

**A new species of *Pterodectes* Robin, 1877 (Proctophyllodidae: Pterodectinae) from the pale-breasted thrush, *Turdus leucomelas* (Passeriformes: Turdidae)**

FÁBIO A. HERNANDES<sup>1</sup> & MICHEL P. VALIM<sup>2</sup>

1 - Programa de Pós-Graduação em Biologia Animal - Depto. Zoologia e Botânica. Instituto de Biociências, Letras e Ciências Exatas – IBILCE. Universidade Estadual Paulista – UNESP, campus de São José do Rio Preto; Rua Cristóvão Colombo, 2265, Jardim Nazareth, São José do Rio Preto, SP, Brazil, 15054-000; Email: fabio\_akashi@yahoo.com.br

2 - Depto. Parasitologia. Universidade Federal de Minas Gerais – UFMG; Av. Presidente Antônio Carlos, 6627, Pampulha, Belo Horizonte, MG, Brazil, 31270-901; Email: mpvalim@hotmail.com

**ABSTRACT**

A new species of feather mite, *Pterodectes fissuratus* sp. n., is described from the pale-breasted thrush, *Turdus leucomelas* Vieillot (Passeriformes: Turdidae), in Brazil. This species is easily distinguished by having numerous well-pronounced lacunae and a longitudinal median furrow on prodorsal and hysteronotal shields in both sexes.

**Key words:** Astigmata, feather mite, Analgoidea, systematics, Brazil

**INTRODUCTION**

Feather mites (Astigmata: Analgoidea, Freyanoidea, Pterolichoidea), a vast group of permanent inhabitants of bird plumage, currently include over 2,400 described species (Mironov 2003). However, this number likely represents only a minute fraction of existing species (Gaud & Atyeo 1996). In the present paper, we describe a new feather mite species, *Pterodectes fissuratus* sp. n. (Analgoidea: Proctophyllodidae: Pterodectinae), collected from the pale-breasted thrush, *Turdus leucomelas* Vieillot (Passeriformes: Turdidae). The feather mite subfamily Pterodectinae includes about 110 species (Park & Atyeo 1971) and is one of two major subfamilies of Proctophyllodidae. Representatives of this family mainly inhabit the ventral surfaces of flight and covert feathers of the wings (Dabert & Mironov 1999). Mites of the genus *Pterodectes* are known to occur on ten families of the order Passeriformes: Corvidae, Emberizidae, Fringillidae, Furnariidae,

Hirundinidae, Icteridae, Thraupidae, Troglodytidae, Turdidae and Tyrannidae (Park & Atyeo 1971).

Although the diversity of feather mites from South America is poorly studied, most species of the genus *Pterodectes* are known from this region: four species have been described from Brazil (Berla 1958, 1959, 1973) and six from Surinam (Černý 1974). In the generic revision of the subfamily Pterodectinae, Park & Atyeo (1971) listed 9 species of *Pterodectes* known at the time, and transferred several species described as such for various other genera of Pterodectinae; since then only six other species have been described (Černý 1974). Park & Atyeo recognized two main groups within the genus *Pterodectes*. In both sexes of the *rutilus* group, setae *c2* are inserted in the hysteronotal shield; in females setae *h2* are almost setiform with a long terminal filament. The sole species currently representing this group, *P. rutilus* Robin, 1877, occurs only on hosts belonging to the swallow family Hirundinidae. The *gracilis* group comprises all remaining species, which have setae *c2* off the hysteronotal shield. In all previously described species of the *gracilis* group, setae *h2* in females are lanceolate or spindle-shaped, without a terminal filament. Hosts of this group belong to various families other than Hirundinidae. *Pterodectes fissuratus* sp. n. described below is placed in the *gracilis* group because it has setae *c2* inserted off the hysteronotal shield; however, its females have setae *h2* with a clear terminal filament.

## MATERIAL AND METHODS

The feathers with feather mites were collected from the wings of a field collected specimen of the pale-breasted thrush and kept in 70% ethanol. Mites were mounted on slides using Hoyer's medium (Flechtmann 1975). Setal nomenclature of the idiosoma follows Griffiths *et al.* (1990), and leg chaetotaxy is that of Atyeo & Gaud (1966). All measurements are given in micrometres ( $\mu\text{m}$ ). The holotype and paratypes are deposited at the Collection of Acari of the Departamento de Zoologia & Botanica of UNESP-Sao Jose do Rio Preto, SP, Brazil (DZSJRP); paratypes are also deposited at the U.S. National Collection, Beltsville, U.S.A. (USNM).

