeeding legs. Ventral seta of telofemur I spur-like. Tibia I ventrally with a slender and two spur-like setae. Claws on tarsi II–IV with delicate pectines.

## Description

Idiosoma 360–384  $\mu$ m long, 198–217  $\mu$ m wide, holotype 378  $\mu$ m long. Dorsal plates (Fig. 1A) with raised, porose areolae, remainder of plate reticulate, with large polygons which in turn are reticulate (Fig. 1D). Porose areolae with panels, each with five to ten canaliculi. Intense eye pigment beneath AD and OC. AD 125  $\mu$ m long, 101  $\mu$ m wide, almost hexagonal in outline, its anterior margin slightly protruding. AD with two distinctly raised and two small, only slightly raised porose areolae; one of two last-mentioned areolae anterior to median distinctly raised areola, the other near posterior margin of the plate. Gland pores large; first pair in lateral angles of pair of porose areolae. OC 105  $\mu$ m long, 62  $\mu$ m wide; anterior cornea distinctly larger than posterior one. Gland pores lateral to posterior cornea. OC with two elongate porose areolae, one medial to corneae, the other one along lateral margin of OC. PD 196  $\mu$ m long, 149  $\mu$ m wide. Pair of medial longitudinal costae in posterior portion of PD curved and bending anteriad; left costa thus J-shaped, right costa



