

## SYSTEMATIC NOTES ON TWO GENERA OF THE FEATHER MITE FAMILY PSOROPTOIDIDAE (ASTIGMATA: ANALGOIDEA)

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**ABSTRACT:** Taxonomic corrections are made for two genera of the feather mite family Psoroptoididae (Astigmata: Analgoidea) based on re-investigation of type specimens. *Megninia casuaricola* Proctor, 2001 from the southern cassowary *Casuarus casuarus* (Linnaeus, 1758) (Casuariidae), the type species of the monotypic genus *Hexacaudalges* Mironov et Proctor, 2005 (Psoroptoidinae), is synonymized with *Pteronyssus* (*Mesalges*) *characurus* Trouessart, 1899. Therefore, the valid name for the type species of *Hexacaudalges* is now *Hexacaudalges characurus* (Trouessart, 1899) comb. n. The original collection (Trouessart 1899) of a single specimen of *H. characurus* on a museum specimen of the Pesquet's parrot, *Psittichas fulgidus* (Lesson, 1830) (Psittacidae), is an obvious accidental contamination.

The genus *Cygnocoptes* Fain et Bochkov, 2003, originally established within the family of house dust mites and allies (Pyroglyphoidea: Pyroglyphidae), actually does not belong to this family and is moved now to the subfamily Pandalurinae of the feather mite family Psoroptoididae. A new diagnosis in the standard format for pandalurines is proposed for the genus *Cygnocoptes*.

**KEY WORDS:** feather mite, Psoroptoididae, *Hexacaudalges*, *Cygnocoptes*, systematics

### INTRODUCTION

In the course of systematic investigations of various groups of feather mites (mites from the suborder Astigmata permanently living on the plumage or skin of bird), I was recently able to re-examine a number of type materials of «old species» described in the 19<sup>th</sup> century that had uncertain status and taxonomic position, and also to examine some species with unusual host associations. The present paper, which is likely the first from the series of papers giving systematic notes and corrections to feather mite taxonomy, proposes taxonomic corrections for two genera of the feather mite family Psoroptoididae (Astigmata: Analgoidea).

The genus *Hexacaudalges* Mironov et Proctor, 2005 (Psoroptoidinae) included a sole species *Hexacaudalges casuaricolus* (Proctor, 2001) inhabiting the southern cassowary, *Casuarus casuarus* (Linnaeus) (Casuariidae). This species was the sole feather mite actually associated with a host from the order Casuariformes. However, the present investigation has found that this mite species was described long ago by Trouessart (1899) under the name *Pteronyssus* (*Mesalges*) *characurus* Trouessart, 1899. Later on (Bonnet 1924, Radford 1953), this species was placed in the genus *Mesalges* Trouessart et Neumann, 1888, but it has never been seriously re-examined or redescribed. Experts were probably disoriented by the fact that the type host of *P. (M.) characurus* was formally pointed as the Pesquet's parrot, *Psittichas fulgidus* (Lesson) (Psittacidae). As psoroptoidids are known to commonly occur on parrots (Gaud and Atyeo 1967, 1982, 1996), this mite species did not awake any particu-

lar interest to reexamine it even in the second part of 20<sup>th</sup> century. In the present paper *H. casuaricolus* (Proctor, 2001) is synonymized with *P. (M.) characurus*, and the type species of the genus *Hexacaudalges* is given a new name combination.

The monotypic genus *Cygnocoptes* Fain et Bochkov, 2003 was originally established in the family Pyroglyphidae and referred to the subfamily Dermatophagoidinae (Fain and Bochkov 2003). Its sole species, *Cygnocoptes prasadi* Fain et Bochkov, 2003, was found on the black-necked swan, *Cygnus melanocoryphus* (Molina, 1782) (Anseriformes). The present study has shown that this genus undoubtedly belongs to the family Psoroptoididae. The authors of *Cygnocoptes* had overlooked in this mite some very characteristic features of psoroptoidids, particularly the ventral apophyses on tibiae I, II, and put too much weight on such characters as position of solenidion  $\omega 1$  in the distal part of tarsus I. In the present paper, the genus *Cygnocoptes* is moved to the family Psoroptoididae and provided with a renewed diagnosis made in the standard format for psoroptoidid genera of the subfamily Pandalurinae.

