

The feather mites of nightjars (Aves: Caprimulgidae), with descriptions of two new species from Brazil (Acari: Xolalgidae, Gabuciniidae)

Fabio Akashi Hernandez

Departamento de Zoologia, Universidade Estadual Paulista, Rio Claro, São Paulo, Brazil

Abstract: Two new species of feather mites are described from nightjars (Caprimulgiformes: Caprimulgidae) of Brazil: *Hartingiella neotropica* sp. n. (Xolalgidae) described from *Hydropsalis parvula* (Gould) and *Paragabucinia brasiliensis* sp. n. (Gabuciniidae) from *H. albicollis* (Gmelin). The former differs from the type species by having, in males, the anterior projections on epimerites III towards setae 3b and the adanal shield bearing setae ps3 present; in both sexes, a pair of small sclerites situated posterior to setae se have flat suprategumental processes. *Paragabucinia brasiliensis* sp. n. differs from *P. petitoti* (Gaud et Mouchet, 1959) by the smaller size of the incisions in the internal margins of opisthosomal lobes of males. These mites are the first representatives of corresponding genera described from the Neotropical region. The genus *Hartingiella* Gaud, 1980 was previously known solely from its type species. Keys to males and females of the genus *Paragabucinia* Gaud et Atyeo, 1975 are presented. In addition, all previous records of feather mites associated with birds of the order Caprimulgiformes of the world are summarised.

Keywords: systematics, taxonomy, Neotropical region, *Hartingiella*, *Paragabucinia*

Nightjars (Aves: Caprimulgiformes: Caprimulgidae) are nocturnal insectivore birds, with approximately 90 species distributed worldwide (del Hoyo et al. 1999, Livesey and Zusi 2007). The feather mites associated with caprimulgiform birds are less known and relatively few species of mites have been described mainly from Africa (Gaud 1958, 1980, Gaud and Mouchet 1959, Gaud and Kolebinova 1973), with additional species being described or recorded from Australia (Atyeo 1979), Neotropics (Mironov and Fain 2003, Mironov 2011), and North America (Dabert and Ehrnsberger 1992). The only feather mite species described from a caprimulgiform in Brazil is *Ascouracarus chordeili* Mironov et Fain, 2003 described from *Chordeiles rupestris* (Spix) (Caprimulgidae). Enout et al. (2012) reported an undetermined species of *Trouessartia* Canestrini, 1899 (Trouessartiidae) on *Hydropsalis albicollis* (Gmelin).

In this paper two new species of feather mites are described from the genera *Hartingiella* Gaud, 1990 and *Paragabucinia* Gaud et Atyeo, 1975 from the families Xolalgidae and Gabuciniidae, respectively. An updated table of known associations of feather mites and birds of the order Caprimulgiformes of the world is presented (Table 1).

MATERIALS AND METHODS

Feather mites of *Hydropsalis parvula* (Gould) were collected from birds captured with mist-nets and visually examined in the field for the presence of mites. Whenever feather mites were detected, a feather was carefully cut off with a small scissors and stored in individual plastic bags; the birds were released back to the wild after the feather examination. Mites from *Hydropsalis albicollis* were collected in the laboratory from dead birds captured with mist-nets (authorized by IBAMA – Brazilian Institute of Environment and Renewable Natural Resources, license number 19849-1, authentication code 28111788, 27 April 2009). All mite specimens were mounted on glass slides in Hoyer's medium (Krantz and Walter 2009).

Body measurements are given in micrometers and were taken as follows: idiosoma length from the anterior end of the prodorsal shield to lobar apices; idiosoma width was measured at the widest portion at the level of humeral shields; distance between setae of the same pair was taken as the direct distance between their bases and distance between different pairs is the direct distance formed by their bases at the same side of the body; dorsal shield length was measured as the greatest length from the anterior margin to the posterior end along the midline and width is the greatest width at the widest part. The chaetotaxy of the idiosoma and legs follows Griffiths et al. (1990) and Atyeo and Gaud (1966), respectively.

Table 1. Feather mites associated with birds of the order Caprimulgiformes of the world (*sensu* Livesey and Zusi 2007).

