

## A New Genus of Mite (Acari: Acaridae) Phoretic on Bees (*Ctenocolletes*) in Australia

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### Abstract

A new genus, *Ctenocolletacarus*, and three new species, *C. longirostris*, *C. grandior* and *C. brevirostris*, are described from hypopial nymphs from three species of bees (*Ctenocolletes*, Stenotritidae) from Western Australia.

### Introduction

The new mites described herein are known only from hypopial nymphs obtained by T.F. Houston, Western Australian Museum, Perth (WAM), from adult bees (*Ctenocolletes*, Stenotritidae). Most were secreted in the abdominal tergal pouches of females, but some occurred under the edges of the abdominal terga and on other parts of the bodies of male and female bees (Houston in press).

The holotypes of the new species are deposited in the WAM. Paratypes are also deposited there, in the Institut royal des Sciences naturelles de Belgique, Bruxelles (IRSNB) and in the British Museum (Natural History), London (BMNH).

The host bees are in the WAM and the Western Australian Department of Agriculture, Perth (WADA).

### Systematics

Acari: Acaridae

Genus *Ctenocolletacarus* gen. nov.

#### Type Species

*Ctenocolletacarus longirostris* sp. nov.

#### Diagnosis

With characters of hypopial nymphs of the Acaridae, but differing from all other genera of this family by prolongation of antero-dorsal extremity of idiosoma into a well-developed rostrum. Resembling *Caloglyphus* Berlese, 1923 (= ?*Sancassania* Oudemans, 1916) and *Lackerbaueria* Zachvatkin, 1941 but differing by presence of a rostrum, its longer sternum (together with epimeres II)

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almost reaching coxae III and its transversely striated dorsal shields. Differing from *Lackerbaueria* in coxal fields III being separated medially (fused in *Lackerbaueria*). Resembling *Paraceroglyphus* Fain and Beaucournu, 1973 in epimeres III-IV forming closed coxal fields (narrowly separated medially) but differing in presence of rostrum, longer sternum, presence of 5 foliate setae on tarsi IV and one saucer-like seta on tarsi I-II.

### Description

Body oval. Dorsal surface slightly convex. Sejugal furrow strong, well forward. Dorsum of body almost completely punctate. Dorsal setae short, either thin or spinose, except long piliform  $\ell$  5. Oil glands opening between setae  $h$  and  $\ell$  2. Venter: Palposoma completely covered by rostrum, longer than wide, with anterior margin slightly incised, bearing two solenidia  $\alpha$  and two pairs of short lateral setae. Sternum loosely connected posteriorly with epimeres II. Two narrow paramedian poorly sclerotized pregenital sclerites present. Suctorial plate large, wider than long. Anterior suckers distinctly smaller than posterior suckers; conoids approximately on same line as posterior suckers (Fain 1973). Legs rather short and thick, ending in a well-developed curved claw.

Chaetotaxy of body: Setae  $v i$  spinose;  $v e$  short, thinner than  $v i$ ;  $s c x$  very thin. Other setae present:  $d 1$  to  $d 5$ ,  $\ell 1$  to  $\ell 5$ ;  $h$ ;  $s h$ ;  $g a$ ;  $g m$ ;  $g p$ . Setae  $c x I$ ,  $c x III$  and  $g p$  modified into conoids (Fain 1973).

Legs: tarsi I-II with 1 long simple seta and 2 short setae (one thin and one spine-like). Tarsi III with 7 foliate and 1 piliform setae. Tarsi IV with 5 foliate and 3 unequal piliform setae (1 very long, 1 long and 1 short). Tibiae I-II with 2-2-1-1 setae. Genua 2-2-1-0. Femora 1-1-0-1. Trochanters 1-1-1-0. Solenidia: Tarsus I with  $\omega 1$  slightly dilated;  $\omega 3$  slightly pore apical and tapering at apex;  $\omega 2$  cylindrical, more basal. Tibiae I-IV with a well-developed solenidion.