Morphological terms used in taxonomic remarks and renewed diagnosis follow Gaud and Atyeo (1996). Latin names and systematics of avian hosts follow Dickinson (2003). Abbreviations used for depositories of materials used in the present study are: IRSNB — the Institut royal des Sciences naturelles de Belgique (Brussels, Belgium), TRT — the Trouessart collection in the Museum National de l'Histoire Naturelle (Paris, France), and ZISP — the Zoological Institute of

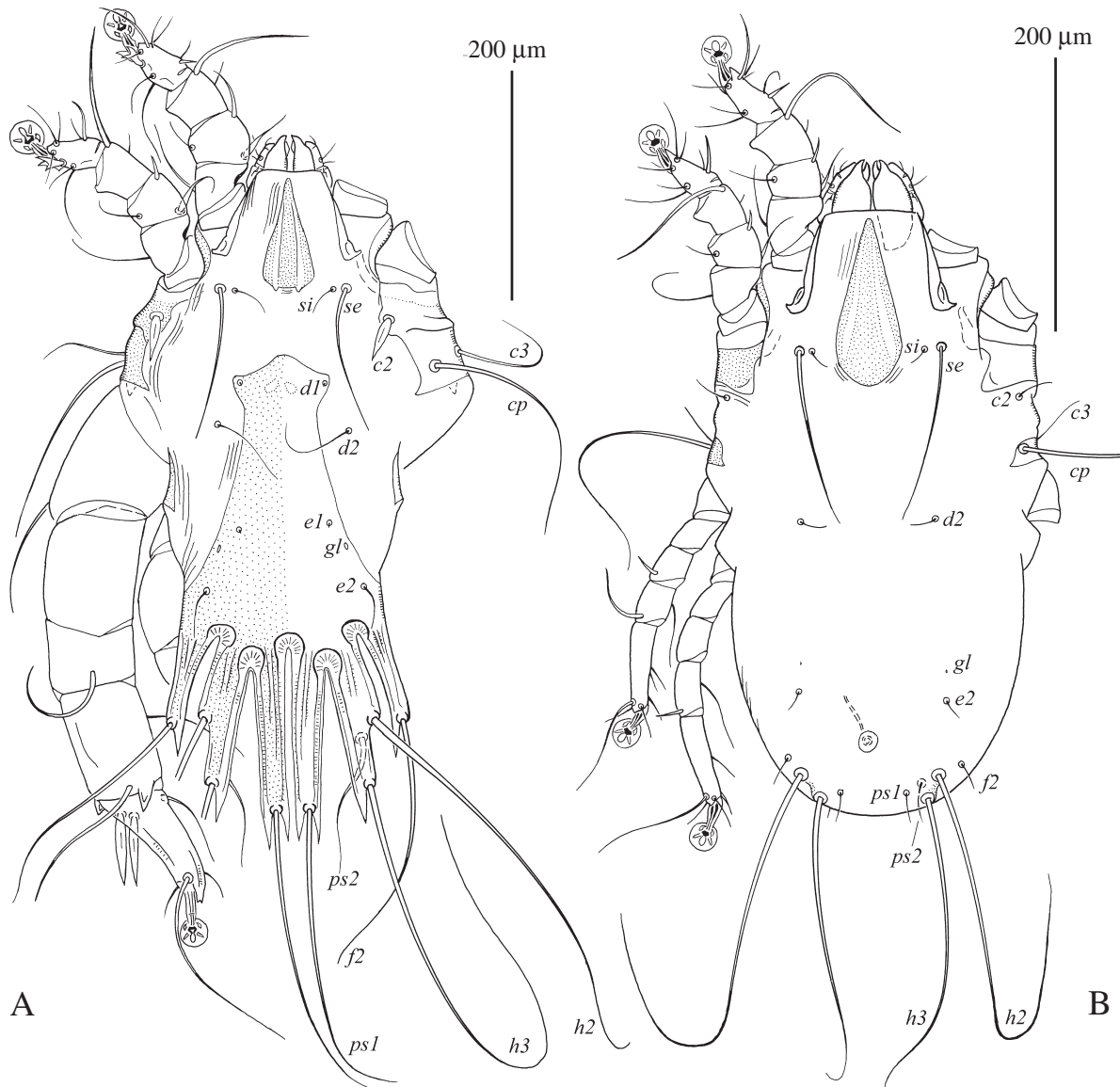


Fig. 1. *Hexacauldages characurus*. A — male, dorsal view, B — female, dorsal view. Modified from: Mironov and Proctor (2005).

the Russian Academy of Sciences (Saint Petersburg, Russia).