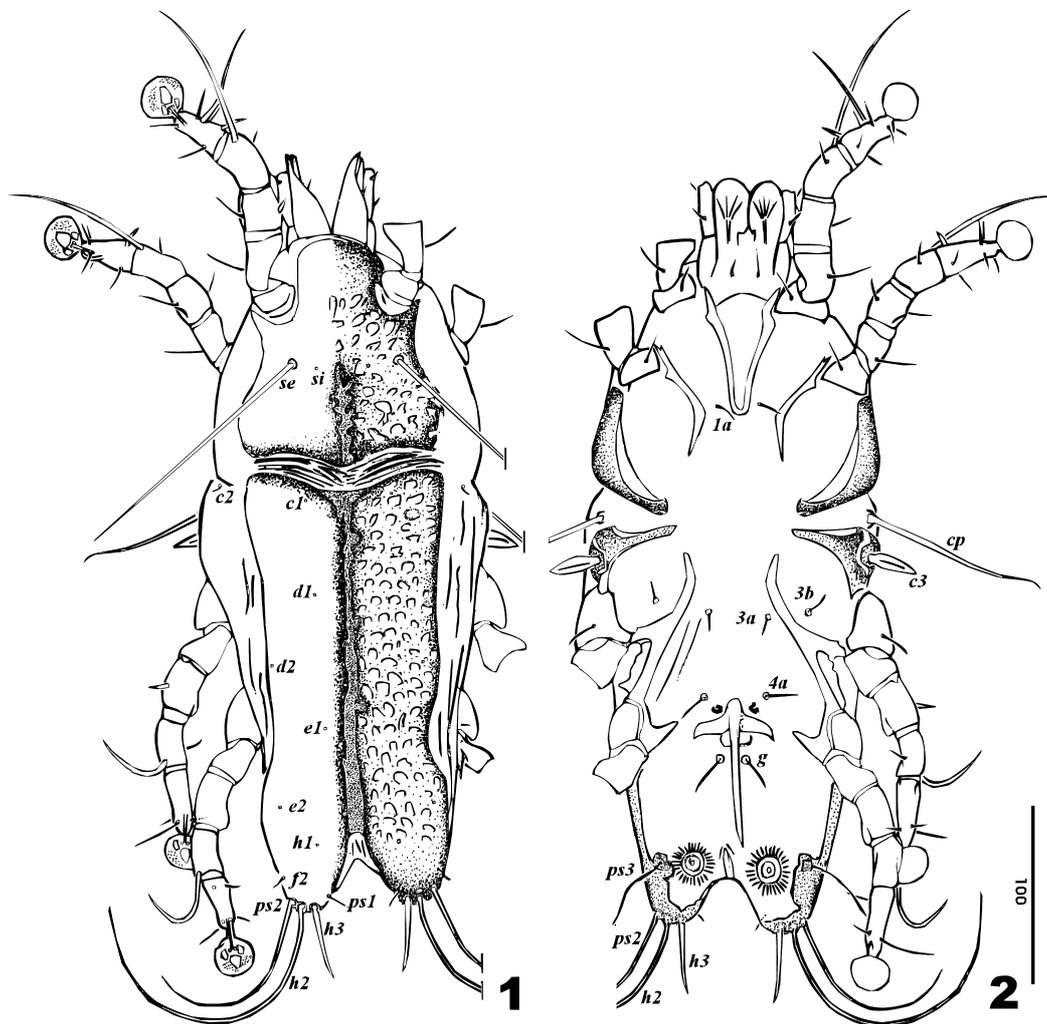
### Proctophylloida Trouessart & Megnin, 1884

#### *Pterodectes* Robin, 1877

#### *Pterodectes fissuratus* **Hernandes & Valim sp. n. (Figs. 1–12)**

TYPE MATERIAL: 1 male holotype, 3 male and 3 female paratypes, collected from *Turdus leucomelas* Vieillot, 1818 (Passeriformes, Turdidae), Parque Estadual Vila Rica do Espirito Santo, Fenix, Parana, Brazil (23°S 55'–51°W 57'), 30.III.2003, coll. A. Bispo.