### Key to Species of *Ctenocolletacarus*

- 1 Idiosoma prolonged anteriorly by a short rostrum.  
Most of dorsal setae spinose. Dorsal striations forming a network ..... *C. brevirostris* sp. nov.  
Idiosoma prolonged anteriorly by a long rostrum.  
Dorsal setae thin, piliform. Dorsal striations not forming a network ..... 2
- 2 Rostrum long and narrow. Posterior suckers slightly wider (18-19  $\mu\text{m}$ ) than anterior suckers (13-15  $\mu\text{m}$ ).  
Idiosoma 340-426  $\mu\text{m}$  long ..... *C. longirostris* sp. nov.  
Rostrum relatively shorter and thicker. Posterior suckers almost twice as wide (33-36  $\mu\text{m}$ ) as anterior suckers (18-20  $\mu\text{m}$ ). Idiosoma 548-585  $\mu\text{m}$  long ..... *C. grandior* sp. nov.



*Ctenocolletacarus longirostris* sp. nov.

Figures 1-6, 10

**Holotype**

WAM 83/169, hypopus on slide, ex tergal pouches of *Ctenocolletes nicholsoni* ♀; 200 km N of Geraldton, Western Australia, 20.viii.1971, T.F. Houston.

**Paratypes**

*Western Australia*

*Ctenocolletes centralis*: 50 hypopi ex tergal pouches of ♀ (WAM 82/1890), 12.5 km ENE of Anketell HS (28°02'S, 118°51'E), 6-7.ix.1981, T.F. Houston (WAM 32 hypopi, WAM 83/360-2; IRSNB 10 hypopi; BMNH 8 hypopi); 12 hypopi from various parts of body of ♂♂ (WAM 82/1893, WADA TFH R15), 4.8 km S of Neale Junction (28°18'S, 125°49'E), 16.vii.1974, K.T. Richards (WAM 8 hypopi, WAM 83; IRSNB 2 hypopi; BMNH 2 hypopi).

*Ctenocolletes nicholsoni*: 35 hypopi, same data as for holotype (WAM 27 hypopi, WAM 83/363-8; IRSNB 8 hypopi); 13 hypopi from ♀, 16 km S of Nerren Nerren HS (27°08'S, 114°38'E), 19.viii.1980, C.A. Howard and T.F. Houston 329-1 (WAM 8 hypopi, WAM 83/379-82; IRSNB 5 hypopi); 40 hypopi ex tergal pouches of ♀ (WAM 82/1881), 37 km NE of Laverton, 10-12.ix.1982, B. Hanich and T.F. Houston (WAM 32 hypopi, WAM 83/369-73; IRSNB 6 hypopi; BMNH 2 hypopi).

**Diagnosis**

Distinguished from the two other species of the genus by the long, narrow shape of the rostrum.

**Description**

Holotype 412 µm long (including rostrum), 249 µm wide (maximum width). Measurements in 8 paratypes (in µm): 426 x 246; 420 x 248; 395 x 240; 390 x 240; 380 x 242; 368 x 213; 350 x 210; 340 x 210. Specimens measuring less than 380 µm are less frequent than those exceeding this length. These small specimens correspond closely to the larger ones except for size of body and of some organs (setae, suckers, etc.). Dorsum: Rostrum 80 µm long and 27 µm wide in its middle. Cuticle covering the rostrum raised to form a crest. Setae *vi* are thick spines, *ve* are smaller and thinner spines. All dorsal setae thin and short except *ℓ 5* 125 µm long. Venter: Palposoma 30 µm long, 19 µm wide; *α* 28-30 µm long. Sternum 87 µm long. Pregenital sclerites fused anteriorly with epimeres IV. Suctorial plate 94 µm wide; anterior suckers 13-15 µm wide, posterior suckers 18-19 µm wide; they are preceded by a flat rounded area. Legs relatively thick and short. Length of tarsi I-IV (in µm): 24-24-27-27. Chaetotaxy of legs I-IV: Tarsi I-II with 2 simple setae (one of 50 µm and one of 12-15 µm) and one spinous seta.

*Ctenocolletacarus grandior* sp. nov.

Figures 8-9

**Holotype**

WAM 83/170, hypopus on slide, ex tergal pouches of *Ctenocolletes centralis* ♀ (WAM 82/1890); 12.5 km ENE of Anketell HS (28°02'S, 118°51'E), Western Australia, 6-7.ix.1981, T.F. Houston.