Mite taxa	Bird host (Caprimulgiformes)	Locality	References
Analgidae	<i>Ancyralges harpipedus</i> (Trouessart, 1886)†	<i>Podargus papuensis</i> * (Podargidae)	New Guinea* Bonnet 1924
Ascouracaridae	<i>Ascouracarus chordeili</i> Mironov et Fain, 2003	<i>Chordeiles r. rupestris</i> * (Caprimulgidae)	Brazil* (Amazonas) Mironov and Fain 2003
	<i>Ascouracarus kosarovi</i> (Vassilev, 1959)	<i>Caprimulgus europaeus</i> * (Caprimulgidae)	Bulgaria* Vassilev 1959, Gaud and Kolebinova 1973
	<i>Ascouracarus michigani</i> Dabert et Ehrnsberger, 1992	<i>Antrostomus vociferus</i> * (Caprimulgidae)	USA* (Michigan) Dabert and Ehrnsberger 1992
	<i>Ascouracarus</i> sp. (larvae)	<i>Caprimulgus climacurus</i> * (Caprimulgidae)	Cameroon* Gaud 1980
Gabuciniidae	<i>Paragabucinia cardiura</i> Gaud, 1980	<i>Caprimulgus rufigena</i> *, <i>C. fraenatus</i> , <i>C. europaeus</i> , <i>C. climacurus</i> (Caprimulgidae)	Cameroon*, South Africa, Kenya, Spain, Morocco, Botswana, Moldavia Shumilo et al. 1973, Gaud 1980
	<i>Paragabucinia ignorata</i> Gaud, 1980	<i>Caprimulgus tristigma</i> *, <i>C. batesi</i> , <i>C. climacurus</i> (Caprimulgidae)	Rwanda*, Zaire Gaud 1980
	<i>Paragabucinia longicaudata</i> Gaud, 1980	<i>Caprimulgus batesi</i> *, <i>C. fossii</i> (Caprimulgidae)	Zaire* Gaud 1980
	<i>Paragabucinia petitoti</i> (Gaud et Mouchet, 1959)	<i>Caprimulgus fossii</i> *, <i>C. natalensis</i> , <i>C. climacurus</i> (Caprimulgidae)	Cameroon* Zaire, Ghana (Côte de l'Or) Gaud and Mouchet 1959, Gaud 1980
	<i>Paragabucinia brasiliensis</i> sp. n.	<i>Hydropsalis albicollis</i> * (Caprimulgidae)	Brazil (Natal*, Rio Claro) present study
Psoroptoididae	<i>Pandalura oconnori</i> Mironov, 2011	<i>Steatornis caripensis</i> * (Steatormidae)	Trinidad* Mironov 2011
	<i>Pandalura podargi</i> Mironov, 2011	<i>Podargus strigoides</i> * (Podargidae)	Australia* Mironov 2011
Pterolichidae	<i>Aegothelichus deficiens</i> Atyeo, 1979	<i>Aegothales cristatus</i> * (Aegothelidae)	Australia (New South Whales)* Atyeo 1979
	<i>Nyctibiolichus megamerus</i> Atyeo, 1979	<i>Nyctibius griseus panamensis</i> *, <i>N. j. jamaicensis</i> (Nyctibiidae)	Panama*, Jamaica Atyeo 1979
	<i>Nyctibiolichus sinuatus</i> Atyeo, 1979	<i>Nyctibius griseus panamensis</i> * (Nyctibiidae)	Panama* Atyeo 1979
	<i>Gymnolichus anadorus</i> Gaud et Mouchet, 1961	<i>Macrodipteryx longipennis</i> * (Caprimulgidae)	Cameroon* Gaud and Mouchet 1961, Gaud 1980
	<i>Gymnolichus secundus</i> Černý et Shumilo, 1973	<i>Caprimulgus europaeus</i> * (Caprimulgidae)	Moldova* Černý and Shumilo 1973
Trouessartiidae	<i>Steatacarus bifiditibia</i> Atyeo et Peterson, 1977	<i>Steatornis caripensis</i> * (Steatormidae)	Ecuador*, Trinidad Atyeo and Peterson 1977
	<i>Trouessartia</i> sp.	<i>Hydropsalis albicollis</i> (Caprimulgidae)	Brazil* Enout et al. 2012
Xolalgidae	<i>Hartingiella megatricha</i> (Gaud, 1958)	<i>Caprimulgus europaeus</i> *, <i>C. fossii</i> (Caprimulgidae)	Morocco*, Cameroon Gaud 1958, Gaud and Mouchet 1959
	<i>Hartingiella neotropica</i> sp. n.	<i>Hydropsalis parvula</i> * (Caprimulgidae)	Brazil* (Santa Bárbara d'Oeste) present study

* type hosts and countries originally reported; † probably contamination

Host common and scientific names are according to Clements et al. (2013). Type specimens are deposited in the following collections: DZUnesp-RC – Collection of Acari of Department of Zoology of Universidade Estadual Paulista, Rio Claro, São Paulo, Brazil; ZISP – Zoological Institute of the Russian Academy of Sciences (Saint Petersburg, Russia); IPCAS – Institute of Parasitology, Biology Centre ASCR, České Budějovice, Czech Republic.

RESULTS

Survey of species found

Analgoidea Trouessart et Mégnin, 1884

Xolalgidae Dubinin, 1953

Ingrassiinae Gaud et Atyeo, 1981

Hartingiella Gaud, 1980

Type species: *Pteralloptes megatrichus* Gaud, 1958

***Hartingiella neotropica* sp. n.**

Figs. 1–4

Description. **Male** (based on holotype, with measurements for 1 paratype in parentheses; Figs. 1, 2). Idiosoma size (length × width) 289 × 109 (290 × 112), length of hysterosoma 190 (177). Prodorsal shield: narrow longitudinal plate noticeably enlarged at level of scapular setae, 77 (70) long, 27 (26) wide (Fig. 1A). Vertical setae absent. Setae *se* 81 (79) in length, separated by 50 (50), situated on small sclerites, setae *si* separated by 36 (36). Posterior margins of scapular shields concave; paired separate fragments of prodorsal shield, situated posterior to setae *se*, bear flat bifurcate supratégumental processes. Hysteronotal shield: anterior margin convex, greatest length of shield from anterior end to base of setae *h3* 161 (160), width at widest

