

# *Tyranniphlopterus caiolukasi* sp. n. (Phthiraptera: Philopteridae) from the yellow-olive flycatcher (Aves: Tyrannidae), with observations on gut contents

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## Abstract

*Tyranniphlopterus caiolukasi* sp. n., collected from the Yellow-olive Flycatcher (*Tolmomyias sulphurescens*), is described and illustrated. The new species is compared with *T. venezuelensis* and *T. minutus*. The finding of leg segments of feather mites in the guts of some specimens is briefly discussed and illustrated.

**Key words** Philopteridae, *Tolmomyias sulphurescens*, Tyrannidae, *Tyranniphlopterus*

## Introduction

Chewing lice of the genus *Tyranniphlopterus* Mey, 2004 (Phthiraptera: Ischnocera: Philopteridae) inhabit and deposit their eggs on the head plumage of the passerine families Pipridae, Cotingidae, Tyrannidae, and Platysteiridae (Mey, 2004). Of the 14 species of this genus, 11 were originally described in the genus *Philopterus* Nitzsch, 1818 or *Clayiella* Eichler, 1940 and three were recently described by Mey (2004).

The number of chewing-lice species currently described underestimates by half the actual existing species (Mey, 2003). In *Tyranniphlopterus* alone, a hundred new species are estimated to be still undescribed (Mey, 2004). On the other hand, Tyrannidae currently contains 400 species of birds (Dickinson, 2003), and only a small fraction of these (2%) are known hosts of *Tyranniphlopterus* (Price *et al.*, 2003; Mey, 2004). In Brazil, only *T. rufus* (Kellogg, 1899) has been reported by Guimarães (1944). Even given this enormous field to be explored, only a few species of chewing lice had been recently described from Brazilian birds (Oniki, 2000; Oniki *et al.*, 2004; Mey, 2004; Valim, 2006; Valim & Linardi, 2006; Valim & Palma, 2006).

Here a new *Tyranniphlopterus* species is described from the yellow-olive flycatcher, *Tolmomyias sulphurescens* (Spix, 1825). The only other philopterid known from this host is *Picicola foedus* (Kellogg & Chapman, 1899) (Price *et al.*, 2003).

## Materials and Methods

Lice were collected from live hosts during banding procedures, and were mounted on slides following the technique of Palma (1978). Host taxonomy follows Dickinson (2003). Abbreviations of measured characters are: HL – head length; FW – frontal width; TW – temporal width; CI – cephalic index; TraL – trabecula length; TraW – trabecula width; DapL – dorsal

anterior plate length; DapW – dorsal anterior plate width; POL – prothorax length; POW – prothorax width; PEL – pterothorax length; PEW – pterothorax width; AL – abdomen length; AW – abdomen width; GL – genitalia length; GW – genitalia width; GchL – genital chamber length; TL – total length. Measurements (in millimeters) were taken with an ocular micrometer from slide-mounted specimens.