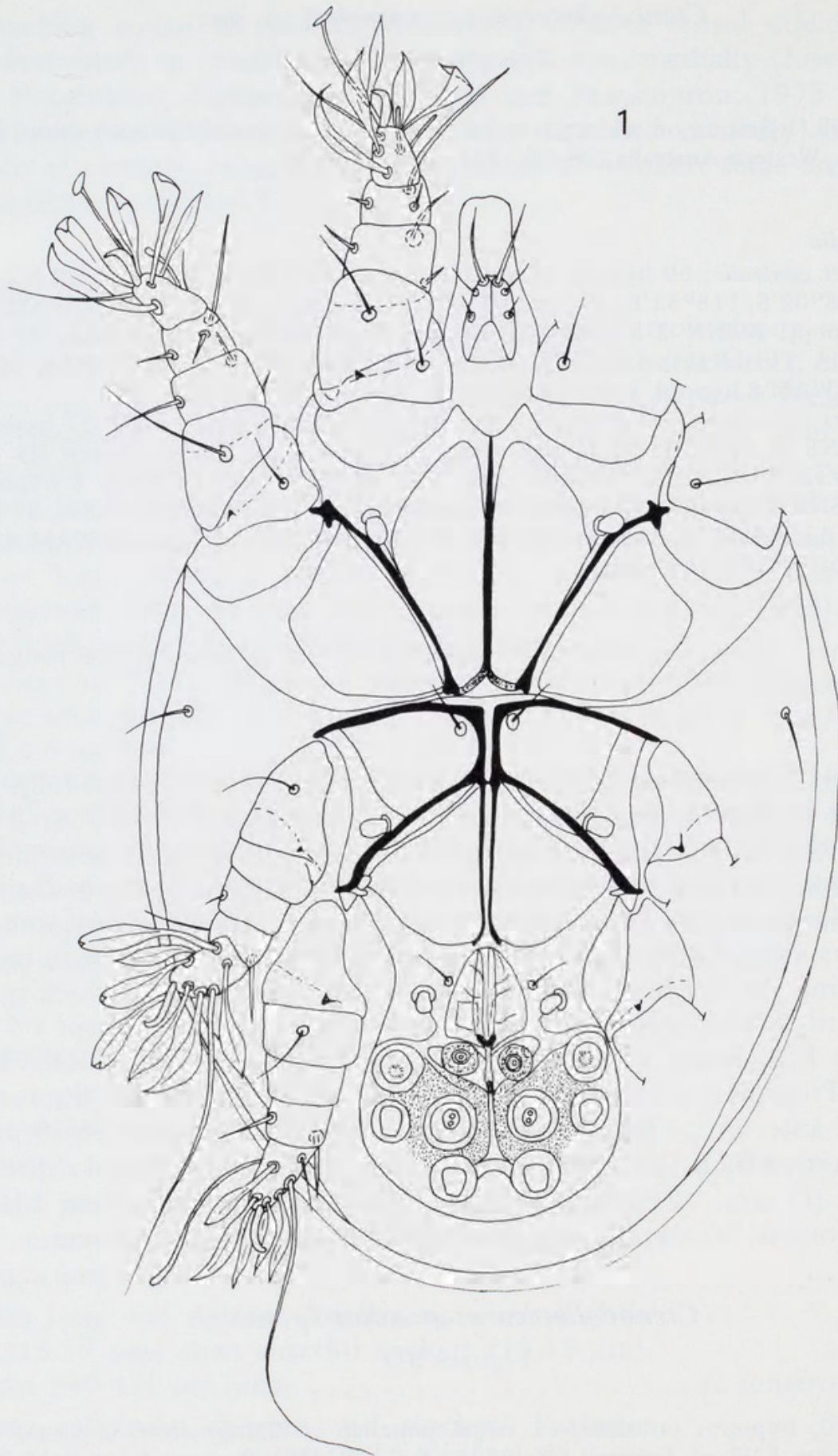