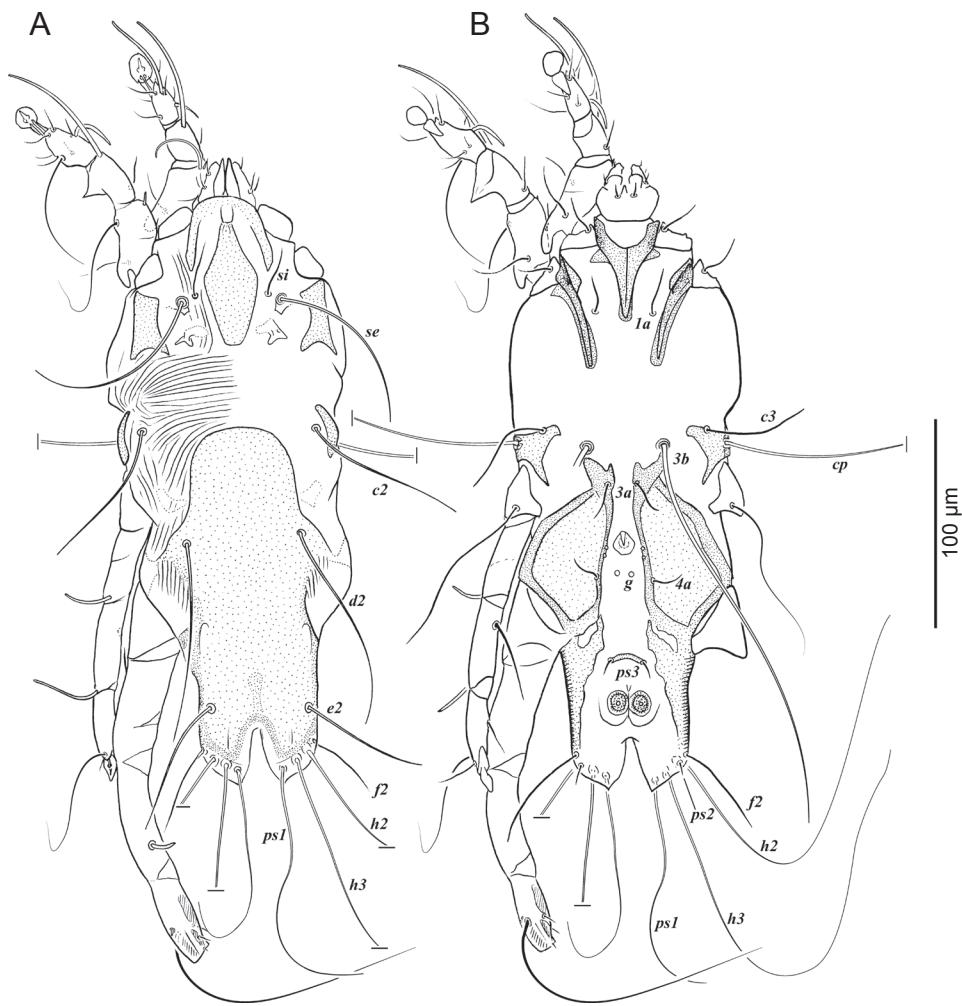


Fig. 1. Male of *Hartingiella neotropica* sp. n. from *Hydropsalis parvula*; holotype. **A** – dorsal view; **B** – ventral view.



Fig. 2. Male of *Hartingiella neotropica* sp. n. from *Hydropsalis parvula*. **A–D** – dorsal view of legs I–IV.