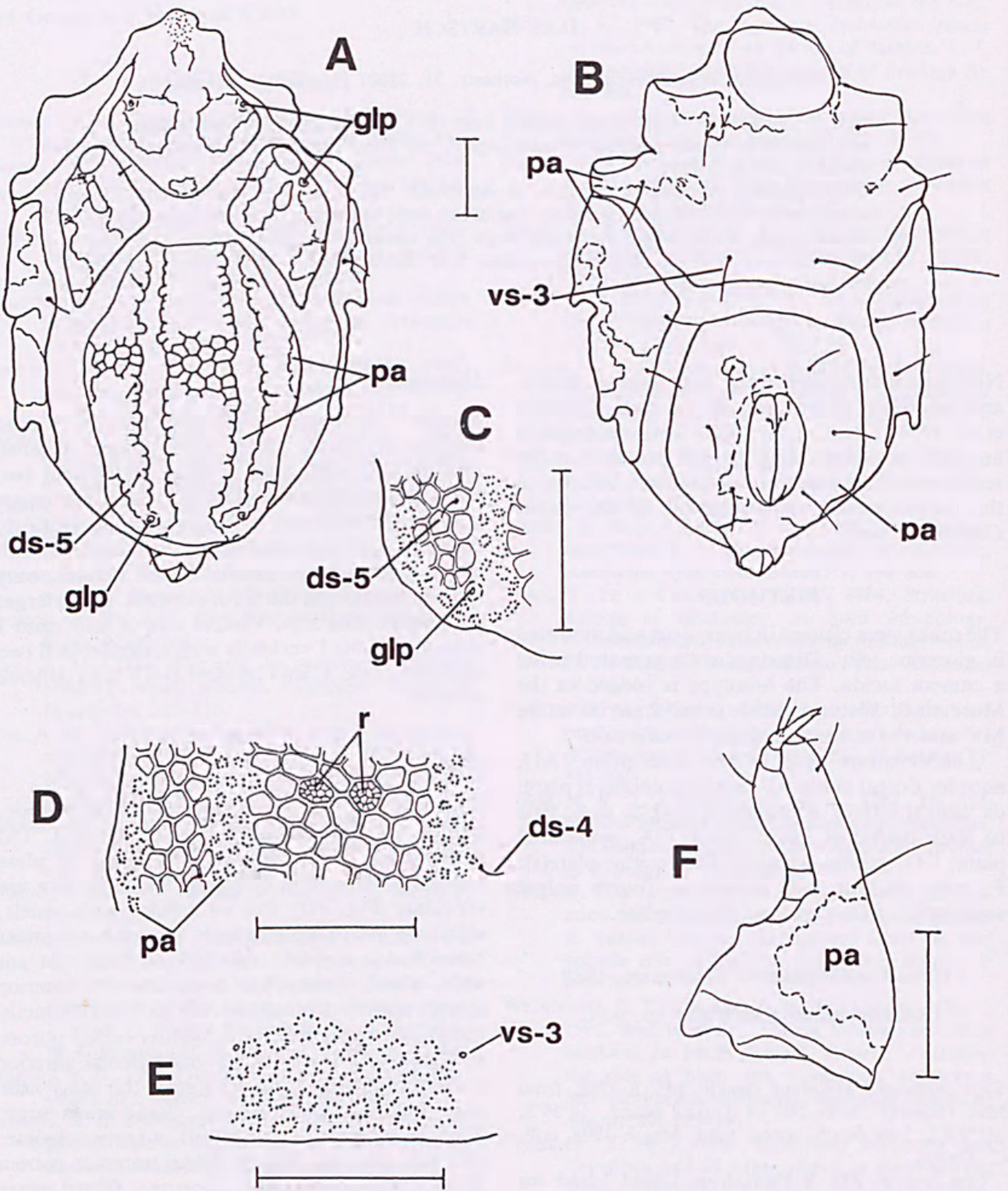


Fig. 1. A-F, *Copidognathus glandulifer* sp. nov., female. A, idiosoma, dorsal. B, idiosoma, ventral (right half with broken lines indicating borders of porose areolae). C, posterior portion of left PD. D, portion of median and left PD level with ds-4 (with two of the polygons showing the reticulation). E, posterior portion of AE level with vs-3. F, gnathosoma, lateral. Bar scale = 50  $\mu$ m. (ds-4, ds-5, fourth and fifth dorsal seta; glp, gland pore; pa, porose areola; r, reticulation; vs-3, third pair of ventral setae.)



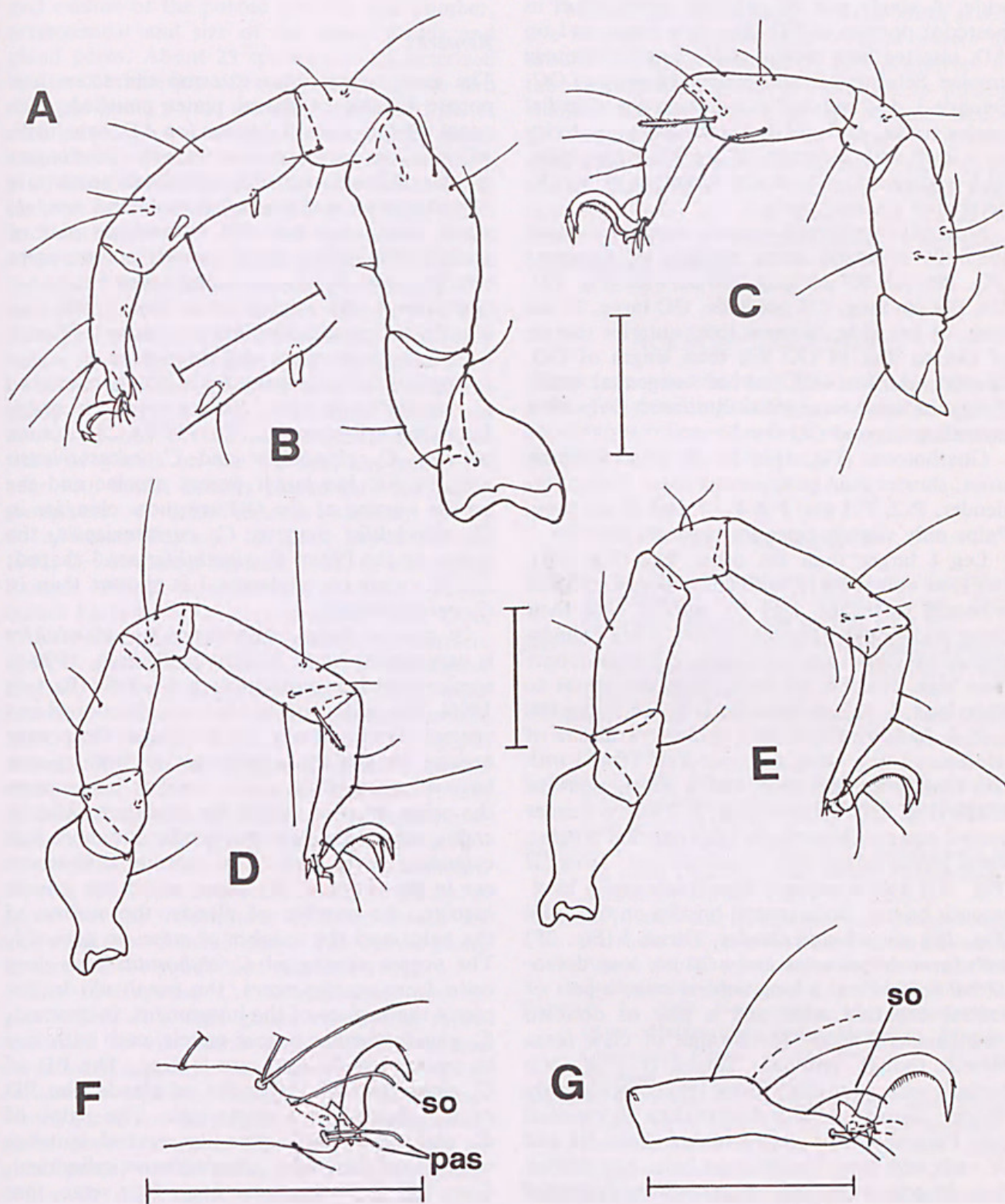


Fig. 2. A-G, *Copidognathus glandulifer* sp. nov., female. A, leg I, medial. B, ventral portion of tibia I, medial. C, telofemur-tarsus II, medial. D, leg III, medial. E, leg IV, medial. F, tip of tarsus I, lateral (ventral seta and the medial eupathid and the doubled parambulacral setae omitted). G, tarsus II, lateral (distomedial seta and medial parambulacral setae in broken lines). Bar scale = 50  $\mu$ m. (pas, parambulacral setae; so, solenidion.)