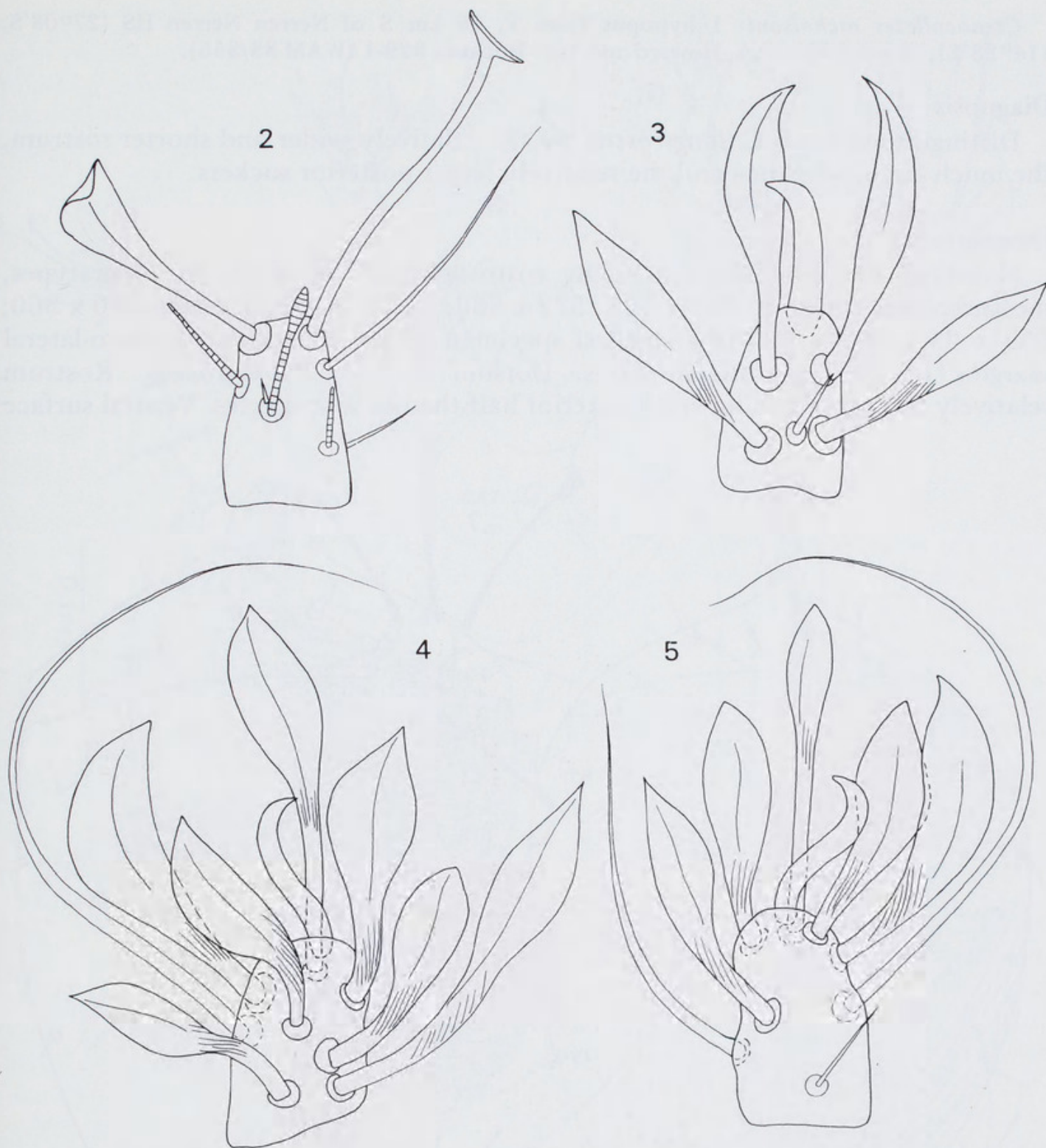