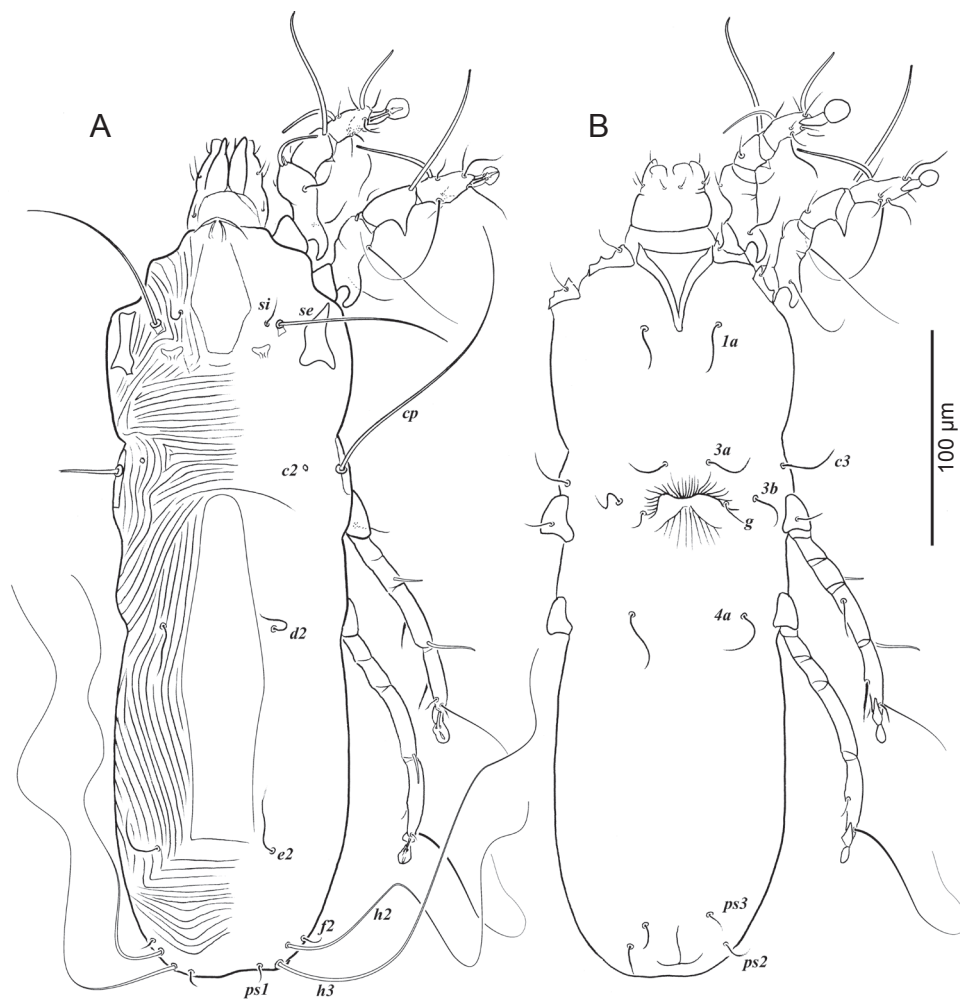


Fig. 3. Female of *Hartingiella neotropica* sp. n. from *Hydropsalis parvula*. **A** – dorsal view; **B** – ventral view.

part posterior to level of setae *d2* 87 (85). Humeral shields present, dorsal part narrow. Length of terminal cleft from anterior end to tip of terminal membrane 31 (31). Supranal concavity narrow. Terminal membrane extensions on lobar apices pointed and narrow. Distance between dorsal setae: *si* : *c2* 70 (70), *c2* : *d2* 51 (51), *d2* : *e2* 83 (79), *ps1* : *ps1* 23 (23), *h3* : *h3* 35 (33), *h2* : *h2* 44 (44). Setae *c2*, *d2* and *e2* long, filiform, approximately as long as setae *cp*.

Epimerites I fused into Y with concave anterior margin, sternum approximately half total length of epimerites I. Epimerites IIa absent. Coxal fields I, II, III open. Setae *c3* and *cp* inserted ventrally on humeral shield. Anterior ends of epimerites IIIa bearing bases of setae *3b*, setae *3a* and *4a* inserted on paragenital apodemes connecting epimerites IVa and IIIa (Fig. 1B). Genital apparatus small; genital discs situated on inner margins of paragenital apodemes. Adanal shield-bow shaped, bearing setae *ps3* on its lateral extremities. Distance between ventral setae: *1a* : *3b* 63 (75), *3b* : *3a* 22 (21), *3a* : *4a* 45 (41), *4a* : *g* 9 (10), *g* : *ps3* 39 (37), *ps3* : *ps3* 16 (15). Diameter of anal suckers 10 (9), distance between centres of suckers 12 (14).

Coxal fields IV completely sclerotised. Femoragenua I, II bear rounded basal retrograde apophysis. Tibiae I with small ventral process, tibia II with well expressed acute ventral process. Tarsus I, II with small apical spine (Fig. 2A,B). Setae *mG* and *ra* of leg II, *sR* and *d* of leg III, and *f* of leg IV much longer than other setae of these legs (Fig. 2B–D). Length of solenidia: $\sigma 1$ of genu I 46 (47), ϕ of tibia I 63 (59), ϕ of tibia II 78 (72), $\omega 1$ of tarsus I 23 (23), $\omega 3$ of tarsus I 35 (33), $\omega 1$ of tarsus II 40 (37). Ambulacral stalk of tarsus III with ventral round extension. Ambulacrum of legs III slender than on anterior legs and absent from legs I (Fig. 2E). Legs I, II similar in shape, legs IV thicker and longer than legs III.

Female (1 paratype; Figs. 3, 4). Idiosoma size (length \times width) 368 \times 110. Prodorsal shield: a longitudinal plate slightly enlarged in the middle part, lightly sclerotized; total length 63, greatest width 28 (Fig. 3A). Vertical setae absent. Setae *se* 84 in length, separated by 58, situated on small sclerites, setae *si* separated by 40. Posterior margins of scapular shields concave, small pair of sclerites present posterior to scapular setae. Hysteronotal shield:

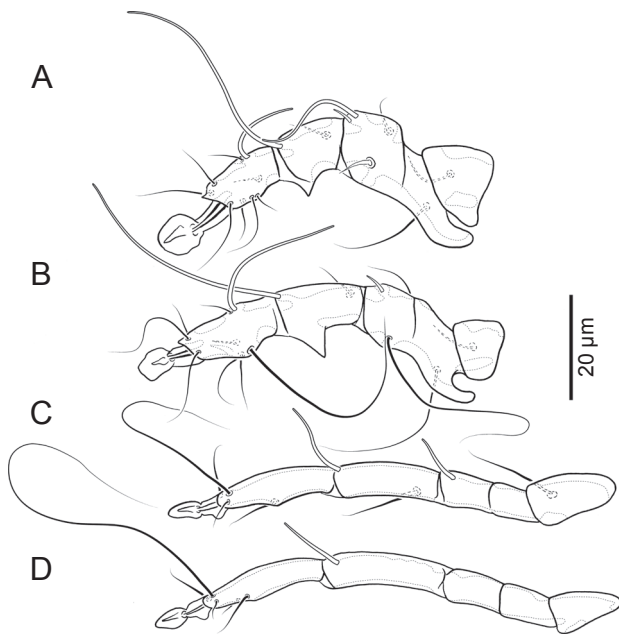


Fig. 4. Female of *Hartingiella neotropica* sp. n. from *Hydropsalis parvula*. **A–D** – dorsal view of legs I–IV.

anterior margin rounded; posterior margin straight; lateral margins slightly convex in medial part; greatest length of shield 161, greatest width 37; setae *c2*, *d2*, and *e2* on striated tegument, *c2* broken in paratype. Distances between dorsal setae: *si* : *c2* 71, *c2* : *d2* 77, *d2* : *e2* 102, *ps1* : *ps1* 32, *h3* : *h3* 48, *h2* : *h2* 61.