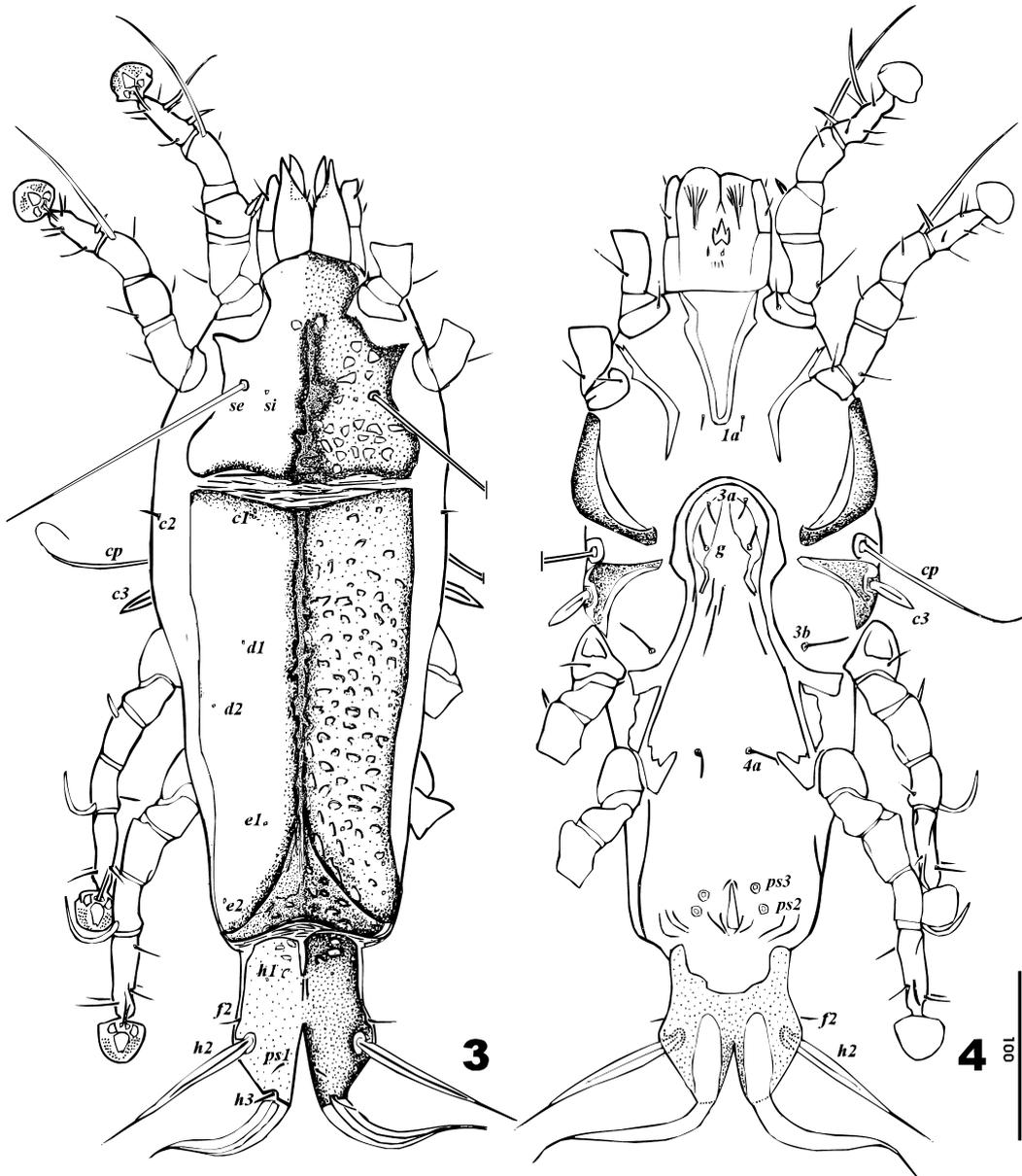
Holotype male and paratypes (2 male and 2 females) are deposited at DZSJRP (slides 6193 to 6197), paratype male and female are deposited at USDA.