## *Tyranniphlopterus caiolukasi* sp. n. (Figs. 1-8)

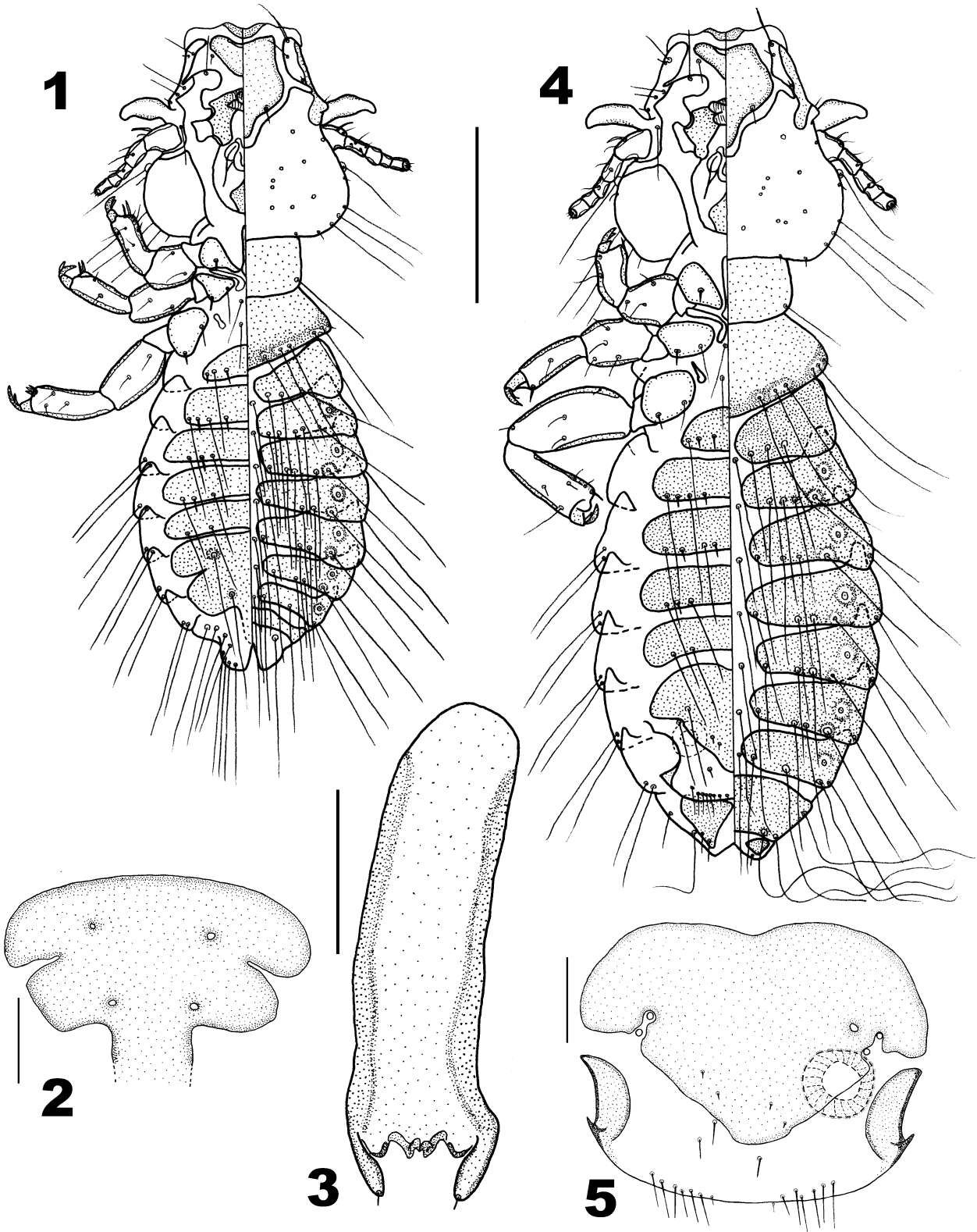
**Type host:** *Tolmomyias sulphurescens* (Spix, 1825) (Passeriformes, Tyrannidae), Yellow-olive Flycatcher.

**Male holotype** (Figs. 1-3, 6-7): Body stout, as in Fig. 1. Head shape as shown in Fig. 1, longer than wide (CI 1.05). Hyaline margin of head with central sclerotization. Marginal temporal setae 1-3 long, 4-5 and pre-ocular seta as microsetae; ocular seta long. Trabeculae slightly pointed. Prothorax with a medium sized seta on each side of the postero-lateral margin. Posterior margin of pteronotum with 5 long setae and a minute seta on postero-lateral margin of each side. The ventral region of thorax with an elongated prosternal plate lacking setae, meso- and metasternum each with a pair of setae, lacking plates. Abdominal sternal plates entire, almost reaching the lateral edge of abdomen. Number of abdominal sternocentral setae: II, 4 spine-like setae and 2 long slender setae; III, 2 spine-like setae and 2 long slender setae; IV, 2 spine-like setae and 2 long slender setae; V, 2 spine-like seta and 4 long slender setae; VI, 4 long slender setae. Tergal plates well developed as shown in Fig. 1. Number of tergoventral abdominal setae (excluding postspiracular seta): II, 7-8; III-IV 9; V 9-12; VI 8-9; VII 7-8; VIII 6. Postspiracular seta on III-VIII. Pleural thickenings conspicuous with well defined re-entrant heads on segments III-VIII. Number of pleural setae: II-III, 0; IV-VIII, 3. Male genital plate as in Fig. 2, with posterior margin difficult to define. Genitalia with parameres fused with the basal plate, each with a conspicuous seta on the tip; endomeral plate atrophied and simple (Fig. 3). Measurements: HL, 0.48-0.51; FW, 0.35-0.38; TW, 0.45-0.47; CI, 1.05-1.08; TraL, 0.11-0.12; TraW, 0.05; DapL, 0.23-0.24;

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Figures 1-5 - *Tyranniphlopterus caiolukasi* sp. n.: 1. Dorso-ventral view of male (bar = 0.4 mm); 2. Male genital plate (setae not drawn) (bar= 0.1 mm); 3. Male genitalia (bar = 0.1 mm); 4. Dorso-ventral view of female (bar = 0.4 mm); 5. Female genital plate (setae not drawn), and vulvar margin (bar = 0.1 mm).