#### SYSTEMATICS

##### Family Psoroptoididae Gaud et Atyeo, 1982

##### Subfamily Psoroptoidinae Gaud et Atyeo, 1982

##### Genus *Hexacauldages* Mironov et Proctor, 2005

Type species: *Pteronyssus* (*Mesalgus*) *characurus* Trouessart, 1899 (= *Megninia casuaricola* Proctor, 2001, *syn. n.*)

**Remark.** The feather mite species, *Megninia casuaricola* Proctor, 2001 (Analgidae: Megniniinae) was described from the southern cassowary, *Casuarus casuaris* (Linnaeus) (Casuariidae) (Figs. 1 A, B). Reinvestigation of this species (Mironov and Proctor 2005) showed that it deserved a separate

genus and actually belongs to the family Psoroptoididae rather than Analgidae. Based on *M. casuaricola*, the monotypic genus *Hexacauldages* Mironov et Proctor, 2005 was established within that family. The most impressive diagnostic feature of this genus is the opisthosomal lobes in male, which are split into three pairs of long and narrow branches (or lobules) (Fig. 1A). This genus was placed into the subfamily Psoroptoidinae, although the authors pointed out that it occupies a distinct position within the subfamily, because the structure of ventral setae in tarsi I, II (Figs. 2 A–D) does not completely correspond to the principal diagnostic features of psoroptoidines (Gaud and Atyeo 1982, 1996). Potentially, this genus could represent a separate lineage of subfamilial rank within the family Psoroptoididae.