FIGURES 1–2. *Pterodectes fissuratus* n.sp. Male: dorsal (1) and ventral (2) views. Scale in  $\mu\text{m}$ .

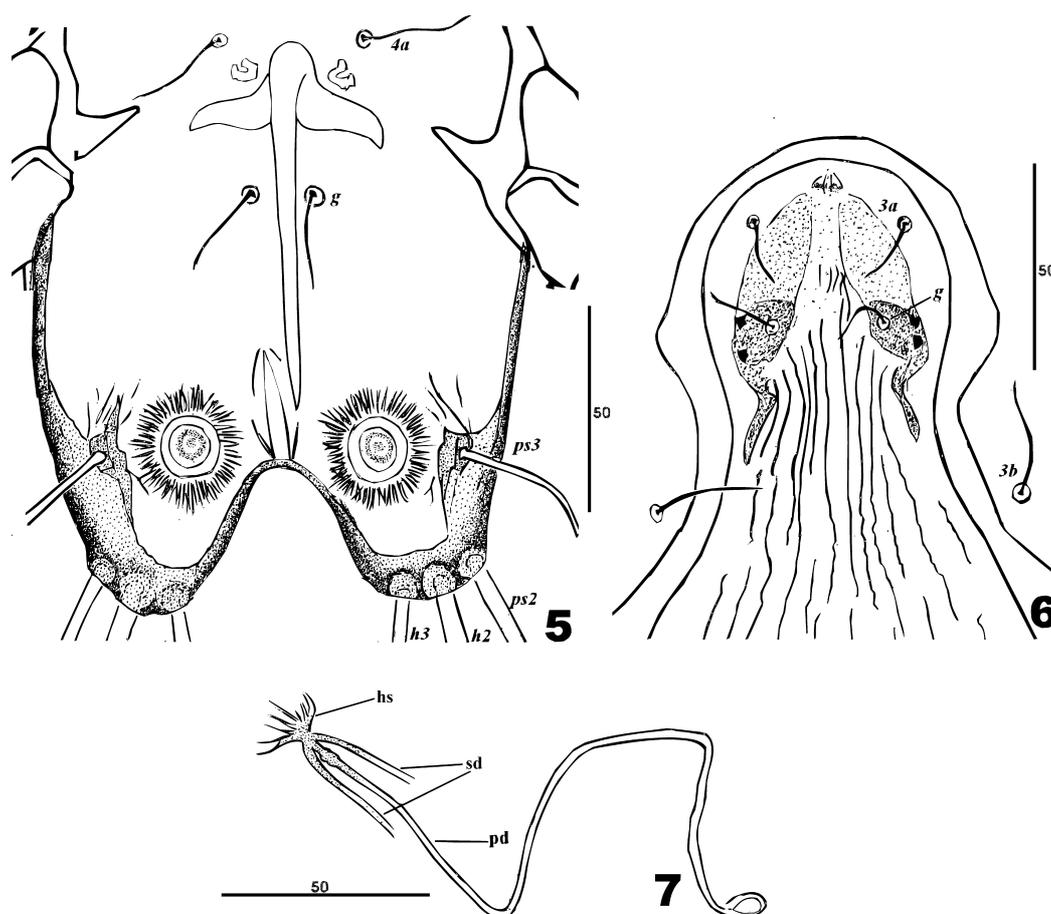
Male holotype (Figs. 1, 2, 5, 8–11). (range of 2 paratypes indicated in parenthesis). Length of idiosoma 363 (341–374), width 154 (165). Prodorsal shield: 122 (117–119) in length along median line, 114 (114) in width at posterior margin, posterior half with deep median suture, posterior two thirds of shield surface with numerous lacunae of irregular shape. Scapular setae *si* and *se* arranged in a transverse line. Scapular setae *se* 119 in length (125–127) and separated by 68 (62); *si* separated by 53 (41–53). Setae *c2* on striated tegument, setae *c3* lanceolate, 30 in length and 8 in width (24–30 x 8). Hysteronotal shield: greatest length 253 (250–252), width at level of setae *cp* 109 (111); surface of the shield with median longitudinal suture running from anterior margin to terminal cleft and with