Figure 1 *Ctenocolletacarus longirostris* sp. nov. Hypopus in ventral view.



Figures 2-5 *Ctenocolletacarus longirostris* sp. nov. Hypopus. Tarsus I in dorsal view (2) and ventral view (3). Tarsi III (4) and IV (5) in lateral view.

#### Paratypes

##### Western Australia

*Ctenocolletes centralis*: 11 hypopi from various parts of body of ♂ (WAM 82/1893); 4.8 km S of Neale Junction (28°18'S, 125°49'E), 16.vii.1974, K.T. Richards (WAM 6 hypopi, WAM 83/357-9; IRSNB 3 hypopi; BMNH 2 hypopi).



*Ctenocolletes nicholsoni*: 1 hypopus from ♀; 16 km S of Nerren Nerren HS (27°08'S, 114°38'E), 19.viii.1980, C.A. Howard and T.F. Houston 329-1 (WAM 83/356).

### Diagnosis

Distinguished from *C. longirostris* by the relatively wider and shorter rostrum, the much larger idiosoma and the relatively larger posterior suckers.

### Description

Holotype 550  $\mu$ m long (including rostrum), 345  $\mu$ m wide. In 7 paratypes, measurements (in  $\mu$ m): 585 x 375; 572 x 360; 570 x 365; 569 x 350; 560 x 360; 555 x 345; 548 x 325 (the smallest specimen of the collection). Postero-lateral margins of idiosoma membranous. Dorsum as in *C. longirostris*. Rostrum relatively shorter but wider in its posterior half than in that species. Ventral surface