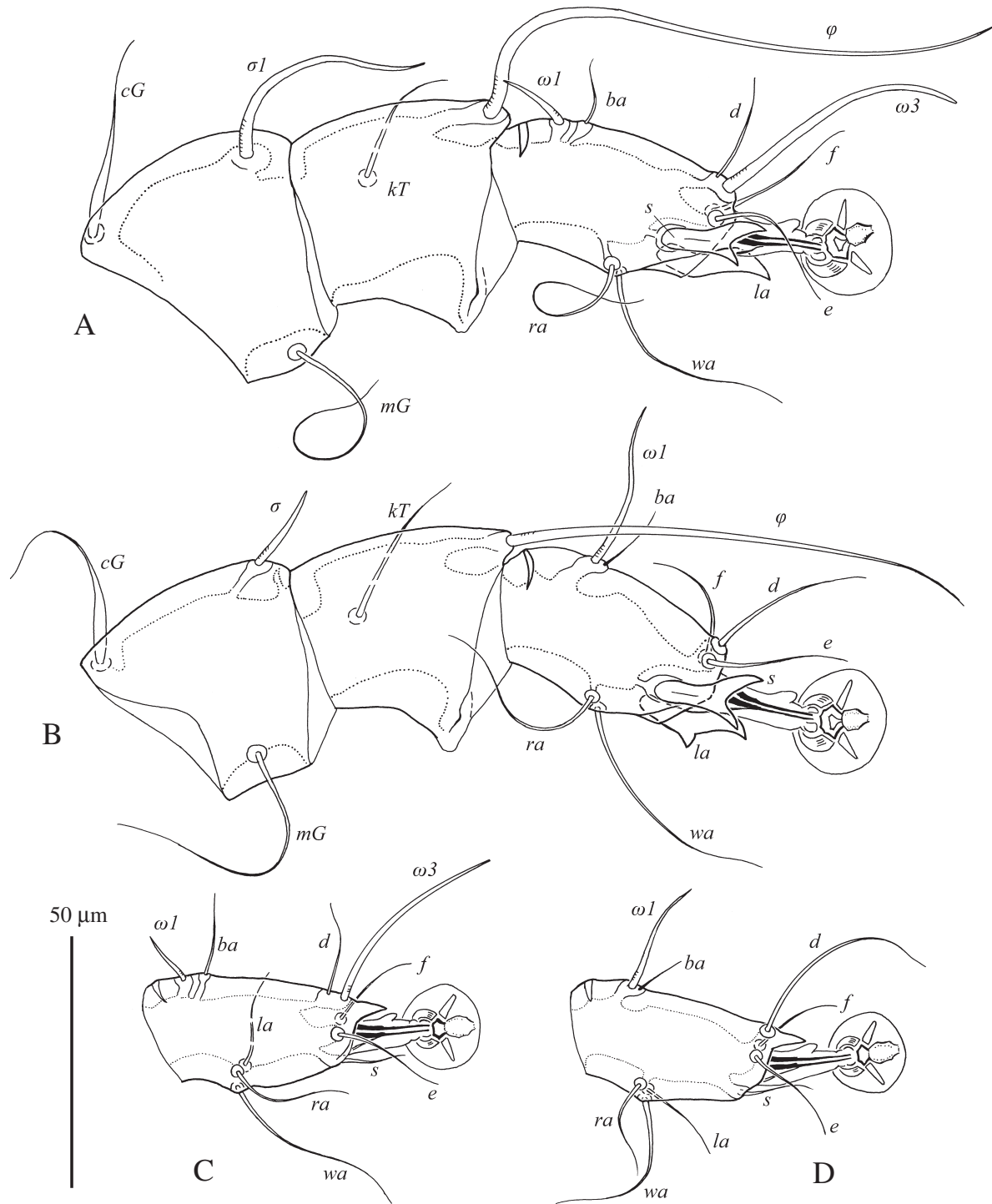


Fig. 2. *Hexacauldages characurus*, details of legs. A — genu, tibia and tarsus I of male, B — genu, tibia and tarsus II of male, C — tarsus I of female, D — tarsus II of female.

In the course of reinvestigation of old types from the Trouessart collection (Museum National de l'Histoire Naturelle, Paris), I found that the species *Pteronyssus (Mesalgus) characurus* Trouessart, 1899, represented by the holotype male (TRT 29i1), completely corresponds to that of *M. casuaricola*. Although the distal halves of all six opisthosomal branches and most distal segments of

legs III are lost, perhaps because the slide was remounted by some previous investigators, the remaining features do not leave any doubts of conspecificity of these species. Also, Trouessart (1899) described in detail all three pairs of long lobules in the male in the original description. Therefore, *M. casuaricola* is declared here as a junior synonym of *P. (M.) characurus*, and the type

species of *Hexacaudalges* is given the valid name *Hexacaudalges characurus* (Trouessart, 1899) **comb.n.** The holotype of *P. (M.) characurus* is designated here by monotypy (under the Article 73.1.2 of ICZN), because it is clear from the original description that Trouessart (1899) had only a sole male for the description.

It is necessary to add that the type host of *P. (M.) characurus* is formally the Pesquet's parrot, *Psittichas fulgidus* (Lesson, 1830) (Psittacidae). It is obvious, however, that this was an accidental contamination, because Trouessart collected all his materials from dry museum skins and made a number of errors in host associations, which have been pointed by many subsequent authors (e.g. Gaud and Atyeo 1996, Mironov and Dabert 2007).

**Material examined.** *Pteronyssus (Mesalges) characurus*, holotype male (TRT 29i1) from *Psittichas fulgidus* (Lesson, 1830) (*Dasyptilus pecqueti* in the original label) (Psittacidae), New Guinea, no date, E. Trouessart. *Megninia casuaricola*, paratype male and female (ZISP) from *Casuarium casuarium* (Linnaeus, 1758) (Casuariidae), Australia, Queensland, Kuranda, suburban yard, 16° 49' S, 145° 38' E, 29 May 2000, J. Seymour.

#### Subfamily Pandalurinae Gaud et Atyeo, 1982

##### Genus *Cygnocoptes* Fain et Bochkov, 2003

Type species: *Cygnocoptes prasadi* Fain et Bochkov, 2003.

**Remark.** The monotypic genus *Cygnocoptes* Fain et Bochkov, 2003 was based on *Cygnocoptes prasadi* Fain et Bochkov, 2003 described from the black-necked swan, *Cygnus melanocoryphus* (Molina, 1782) (Anseriformes: Anatidae). By unclear reasons, this new genus of astigmatan mite was established by the authors within the family Pyroglyphidae (Pyroglyphoidea), which is not a family of «pure» feather mites because includes bird-nest commensals, permanent inhabitants of birds and well known house-dust mites (Fain 1988, Fain and Atyeo 1990). As it possible to suggest, the authors were probably disoriented by the position of the solenidion  $\omega 1$  in on tarsi I of *Cygnocoptes prasadi* (Fig. 3 A), the base of which is situated approximately in the distal third of this segment, as in all Pyroglyphidae. At the same time they apparently did not take in attention that in *Cygnocoptes* two very characteristic features of Pyroglyphidae, the tight and well-pronounced striation of soft idiosomal cuticle and the famulus  $\varepsilon$  of tarsus I, are absent. The authors of the genus also did not consider the following characters: the central sclerite

of the ambulacral disc shaped as an inverted T; the presence of ventral apophyses on tarsi and tibiae I, II; the lanceolately enlarged bases of setae  $cG$  of genua I, II; and strongly shortened tarsi IV in males (shorter than corresponding tibiae). These features are very characteristic for the pandalurine genera of the true feather mite family Psoroptoididae (Analgoidea).