mirror-inverted. Costae mostly three porose panels wide. Short lateral costae one to two porose panels wide. A single pair of enlarged gland pores in posterior portion of PD (Fig. 1C). Setae ds-1 on AD, inserted near medial edge of pair of porose areolae. Setae ds-2 in anteromedial margin of OC. Setae ds-3, ds-4 and ds-5 in lateral margin of medial porose costae, ds-3 and ds-4 anterior and posterior to a level with insertion of leg III respectively, ds-5 posterior to a level with insertion of leg IV. Setae ds-6 on anal cone.

Most of ventral plates coarsely porose; canaliculi generally arranged along margins of polygons (Fig. 1E). AE 107  $\mu\text{m}$  long, 230  $\mu\text{m}$  wide (Fig. 1B). GA 179  $\mu\text{m}$  long, 135  $\mu\text{m}$  wide. GO large, 72  $\mu\text{m}$  long, 41  $\mu\text{m}$  wide; distance from anterior margin of GA to that of GO less than length of GO. Genital sclerites with pair of subgenital setae. Perigenital setae arranged as illustrated. Ovipositor extending beyond GO for 11  $\mu\text{m}$ .

Gnathosoma (Fig. 1F) 132  $\mu\text{m}$  long. Rostrum stout, shorter than gnathosomal base. Palps very slender, P-2, P-3 and P-4 41, 7 and 25  $\mu\text{m}$  long. Palps only slightly extending beyond rostrum.

Leg I larger than the other legs (Fig. 2A). Leg I, as well as leg II, with telofemora and tibiae subequal in length; legs III and IV with their tibiae being longer than telofemora. Tibia I almost cylindrical, telofemur I widened, 2.4 times longer than high. Number of setae, from trochanter to tibia: leg I, 1, 2, 5, 4, 7; leg II, 1, 2, 5, 4, 7; leg III, 1, 2, 2, 3, 5; leg IV, 0, 2, 2, 3, 5. Ventral seta of telofemur I very short and spur-like. Tibia I with two bluntly ending spurs and a short, seta-like bristle (Fig. 2B). Tibia II (Fig. 2C) with a slender ventral and two bipectinate ventromedial bristles; distal bristle larger than proximal one. Tibia III (Fig. 2D) with a coarsely bipectinate and a long, smooth bristle. Both ventral bristles on tibiae IV (Fig. 2E) smooth and slender. Tarsus I (Fig. 2F) with three dorsal setae and a 20  $\mu\text{m}$  long dorso-lateral solenidion, a long ventral seta, a pair of ventral eupathid setae and a pair of doubled parambulacral setae. Membranes of claw fossa present though reduced. Tarsus II (Fig. 2G) dorsally with three setae; basal seta conspicuously slender; distolateral seta stouter than distomedial one. Parambulacral setae doubled. Tarsi III and IV each with four dorsal setae; basal one shorter than the other setae. Tip of tarsus III with slender medial and spur-like lateral parambulacral seta. Both parambulacral setae on tarsus IV spur-like.

Paired claws on tarsus I much smaller than those of the other legs. Claws with accessory process. Pectines of claws on tarsi II–IV provided with very delicate tines. Median claw on tarsus I bidentate,

both dents similar in size. Median claw on the other legs with reduced dorsal dent.

### Remarks

The most conspicuous external characters are: porose areolae of dorsal plates panelled, each panel with five (on PD) to ten (on AD) canaliculi; AD with four porose areolae, OC with two elongate areolae, PD with pair of longitudinal, posteriorly curved costae, and pair of short lateral areolae; gland pores enlarged; PD with single pair of gland pores; ventral plates coarsely porose; palps slender, only slightly extending beyond rostrum; telofemur I with ventral spur; tibia I with two bluntly-ending spur-like bristles; genua I–IV each with four, four, three and three setae.

*Copidognathus glandulifer* is closely related to *C. curassaviensis* Viets, 1936, a species recorded from the Caribbean area (Viets 1936). Differences between *C. glandulifer* and *C. curassaviensis* are: the AD has larger porose areolae and the porose areolae of the OC are more elongate in *C. glandulifer* than in *C. curassaviensis*, the costae on the PD of *C. glandulifer* are J-shaped, and the spur on telofemur I is shorter than in *C. curassaviensis*.