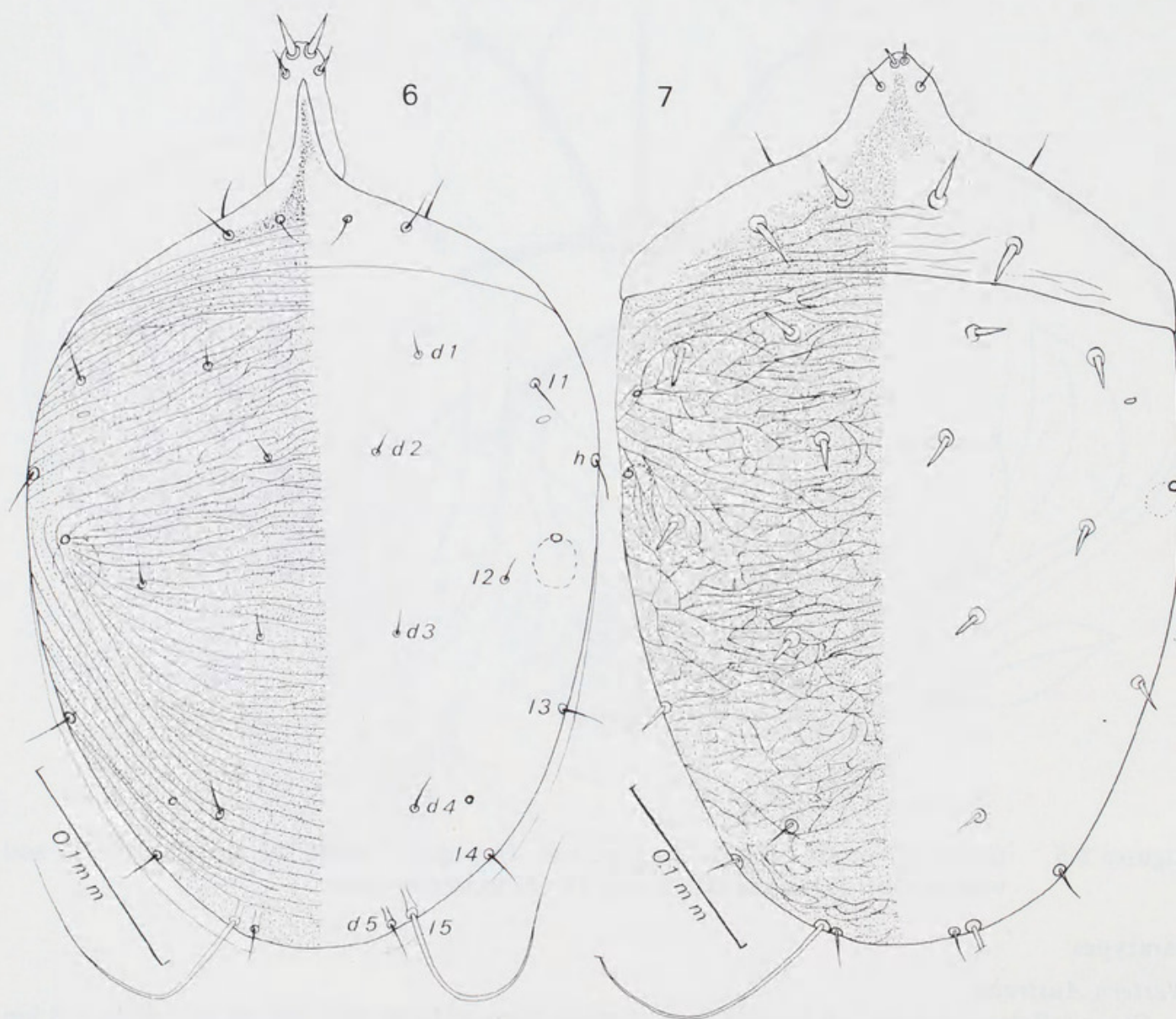
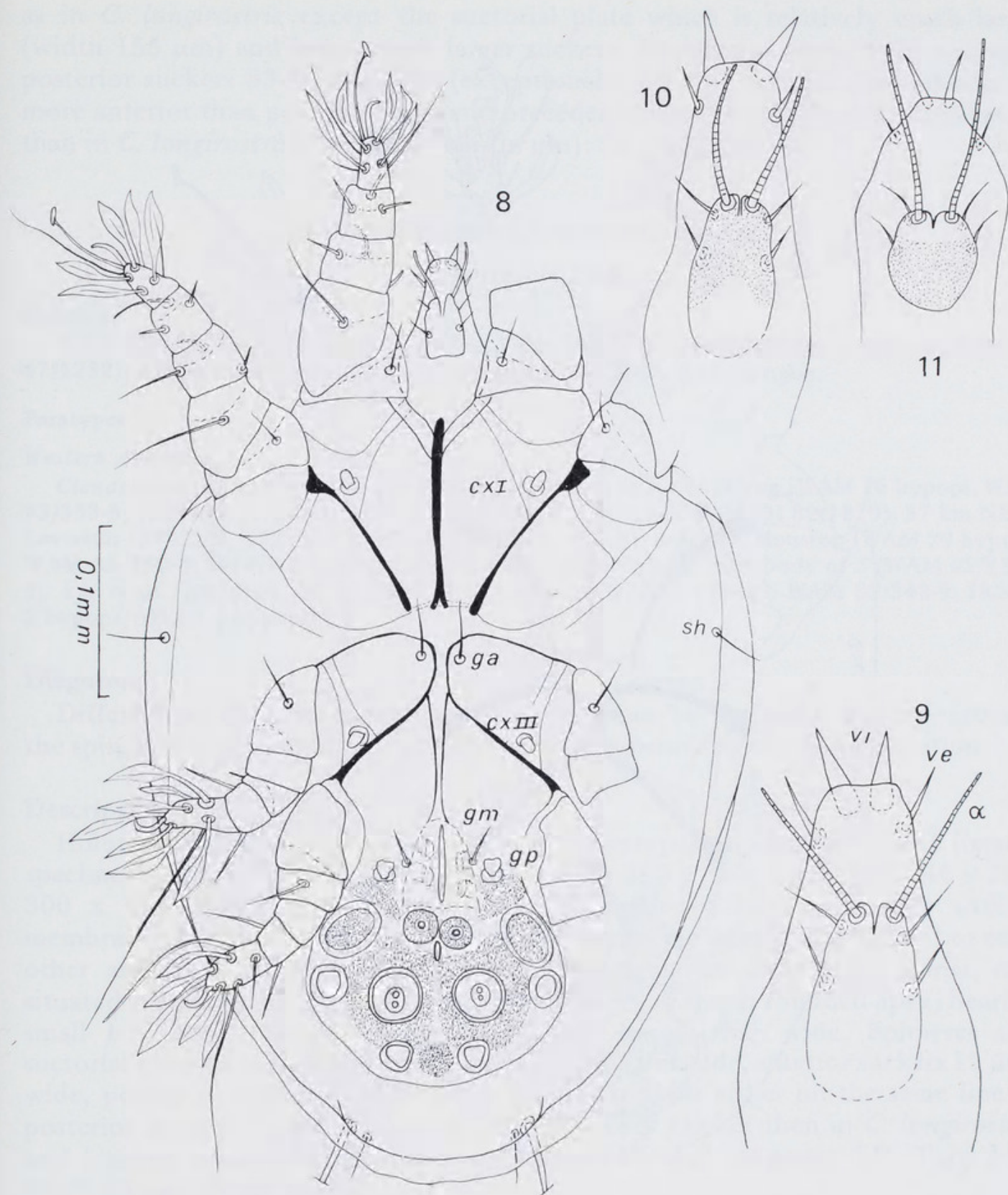