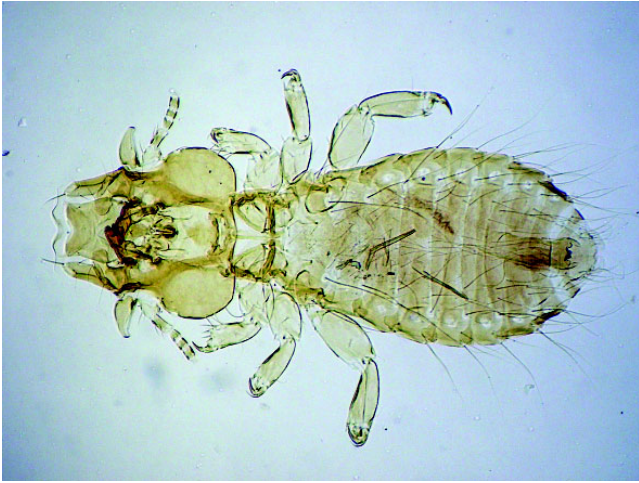


Figure 6 - *Tyranniphlopterus caiolukasi* sp. n. Male



Figure 7 - *Tyranniphlopterus caiolukasi* sp. n., without genitalia. Male

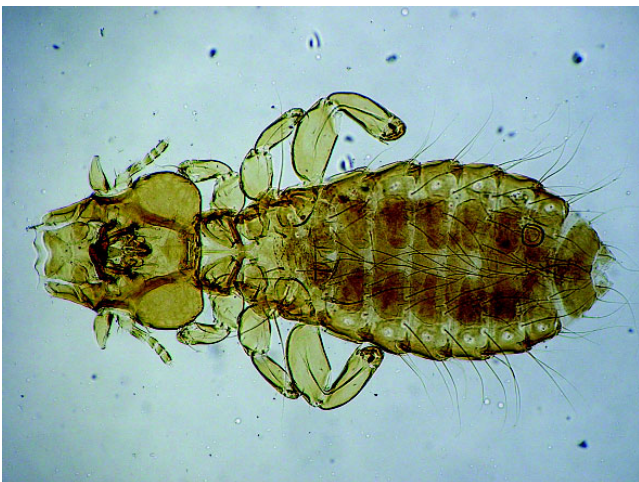
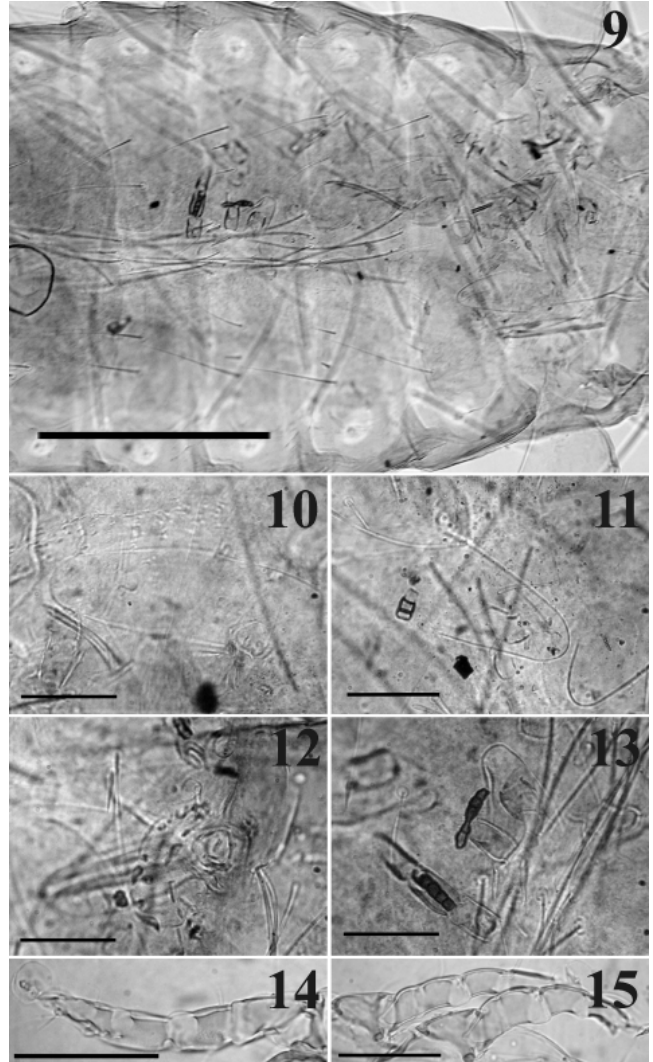


Figure 8 - *Tyranniphlopterus caiolukasi* sp. n. Female



Figures 9-15 - *Tyranniphlopterus caiolukasi* n.sp. 9. General aspect of female abdomen with fragments of legs and egg shells of feather mite (bar = 0.5 mm); 10. Entire egg shells of feather mites; 11. Fragments of feather mites egg shells; 12. Leg of feather mite, with at least four segments; 13. Fragments of feather mites legs; 14. Leg I of male of *Nycteridocaulus tyranni*; 15. Legs II and IV of male of *N. tyranni* (bar = 0.05 mm, in Figs. 10-15).