Epimerites I fused into a V with a small sternum. Epigynum absent, oviporus represented by transverse bow-shaped folds (Fig. 3B). Distances between ventral setae: *la* : *3a* 65, *3a* : *g* 26, *g* : *4a* 47, *4a* : *ps3* 142, *ps2* : *ps3* 16, *ps2* : *ps2* 42, *ps3* : *ps3* 31.

Legs I–III as in male, except for very short setae *sRIII* on trochanters III. Ambulacral stalks of tarsi III, IV with ventral round extension. Legs IV extending to level of setae *e2* (Fig. 4D).

Type host: *Hydropsalis parvula* (Gould) (Aves: Caprimulgiformes: Caprimulgidae).

Type locality: Santa Bárbara d'Oeste, São Paulo State, Brazil (47°25'04"S; 22°49'14"W).

Type material: ♂ holotype, 1 ♂ and 2 ♀ paratypes from *Hydropsalis parvula* (Gould) (Caprimulgiformes: Caprimulgidae), 2 March 2013, collected by F.A.F. Jacomassa. Holotype and paratypes at DZUnesp-RC (Coll. Nos. 385–388).

Etymology: The specific epithet refers to the Neotropical region, since this is the first species of the genus described from this region; it is treated as an adjective in the nominative singular.

Differential diagnosis. *Hartingiella neotropica* sp. n. differs from the type species of the genus by having the following features: in males, the anterior projections on

epimerites III towards setae *3b* and the adanal shield bearing setae *ps3* are present; in both sexes, a pair of small sclerites situated posterior to setae *se* have flat suprategumental processes. In males of *H. megatricha*, both the projections on epimerites III and the adanal shields are absent, and in both sexes, the suprategumental flat processes are also absent.

Remarks. The genus *Hartingiella* was previously monotypic, including only the type species *H. megatricha* (Gaud, 1958), described from *Caprimulgus europaeus* Linnaeus in Morocco, and later found on *C. inornatus* Heuglin, *Scotornis fossii* (Hartlaub), and *S. climacurus* (Vieillot) from Cameroon (Gaud 1980). All known hosts are from the family Caprimulgidae.

Feather mites of this genus are elongated forms, characterised by having the following features: in both sexes, femora I and II have rounded basal retrograde apophyses; in males, the posterior legs are longer than anterior ones, ambulacra are absent from legs IV, and setae *f* of tarsus IV are extremely long (about 170 μm, Fig. 1).

Pterolichoidea Trouessart et Mégnin, 1884

Gabuciniidae Gaud et Atyeo, 1975

Paragabucinia Gaud et Atyeo, 1975

Type species: *Gabucinia petitoti* Gaud et Mouchet, 1959

Paragabucinia brasiliensis sp. n.

Figs. 5–7

Description. Male (holotype, measurements for 8 paratypes in parentheses; Figs. 5, 6): Length of idiosoma from anterior end of prodorsal shield to tips of lobes 478 (463–501), greatest width 231 (226–240), length of hysterosoma 313 (297–328). Prodorsal shield entire, without lateral incisions, posterior margins with slight median concavity, length along midline 106 (104–118), greatest width 160 (149–166) (Fig. 6A). Setae *vi* 42 (33–43) in length, separated by 21 (15–23), *se* 236 (214–247) in length, separated by 83 (80–88), situated on prodorsal shield, setae *si* at same level of setae *se*, separated by 57 (51–61). Scapular shields narrow, with posterior margins oblique. Humeral shields present. Distance between prodorsal and hysteronotal shields 64 (55–72). Setae *c1*, *c2* on striated tegument. Hysteronotal shield: slightly concave, width at anterior margin 203 (198–219). Setae *c2* and *d2* filiform, setae *e2*, *f2*, and *h1* thickened. Supranal concavity with median projection anteriorly and acute apices posteriorly, open posteriorly into terminal cleft. Setae *h1*, *e2* and *f2* thick, length of setae *h1* 20 (19–23), *e2* 19 (16–24), *f2* 22 (21–25). Setae *h2* 347 (312–368) long, *h3* 271 (235–293) long. Setae *ps1* spiculiform, slightly thicker than *c2*, situated anterior to level of *h3*, 15 (15–19) in length. Distance between dorsal setae: *c1* : *d1* 91 (81–94), *d1* : *d2* 38 (40–54), *d2* : *e1* 71 (69–77), *e1* : *e2* 76 (56–77), *h1* : *h1* 50 (53–61), *h3* : *h3* 72 (77–86).