Indeed, the ventral apophyses of tibiae I, II in *Cygnocoptes* are short and blunt; those on tarsi I, II are absent, but ventral margins of these segments are blunt-angular (Figs. 3 A–B). However in pyroglyphids these leg segments are always cylindrical or conical. In *Cygnocoptes*, the moving of solenidion  $\omega 1$  and reduction of ventral apophyses on tibia and tarsi I, II may be probably explained by general shortening of all segments of legs I, II and by diminution of size of this mite compared to other psoroptoidids.

As some essential features of the genus were missed in the original description (Fain and Bochkov 2003), herewith is given a renewed diagnosis of the genus *Cygnocoptes* corresponding to the standard format used for the pandalurine genera (Gaud and Atyeo 1967, Mironov 2004). Among Pandalurinae, *Cygnocoptes* looks most similar to the genus *Temnalges* Gaud et Atyeo, 1967 by having free and widely separated epimerites I and by the loss of idiosomal setae  $vi$ ,  $c1$ ,  $d1$ . Both sexes of *Cygnocoptes* differ from that genus by loss of laterocoxal setae and ventral apophyses of tarsi I, II, by having short and blunt ventral apophyses on tibiae I, II; the males differ by having simple bluntly rounded opisthosomal lobes and by loss of any spines on distal margin of tibia III. In both sexes of *Temnalges*, laterocoxal setae are present and ventral apophyses on tibiae I, II are acute, spine-shaped; in the males, the outer margin of the relatively short opisthosomal lobes have noticeably extended bases of setae  $f2$ ,  $h2$ ,  $h3$ , and  $ps2$ , and the distal margin of tibia III has a large paraxial spine-like apophysis.

**Diagnosis.** Both sexes. Pandalurines of relatively small size (200–350 microns in length). Subcapitulum with poorly expressed tooth on lateral margins (Fig. 3 C). Vertical setae  $vi$  absent. Hysteronotal setae  $c1$ ,  $d1$ ,  $h1$  absent. Laterocoxal setae  $lcx$  absent. Epimerites I free, separated by large space. Tarsi I, II with blunt-angular ventral extensions, without hyaline ventral apophyses; solenidion  $\omega 1$  closer to apex than to base of these segments (Figs. 3 A, B). Tarsus I without apicodorsal spine, seta  $ba$  strongly reduced. Tarsus II with short apicodorsal spine, seta  $ba$  4–5 times shorter