DapW, 0.18-0.19; POW, 0.25-0.27; PEW, 0.38-0.41; AL, 0.66-0.77; AW, 0.52-0.56; GL, 0.23-0.28; GW, 0.08-0.09; TL, 1.44-1.57. One male paratype presented a teratology, the complete genitalia absence (Fig. 7). This male had the largest of structures measured. Similar abnormality was found by Palma & Pilgrim (1977).

**Female** (Figs. 4-5, and 8): Larger than male, body stout, whole specimen as in Fig. 4. General aspects of plates and setae as described for male. Prothorax with a medium sized seta on each side of the postero-lateral margin. Posterior margin of pteronotum with 5 long setae and a minute seta on postero-lateral margin on each side. Number of sternocentral abdominal

setae: II, 4 spine-like setae and 2 long slender setae; III-IV, 2 spine-like setae and 2 long slender setae; V, 2 spine-like seta and 4 long slender setae; VI, 4 long slender setae. Number of tergoventral abdominal setae (excluding postspiracular seta): II, 6-8; III, 8; IV-V, 8-11; VI, 7-10; VII, 6-8; VIII, 5-7. Postspiracular setae on III-VIII. Number of pleural setae: II-III, 0, IV-VIII, 3. Genital plate and vulvar margin as in Fig. 5. Edge of vulvar opening with 4-6 long setae and 2-4 short setae on each side. Measurements: HL, 0.51-0.56; FW, 0.38-0.44; TW, 0.48-0.53; CI, 1.05-1.06; TraL, 0.12-0.13; TraW, 0.05-0.06; DapL, 0.23-0.26; DapW, 0.20-0.22; POW, 0.27-0.30; PEW, 0.40-0.45; AL, 0.87-1.03; AW, 0.49-0.70; GchL, 0.05-0.08; TL, 1.69-1.88.

**Type Material:** one male holotype, three male and 10 female paratypes, and four nymphs, collected from the head plumage of *Tolmomyias sulphureus* (Spix, 1825) (Passeriformes, Tyrannidae), Fazenda Água Limpa, Brasília, DF, Brazil, 29.VIII.2002, coll. Mieko F. Kanegae. Holotype male and paratypes are deposited at the Entomological Collection of the Instituto Oswaldo Cruz/FIOCRUZ (IOCC) (slides PHTPHI 0014 to 0021).

**Additional material:** eight males, 17 females and 16 nymphs from two additional birds of the same type host species and type locality (slides PHTPHI 0022 to 0039).

**Etymology:** This species is named after Caio Lukas B. Valim, the author's son.

**Diagnosis:** *Tyranniphlopterus caiolukasi* sp. n. is the largest known member of its genus. It is morphologically similar to *T. venezuelensis* Mey, 2004, from which it can be distinguished by the tergal and sternal chaetotaxy, the number of setae on pterothorax margin (20-25 in *T. venezuelensis*), and by the absence of lateral sclerites in the sternites III and IV in females (present in *T. venezuelensis*). The male genitalia of *T. caiolukasi* sp. n. is similar to *T. minutus* (Carriker, 1963), however, *T. minutus* has lateral sclerites in the sternites of both sexes.

**Remarks:** Four of the ten females that compose the type series had articles of legs of feather mites (Acaridida, Analgoidea), and egg shells of these mites in their digestive tracts (Fig. 9). Philopterids have a diet consisting of fragments of the feathers (barbs and barbules) (Rothschild & Clay, 1952; Johnson & Clayton, 2003), thus it is not difficult to imagine that fragments of exuviae are accidentally ingested during the feeding process. Those with articles of feather mites legs did not contain fragments of barbules inside the crop. Although Waterston (1926) did not report mites when studying the alimentary content of chewing lice, this phenomenon has been observed by other authors (Rothschild & Clay, 1952; Oniki & Butler, 1989). Fragments (Fig. 11) and almost entire egg shells were found (Fig. 10), as was a well preserved leg, at least, with femora, genua, tibia and tarsi present (Fig. 12), and articles of legs of feather mites (Fig. 13). The same birds from which the chewing lice used for this description were collected, also had males and females of the feather mite *Nycteridocaulus tyranni* Atyeo, 1966 (Acari, Acaridida, Proctophyllodidae, Proctophyllodinae) (legs on Fig. 14 and 15, both figures of adult male). Given the appearance of these mite body-parts, it is possible that these fragments are exuviae of immature (nymphs) *Nycteridocaulus tyranni*.

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