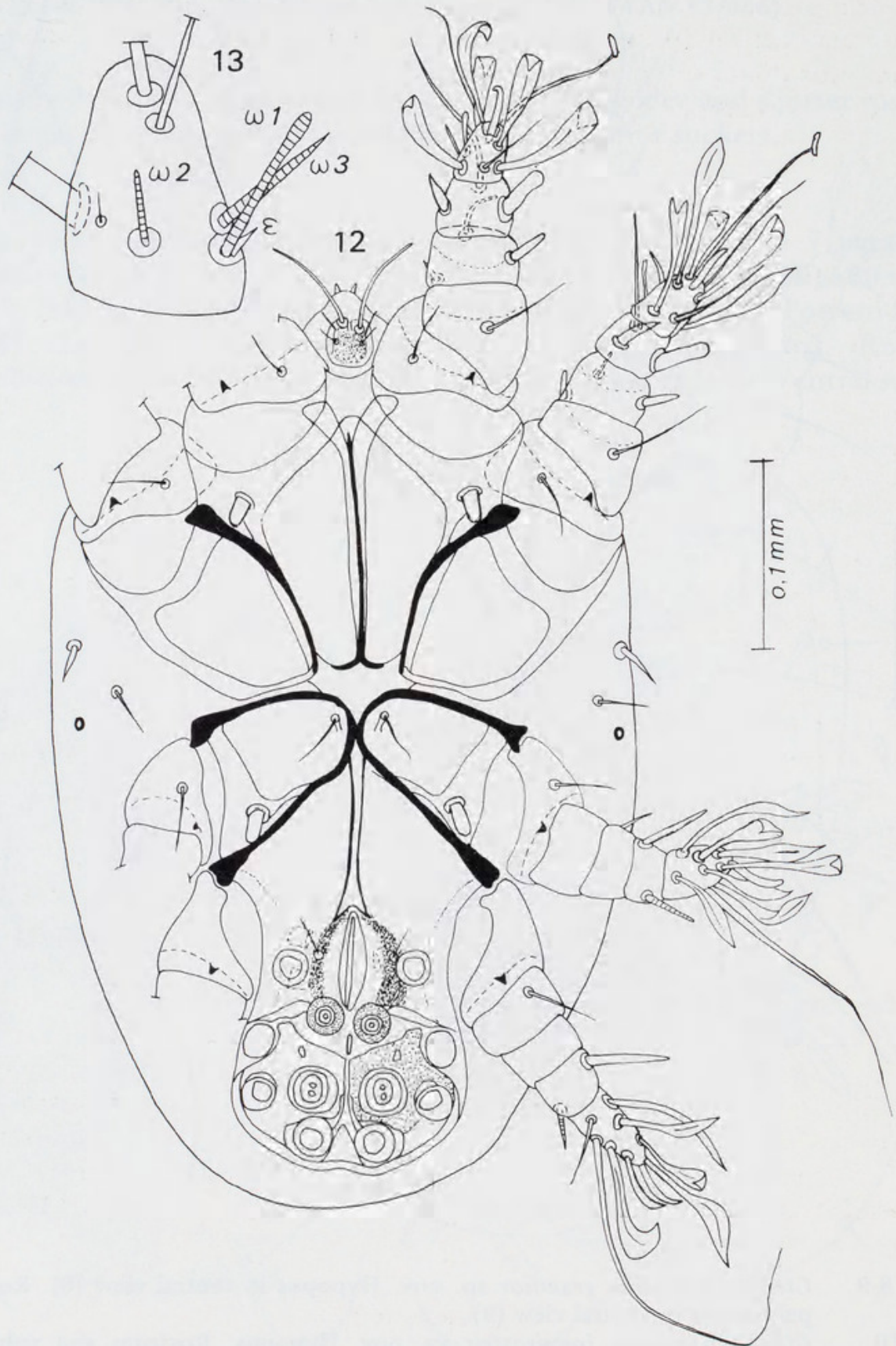