numerous lacunae of irregular shape, except for lobar area. Terminal cleft V-shaped, with rounded anterior end, 35 (33–38) from anterior end to lobar apices. Setae *h3* relatively short, without terminal filament, separated by 61 (49–63). Length of setae: *ps1* 11 (8–11), *h3* 35 (41), *h2* 185 (190–207), *ps2* 98 (95–106), *f2* 8 (8), *ps3* 38 (41–46). Distance between dorsal setae: *si-c1* 76 (60–76), *c1-c2* 52 (44–52), *c1-d1* 64 (60–71), *d1-d2* 38 (38–41), *d1-e1* 79 (73–82), *d2-e1* 50 (49–53), *e1-e2* 50 (48–50), *e1-h1* 73 (61–73), *e2-h1* 39 (29–39), *h1-f2* 24 (23–24).



FIGURES 3–4. *Pterodectes fissuratus* n.sp. Female: dorsal (3) and ventral (4) views. Scale in  $\mu\text{m}$ .

Epimerites I fused as a narrow U, coxal fields I, II and III not closed. Aedeagus reaches the level of adanal discs (Fig. 5), 84 in length (80–82); genital arch 43 in width (41–46). Distance between ventral setae: *3a–4a* 41 (41–43), *4a–g* (35–38), *g–ps3* 68 (68–71), *ps3–ps3* 73 (73–79), *ps3–h3* 37 (35–38). Adanal discs 14 (14–15) in diameter, and separated by 41 (41) [distance between centres of discs]. Solenidion  $\sigma$ –I of genu I as thin spine (Fig.8), seta *cG* of genua I, II setiform; genua III, IV with short and rounded ventral apophysis (Fig.9). Tarsus IV 58 in length, seta *e* stick-like, seta *f* setiform, only insertion of seta *d* present (Fig.10).

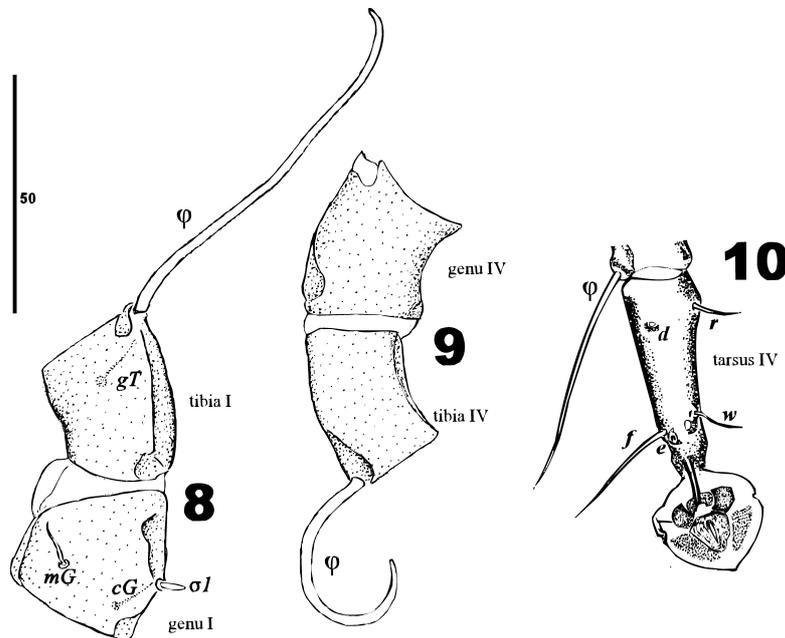


**FIGURES 5–7.** *Pterodectes fissuratus* n.sp. Genital region of male (5) and female (6). Fig. 7. Female spermatheca: *hs*—head of spermatheca; *pd*—primary spermaduct; *sd*—secondary spermaducts. Scales in  $\mu\text{m}$ .