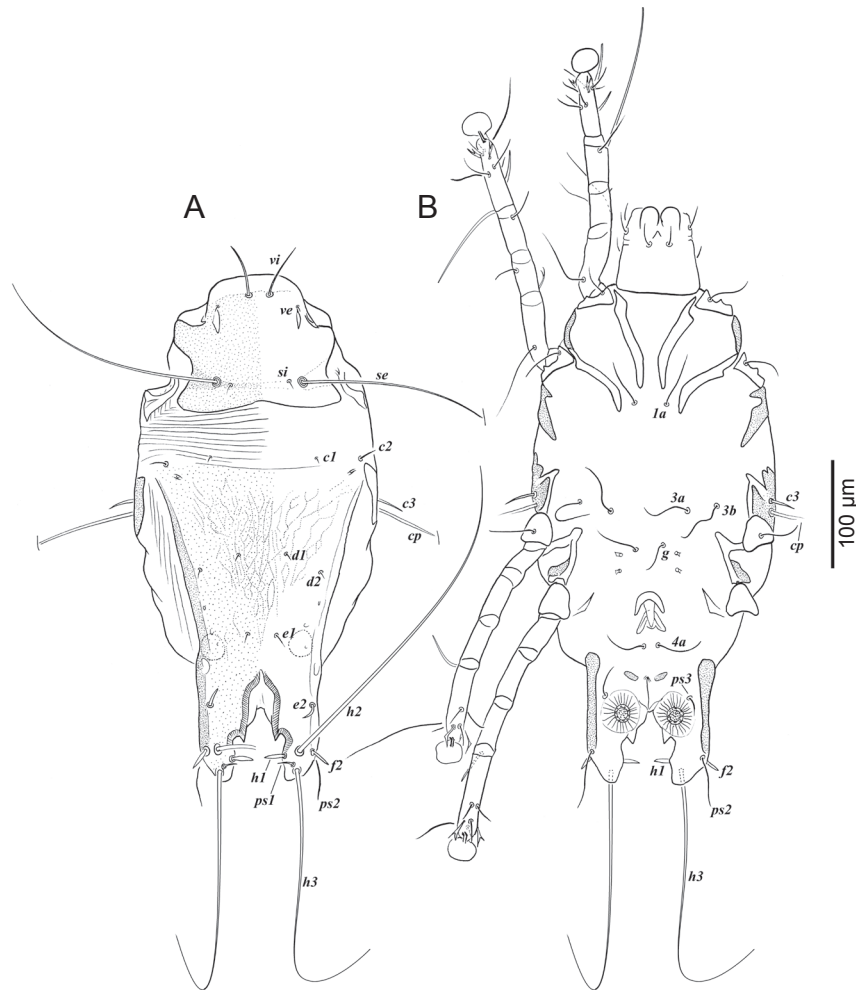


Fig. 5. Male of *Paragabucinia brasiliensis* sp. n. from *Hydropsalis albicollis*; holotype. **A** – dorsal view; **B** – ventral view.

Epimerites I free, posterior extremities parallel. Setae *c3* thin, spiculiform; setae *c3* and *cp* inserted ventrally on humeral shield (Fig. 6B). Ventral surface without large sclerotized areas. Pregenital apodeme (epiandrium) arch-like, small. Genital apparatus small, aedeagus 30 (24–32) in length, genital arch width 32 (25–31). Adanal shields present, represented by small ovate sclerites at level of anterior end of anal opening. Epimerites IVa present, indistinct. Setae *ps2* 40 (39–49) in length, setae *ps3* 25 (16–28) in length. Diameter of anal suckers 16 (17–19), distance between centers of discs 50 (51–61). Setae *3a* and *3b* situated approximately at same transverse level. Setae *g* at level of anterior pair of genital papillae. Distance between ventral setae: *1a* : *3a* 105 (95–109), *3a* : *g* 42 (39–49), *g* : *4a* 91 (84–102), *4a* : *ps3* 56 (54–62), *ps3* : *ps3* 80 (80–86).

Seta *cG* on genu I approximately as long as genu and tibia combined, setae *cG* on genu II distally bifid (Fig. 7A,B). Length of solenidia: ωI of tarsus I 21 (20–24), $\omega 3$ of tarsus I 40 (42–46), ωI of tarsus II 32 (30–36). Setae *d* of tarsus IV situated at midlength of this segment (Fig. 7D).

Female (based on 8 paratypes; Fig. 7): Length of idiosoma 534–589, greatest width 266–294, length of hysterosoma 349–373. Prodorsal shield shaped as in the male, length along midline 115–126, greatest width 179–192 (Fig. 8A). Scapular setae *si* and *se* situated at same transverse level, on prodorsal shield. Setae *vi* 40–50 in length, separated by 23–28, *se* 256–304 in length, separated by 95–101, *si* separated by 66–72. Scapular shields narrow, with posterior margins oblique. Humeral shields present. Distance between prodorsal and hysteronotal shields 90–97. Hysteronotal shield: anterior margin concave, posterior part with large unsclerotized area surrounding setae *h1*, anterior margin of this area irregularly indented; greatest width of shield 231–249. Distance between dorsal setae: *c1* : *d1* 90–107, *d1* : *d2* 47–59, *d2* : *e1* 106–120, *e1* : *e2* 80–104, *e2* : *h1* 32–39, *h1* : *h1* 63–72, *h2* : *h2* 66–80, *h3* : *h3* 43–64, *ps1* : *ps1* 26–33.