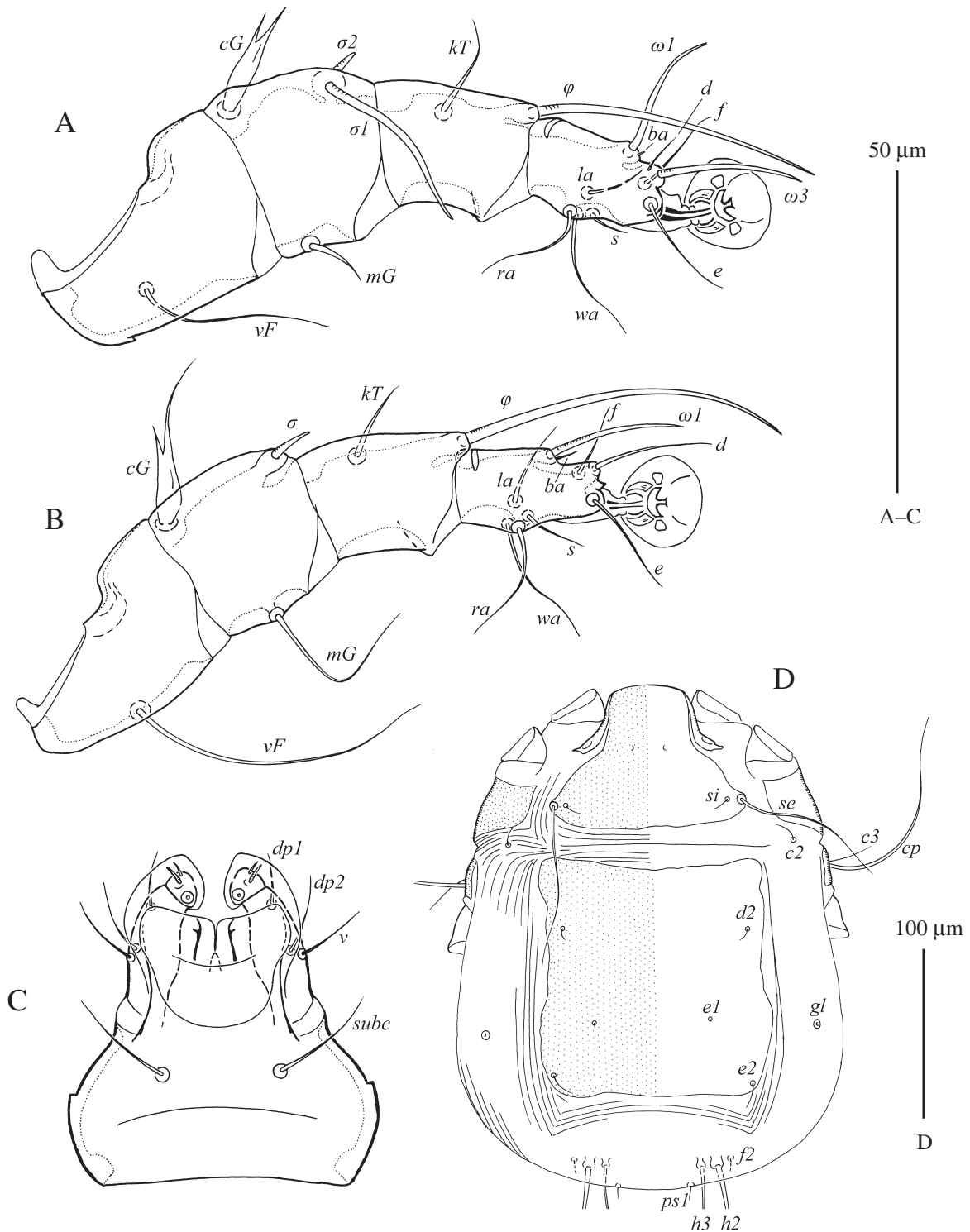


Fig. 3. *Cygnocoptes prasadi*, female. A — leg I, B — leg II, C — subcapitulum, D —, dorsal view of idiosoma.

than solenidium  $\omega 1$ . Tibiae I, II with short and blunt ventral apophyses. Solenidium  $\sigma 2$  on genu I present. Setae  $cG$  of genua I, II with flattened and enlarged in basal part and with two unequal setiform apices. Posterolateral angle of femur I with indentation. Central sclerite of ambularcral disc shaped as an inverted T with very short median branch.

Male. Epimerites II not connected to epimerites III, coxal fields II, III open. Opisthosomal lobes poorly expressed, represented by pair of wide, short and bluntly rounded extensions; terminal cleft shallowly concave (Fig. 4 A). Bases of setae  $f2$ ,  $h2$ ,  $h3$ ,  $ps1$  close to each other and situated on margin of opisthosomal lobe; setae  $ps2$  situated ventrally,