Female (Figs. 3, 4, 6, 7 and 12). (measurements of 3 paratypes). Length of idiosoma excluding terminal appendages 506–539, width 176–187. Prodorsal shield: 132–133 in length along median line, 133–140 in width at posterior margin, median suture runs three quarters of shield length, posterior 2/3–3/4 of shield with numerous lacunae of irregular form. Scapular setae *si* and *se* arranged in a transverse line. Setae *se* 125–141 in length and

separated by 76–79; pair *si* separated by 53–58. Setae *c2* on striated tegument; setae *c3* lanceolate, 20–33 in length and 7–8 in width. Anterior hysteronotal shield: greatest length 258–277, width at level of setae *cp* 133–139; surface with lacunae of irregular shape and with median furrow running entire length of the shield; posterior end of this furrow bifurcate as an inverted Y (Fig. 12). Length of lobar region excluding terminal appendages 103–109, greatest width 84–87. Setae *h2* thickened, with short terminal filament, 98–120 in length, 7 in width. Setae *h1* inserted on anterior third of lobar shield. Distance between dorsal setae: *si-c1* 75–88, *c1-c2* 49–57, *c1-d1* 71–76, *d1-d2* 41–48, *d1-e1* 105–113, *d2-e1* 68–76, *e1-e2* 54–62, *e1-h1* 31–34, *e2-h1* 46–52, *h1-f2* 31–34, *f2-h2* 14–19.

Epimerites I fused as a narrow U, coxal fields I, II and III not closed. Setae *ps2* and *ps3* button-like. Spermatheca and spermatheca as in Fig. 7.

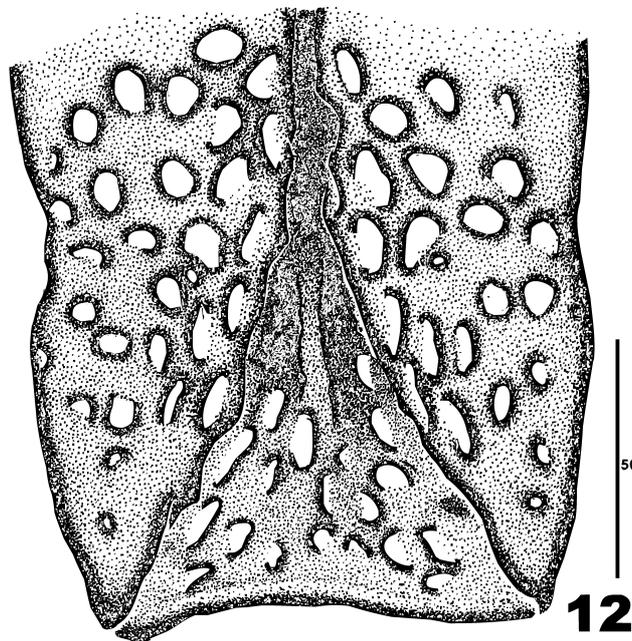
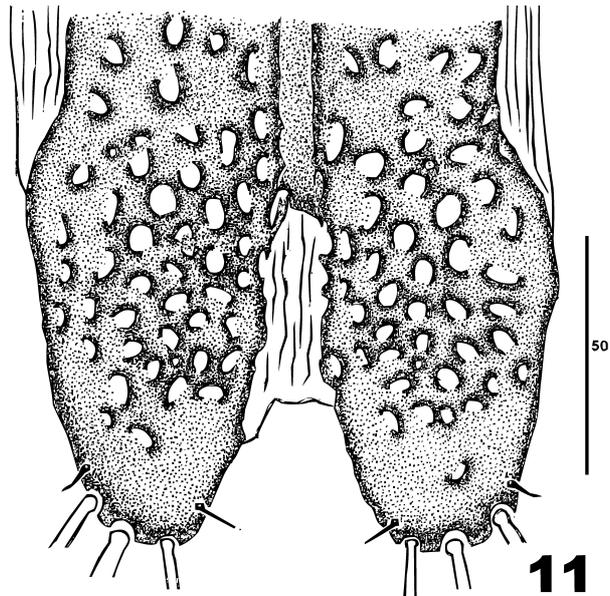


**FIGURES 8–10.** *Pterodectes fissuratus* n.sp. Male legs: 8. Genu and tibia I. 9. Genu and tibia IV. 10. Tarsus IV. Scales in  $\mu\text{m}$ .