Figure 6 *Ctenocolletacarus longirostris* sp. nov. Hypopus in dorsal view.  
Figure 7 *Ctenocolletacarus brevirostris* sp. nov. Hypopus in dorsal view.





- Figures 8-9 *Ctenocolletacarus grandior* sp. nov. Hypopus in ventral view (8). Rostrum and palposoma in ventral view (9).
- Figure 10 *Ctenocolletacarus longirostris* sp. nov. Hypopus. Rostrum and palposoma in ventral view.
- Figure 11 *Ctenocolletacarus brevisrostris* sp. nov. Hypopus. Rostrum and palposoma in ventral view.



Figures 12-13 *Ctenocolletacarus brevirostris* sp. nov. Hypopus in ventral view (12). Tarsus I in dorsal view (13).



as in *C. longirostris* except the suckorial plate which is relatively much larger (width 155  $\mu\text{m}$ ) and bears much larger suckers. Anterior suckers 18-20  $\mu\text{m}$  wide, posterior suckers 33-36  $\mu\text{m}$  wide (exceptionally 38  $\mu\text{m}$ ). Lateral conoids slightly more anterior than posterior ones and preceded by large oval flat area. Legs longer than in *C. longirostris*; length of tarsi (in  $\mu\text{m}$ ): 31-31-33-33.

### *Ctenocolletacarus brevirostris* sp. nov.

Figures 7, 11-13

#### Holotype

WAM 83/171, hypopus on slide, ex tergal pouches of *Ctenocolletes albomarginatus* ♀ (WAM 47/1232); Merredin, Western Australia, presumably in 1947, A.M. Douglas.

#### Paratypes

##### *Western Australia*

*Ctenocolletes albomarginatus*: 20 hypopi, same data as for holotype (WAM 16 hypopi, WAM 83/353-5; IRSNB 4 hypopi); 38 hypopi ex tergal pouches of ♀ (WAM 82/1879); 37 km NE of Laverton (28°21'S, 122°37'E), 10-12.ix.1982, B. Hanich and T.F. Houston (WAM 29 hypopi, WAM 83/350-2; IRSNB 5 hypopi; BMNH 4 hypopi); 9 hypopi from body of ♂ (WAM 82/122), 21 km N of Geraldton, 19.viii.1971, T.F. Houston (WAM 5 hypopi, WAM 83/348-9; IRSNB 2 hypopi; BMNH 2 hypopi).

#### Diagnosis

Differs from the two other species in the genus by the much shorter rostrum, the spinose dorsal chaetotaxy and the network formed by the dorsal striation.

#### Description

Holotype 450  $\mu\text{m}$  long, 240  $\mu\text{m}$  wide. In 8 paratypes (in  $\mu\text{m}$ ): 460 x 265 (largest specimen); 435 x 250; 423 x 237; 405 x 238; 390 x 240; 363 x 225; 340 x 220; 300 x 180 (smallest specimen). Posterior margin of body with very narrow membrane. Dorsum as in *C. longirostris* but transverse lines are connected to each other and form an irregular network. Dorsal setae are short thick spines, *sc i* situated distinctly in front of *sc e*. Rostrum short and with rounded apex, bearing small *v i* setae. Venter: Palposoma slightly longer than wide. Epimeres and suckorial plate as in *C. longirostris*, the plate is 93  $\mu\text{m}$  wide, anterior suckers 15  $\mu\text{m}$ , wide, posterior suckers 21  $\mu\text{m}$  wide. Lateral conoids either on the same line as posterior suckers or slightly behind this line. Legs thicker than in *C. longirostris* and bearing much thicker spines on tibiae I-IV and on genua I-II. Tarsi I-IV 29-29-30 and 30  $\mu\text{m}$  long.

#### Discussion

The material examined was obtained from a relatively small number of host specimens: *C. longirostris* from 3 specimens each of *Ctenocolletes centralis* and



*C. nicholsoni*; *C. grandior* from 2 *Ctenocolletes centralis* and 1 *C. nicholsoni*; and *C. brevirostris* from 3 *Ctenocolletes albomarginatus*. However, on the basis of these records it appears that *C. longirostris* and *C. grandior* share (and are confined to) two bee hosts (*Ctenocolletes centralis* and *C. nicholsoni*) while *C. brevirostris* is confined to a third (*C. albomarginatus*). This situation reflects the affinities of the host bees where *centralis* and *nicholsoni* are very closely related to each other and more distantly related to *albomarginatus* (Houston 1983).

### Acknowledgements

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