Epimerites I free, posterior extremities parallel. Epigynum thick, bow-shaped, 76–87 long, 48–61 wide, tips bearing bases of setae *3a*. Setae *3b* slightly posterior to level of setae *3a*; setae *g* slightly posterior to level of tro-

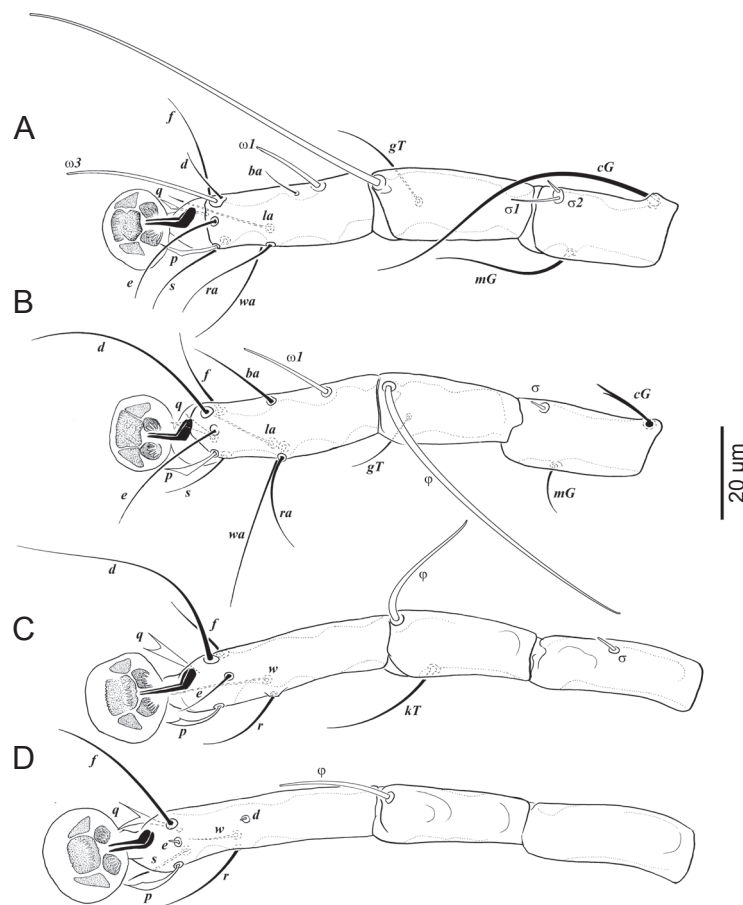


Fig. 6. Male of *Paragabucinia brasiliensis* sp. n. from *Hydropsalis albicollis*. **A–D** – dorsal view of tibiae-tarsi of legs I–IV.

chanters III, genital papillae posterior to setae *g*. Seta *c3* spiculiform, 29–34 in length. Seta *h2* 368–429 long, seta *h3* 300–387 long. Distance between ventral setae: *la* : *3a* 93–108, *3a* : *g* 58–68, *g* : *4a* 69–86, *4a* : *ps3* 120–148, *ps2* : *ps3* 24–37, *ps2* : *ps2* 53–76, *ps3* : *ps3* 37–52.

Legs I, IV as in the male. Tarsus IV extending beyond posterior end of opisthosoma. Setae *sRIII* subequal to total length of corresponding femur. Length of solenidia: $\omega 1$ of tarsus I 21–26, $\omega 3$ of tarsus I 48–51, $\omega 1$ of tarsus II 29–40.

Type host: *Hydropsalis albicollis* (Gmelin) (Aves: Caprimulgiformes: Caprimulgidae)

Type locality: Mata da Escola Agrícola de Jundiá-UFRN (5°53'S, 35°23'W), Macaíba, Rio Grande do Norte, Brazil.

Type material: ♂ holotype, 15 ♂ and 13 ♀ paratypes ex *Hydropsalis albicollis* (Caprimulgiformes: Caprimulgidae), 19 April 2012, collected by H.M. Silva.

Additional material: 23 immatures collected from the same host at UNESP (22°24'S; 47°33'W), Rio Claro, SP State, Brazil, 2 March 2013, collected by F.A.F. Jacomassa. Holotype and paratypes at DZUnesp-RC (Coll. Nos. 389–413); a male and female paratypes at ZISP and IPCAS.

Etymology: The specific epithet refers to the country where the new species was found and it is treated as an adjective in the nominative singular.

Differential diagnosis. *Paragabucinia brasiliensis* sp. n. is most similar to *P. petitoti* (Gaud et Mouchet, 1959) by having an incision on the internal margins of opisthosomal lobes of males (anterior to the level of setae *h1*). However, it differs from the latter by the smaller size of these incisions with the acute anterior edge and by having the scapular setae *se* inserted on the prodorsal shield. In *P. petitoti* the lobar incisions are very large, and setae *si* and *se* are inserted on the striated tegument crossing the prodorsal shield.

Remarks. The genus *Paragabucinia* currently includes four species associated with nightjars of the genus *Caprimulgus* Linnaeus (Caprimulgidae) from Africa and Europe (Gaud and Mouchet 1959, Gaud and Atyeo 1975, Shumilo et al. 1973, Gaud 1980). A fifth species is herein described from the pauraque, *Hydropsalis albicollis* (Gmelin) (Caprimulgidae), from Brazil. This genus is characterised by having solenidium σ present on genua I and II, two setae *vi*, setae *c2* filiform. Males have well developed opisthosomal lobes and the epigynum is long and encompasses setae *3a* in females. The main discriminant characters of all known genera of the family Gabuciniidae were provided by Mironov et al. (2007).