**ETYMOLOGY:** the specific designation refers to the longitudinal furrow on dorsal shields.

**Differential diagnosis.** The new species resembles *P. bilineatus* Berla, 1958 in having a longitudinal median suture on the hysteronotal shield. However, in *P. fissuratus*, the suture on dorsal surface of the body also spreads onto the posterior half of the prodorsal shield in the male and runs through almost the entire length of the prodorsal shield in the female (Figs. 1, 3). Prodorsal and hysteronotal shields in both sexes have numerous well-pronounced lacunae of irregular shape, which somewhat resemble those of *Montesauria pardalis* (Gaud & Mouchet, 1957). Seta *cG* of genera I and II are normal, setiform (greatly

thickened, blade-like in *P. bilineatus*). The aedeagus in *P. fissuratus* is shorter and reaches only the level of adanal discs (Fig.5). The epimerites I of male are fused as a narrow U and are not connected with epimerites II, differently from *P. bilineatus*, which has a narrow V connected with epimerites II by a transverse bar. The new species was collected from *Turdus leucomelas*, Turdidae, whereas *P. bilineatus* was collected from *Cariothraustes canadensis* (Linnaeus, 1966.), Cardinalidae.



**FIGURES 11–12.** *Pterodectes fissuratus* n.sp. lobar region of male (11) and female (12). Scales in  $\mu\text{m}$ .

## ACKNOWLEDGEMENTS

To Dr. Sergey V. Mironov (Zoological Institute, Russian Academy of Sciences, Saint Petersburg, Russia), for the critical review of the manuscript, sending important bibliography and confirming the new species status; Dr. Heather C. Proctor (Department of Biological Sciences, University of Alberta, Edmonton, Canada) for critical review of the manuscript, and also for sharing important comments and information; to both referees of Zootaxa for valuable suggestions; Dr. Reinaldo J.F. Feres (Universidade Estadual Paulista – Sao Jose do Rio Preto, SP, Brazil), for allowing us to use microscopes and laboratory support; M.Sc. Arthur A. Bispo for collecting the feathers of the thrush; material yielded by the FEMA/IAP/SEMA (contract n.024/02) and the Mater Natura – Instituto de Estudos Ambientais.

## REFERENCES

- Atyeo, W.T. & Gaud, J. (1966) The chaetotaxy of sarcoptiform feather mites (Acarina: Analgoidea). *Journal of the Kansas Entomological Society*, 39, 337–346.
- Berla, H.F. (1958) Analgesidae Neotropicais. I – Duas Novas espécies de *Pterodectes* Robin, 1868 (Acarina – Proctophylloidea) coletadas em Fringillidae, Aves, Passeriformes. *Boletim do Museu Nacional (Zoologia)*, 186, 1–6.
- Berla, H.F. (1959). Analgesoidea Neotropicais. IV– Sobre algumas espécies novas ou pouco conhecidas de acarinos plumícolas. *Boletim do Museu Nacional (Zoologia)*. 209: 1–17.
- Berla, H.F. (1973). Analgesoidea Neotropicais. X– Uma nova espécie de *Pterodectes* Robin, 1877. *Revista Brasileira de Biologia*, 33, 21–22.
- Černý, V. (1974). Parasitic mites of Surinam XXXI. New species of Proctophylloidea (Sarcoptiformes, Analgoidea). *Folia Parasitologica*, 21, 349–361.
- Dabert, J. & Mironov, S.V. (1999). Origin and evolution of feather mites (Astigmata). *Experimental and Applied Acarology*, 23, 437–454.
- Flechtmann, C.H.W. (1975) *Elementos de Acarologia*. São Paulo. Livraria Nobel S.A., 344 pp.
- Gaud, J. & Atyeo, W.T. (1996). Feather mites of the world (Acarina, Astigmata): the supraspecific taxa. *Annales Musee Royal L'Afrique Centrale, Sciences Zoologiques*, 277, (Part I) 1–187, (Part II) 1–436.
- Griffiths, D.A., Atyeo, W.T., Norton, R.A. & Lynch, C.A. (1990) The idiosomal chaetotaxy of astigmatid mites. *Journal of Zoology*, 220, 1–32.
- Mironov, S.V. (2003) On some problems in systematics of feather mites. *Acarina*, 11, 3–29.
- Park, C.K. & Atyeo, W.T. (1971) A generic revision of the Pterodectinae, a new subfamily of feather mites (Sarcoptiformes: Analgoidea). *Bulletin of the University of Nebraska State Museum*, 9, 39–88.