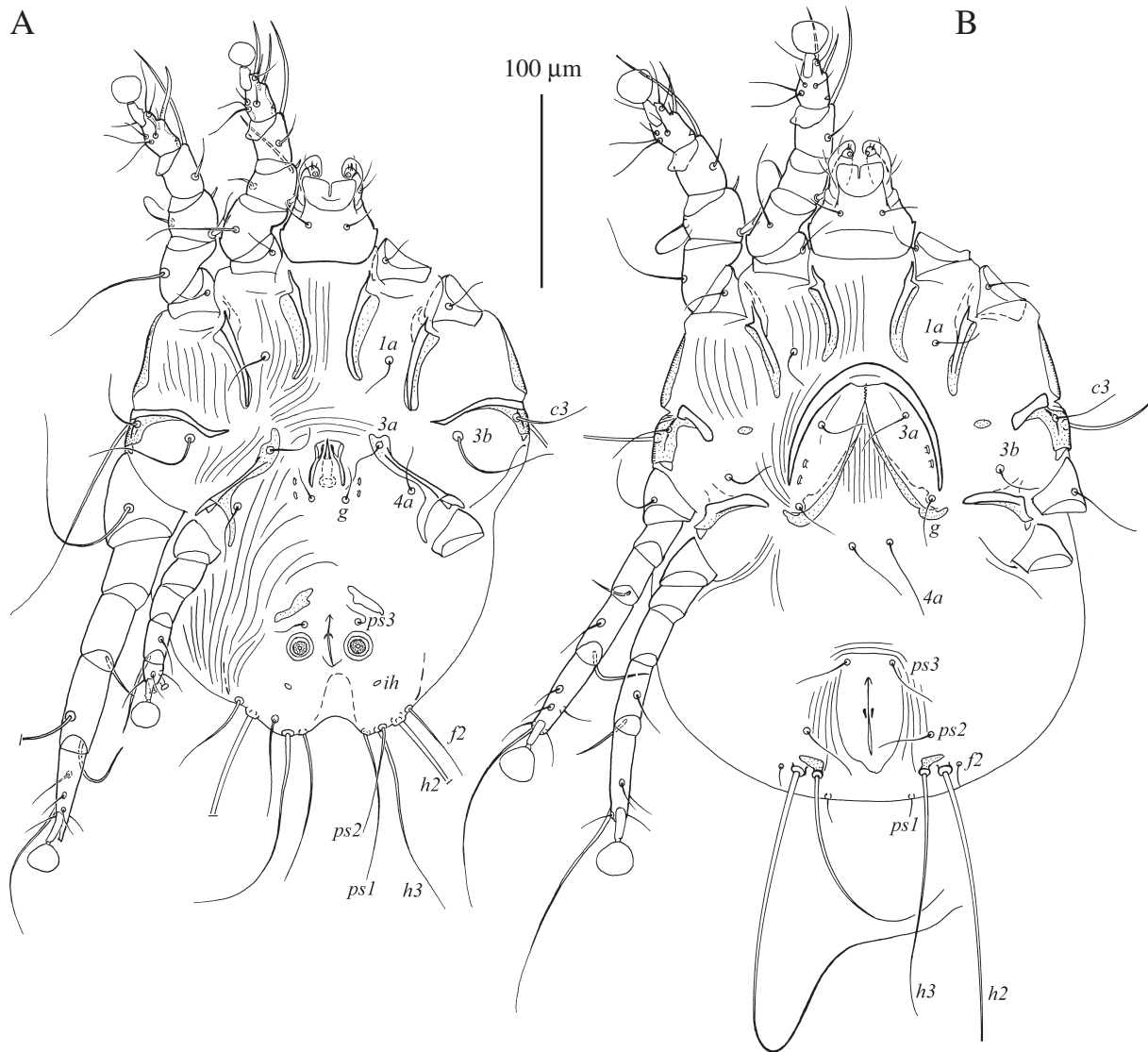


Fig. 4. *Cygnocoptes prasadi*. A — male, ventral view, B — female, ventral view. A — modified from: Fain and Bochkov (2003).

approximately at level of setae *h2*. Genital apodemes absent, aedeagus stylet-like, shorter than apodemes forming genital arch. Adanal apodemes present, poorly developed, represented by pair of oblique sclerites anterior to setae *ps3*. Cupules *ih* present. Antaxial and paraxial spur-like processes in distal part of tibia III absent. Tarsus III with straight apical extension, slightly bifid apically. Tarsus IV half as long as corresponding tibia, without paraxial cone-shaped process, setae *d*, *e* modified into suckers with long cylindrical base and discoid cap.

Female. Hysteronotal shield rectangular (Fig. 3 D). Posterior end of opisthosoma with two pairs of macrosetae (*h2*, *h3*). Epigynum represented by large arch slightly wider than long, extending from level of tips of epimerites II to level of epimerites

IIIa, tips of epigynium free from epimerites (Fig. 4 B). All setae of tarsi III, IV setiform.

**Material examined.** *Cygnocoptes prasadi*, 1 male holotype and 2 female paratypes (IRSNB) from *Cygnus melanocoryphus* (Molina, 1782) (Anatidae), Zoo of Antwerp, Belgium, during quarantine, March, 1964, A. Fain.

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