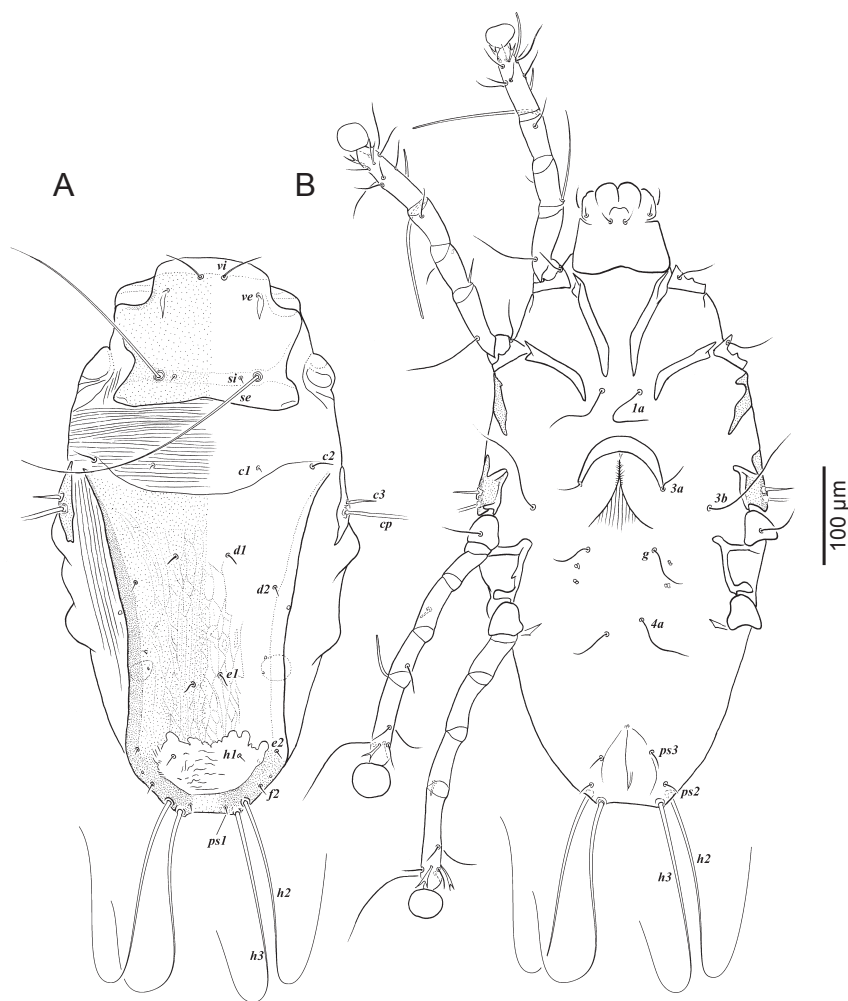


Fig. 7. Female of *Paragabucinia brasiliensis* sp. n. from *Hydropsalis albicollis*. **A** – dorsal view; **B** – ventral view.

A taxonomic note should be made concerning the names *Paragabucinia* and *P. cardiura*. Shumilo et al. (1973) reported the latter species on *Caprimulgus europaeus* Linnaeus in Moldavia, referring the authority of both genus and species to Gaud, and the date of their own paper – 1973. However, the genus *Paragabucinia* was described two years later by Gaud and Atyeo (1975), and the species *P. cardiura* was actually described by Gaud (1980) seven years later, from a different host species, *Caprimulgus rufigena* Smith. Shumilo et al. (1973) apparently used manuscript names provided by J. Gaud; therefore, the taxa *Paragabucinia* and *P. cardiura* as appeared in their publication are *nomina nuda*, since they were not accompanied by a description. The genus and species names were validated in 1975 and 1980, respectively (Gaud and Atyeo 1975, Gaud 1980).

Key to males of the genus *Paragabucinia* Gaud et Atyeo, 1975

- 1 Seta *e2* approximately as long as tarsus IV 2
- Seta *e2* about 1/5 of the length of tarsus IV 3

- 2 Distance between setae *g–4a* equal to or longer than distance *g–h1* *P. cardiura* Gaud, 1980
- Distance between setae *g–4a* significantly less than distance *g–h1* *P. ignorata* Gaud, 1980
- 3 Internal margins of opisthosomal lobes with a semicircular indentation anterior to level of setae *h1* 4
- Semicircular indentation on opisthosomal lobes absent. *P. longicaudata* Gaud, 1980
- 4 Prodorsal shield with lateral incisions at level of setae *se* and *si*, these setae inserted off prodorsal shield (in both sexes) *P. petitoti* (Gaud et Mouchet, 1959).
- Lateral incisions on prodorsal shield absent, setae *se* and *si* inserted on prodorsal shield *P. brasiliensis* sp. n.

Key to females of the genus *Paragabucinia* Gaud et Atyeo, 1975

- 1 Area of hysteronotal shield between setae *e1* and *h1* with a pair of distinct incisions 2.
- Paired incisions in this area absent *P. brasiliensis* sp. n.

- 2 Paired incisions on hysteronotal shield not extending to the level of setae *e1* 3
 – Paired incisions on hysteronotal shield extending to the level of setae *e1* 4
- 3 Anterior margins of paired incisions anterior to setae *h1* rounded *P. cardiura* Gaud, 1980
 – Anterior margins of paired incisions anterior to setae *h1* angular *P. petitoti* (Gaud et Mouchet, 1959)

- 4 Setae *h1* anterior to or at the same level of setae *e2*
 *P. longicaudata* Gaud, 1980
 – Setae *h1* posterior to level of setae *e2*
 *P. ignorata* Gaud, 1980

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