In general facies, *Copidognathus glandulifer* is very similar to *C. elaboratus* Bartsch, 1996, a species recorded from Northern Australia (Bartsch 1996). The outline of the idiosoma, the dorsal and ventral plates and also the outline of the porose areolae are similar in both species; both species have enlarged gland pores; leg I is longer than the other legs and tibia I has two short, bluntly ending spines; the palps are slender and short, just extending to the end of the rostrum. Differences are in the shape of the pores within the porose areolae, the number of glands, the outline of the palps and the number of setae on genu IV. The porose areolae of *C. elaboratus* bear deep ostia from rosette pores, the canaliculi do not pierce the surface of the integument, in contrast, *C. glandulifer* has porose panels, each with five to ten canaliculi, ostia are lacking. The PD of *C. elaboratus* has two pairs of glands, the PD of *C. glandulifer* a single pair. The palps of *C. elaboratus* have spine-like ventral lamellae whereas the palps of *C. glandulifer* are cylindrical. Genu IV of *C. elaboratus* bears four setae, that of *C. glandulifer* three setae.

### DISCUSSION

The cosmopolitan genus *Copidognathus* contains almost 300 species. Diagnostic features are, e.g.,



size, outline and ornamentation of the idiosoma and its plates, the gnathosoma and legs, presence and outline of the porose areolae, and number, arrangement and size of the setae, glands and gland pores. About 25 species are characterized by the combination of, conspicuous glands and enlarged gland pores; intensely sclerotized plates with raised porose areolae on the dorsal plates and coarsely porose ventral plates; an anteriorly protruding AD and its pair of porose areolae being circular or ovate in form but not fused; small and inconspicuous epimeral processes; short ovipositor; clavate trochanters III and IV without spine-like dorsomedial lamellae; two dorsal but no ventral setae on telofemora III and IV. The idiosoma of these species is about 1.3–1.7 times longer than wide, never remarkably slender. The majority of these species belong to the *bairdi* group. Apart from the characters mentioned above, species of the *bairdi* group have two pairs of glands on the PD and the genua IV bear four setae. Species placed into the *bairdi* group are: *C. acanthoscelus* Bartsch, 1992a, *C. africanus* Bartsch, 1972, *C. bairdi* Newell, 1947, *C. bairdiensis* Bartsch, 1984, *C. elaboratus* Bartsch, 1996, *C. euryalus* Bartsch, 1996, *C. frontispinus* Bartsch, 1972, *C. gibberipes* Viets, 1936, *C. gitae* Chatterjee, 1991, *C. glandulosus* Bartsch, 1984, *C. grandiculus* Bartsch, 1977, *C. hawaiiensis* Bartsch, 1989, *C. malaysius* Bartsch, 1993, *C. monacanthus* Bartsch, 1992a, *C. obesus* Bartsch, 1984, *C. ornatus* Bartsch, 1981, *C. sidellus* Bartsch, 1985, *C. sideus* Bartsch, 1982, *C. spinula* (Trouessart, 1899), *C. temaeus* Bartsch, 1992b, *C. umbonatus* Bartsch, 1992a, and *C. unispinosus* Bartsch, 1989. *C. ganglionatus* Newell, 1984, *C. triareolatus* Newell, 1984 and *C. tuberans* Newell, 1984, assumedly also belong to the *bairdi* group but the descriptions of some details are inadequate or contradictory. The *bairdi* group in turn can be subdivided (Bartsch 1996).

The two species *C. curassaviensis* and *C. glandulifer*, at a first glance resembling representatives of the *bairdi* group, belong to the *curassaviensis* group, named after *Copidognathus curassaviensis* Viets. Characters of the *curassaviensis* group are: dorsal plates with porose panels; gland pores enlarged; PD with single pair of gland pores; ventral plates with coarse porosity; ovipositor only slightly extending beyond GO; tibia I with two bluntly ending spurs; genu IV with three setae; telofemora III and IV with two setae each; palps slender and short, hardly extending beyond stout rostrum. The most obvious differences to representatives of the *bairdi* group are, the PD of species of the *curassaviensis* group has

a single pair of enlarged gland pores and genu IV three setae.

The majority of the species of the *bairdi* group live in warm temperate and tropical waters all around the globe. Similarly, representatives of the *curassaviensis* group are thought to inhabit shallow tropical waters of all oceans. Beside *C. curassaviensis* which was taken in a tidal sand pool on the shores of Curaçao (Viets 1936) and *C. glandulifer* from the Great Barrier Reef another species of this group was found in sandy deposits of Mactan Island, Philippines (unpublished record).

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