



Mites associated with the ruddy ground dove, *Columbina talpacoti* (Temminck, 1810), in São Paulo State, Brazil

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Abstract

Mites associated with birds have different relationships with their hosts, ranging from accidental association to true ecto- and endoparasitism. A total of 51 samples of the ruddy ground dove, *Columbina talpacoti* (Temminck, 1810) (Columbiformes), from São Paulo State, Brazil, were examined for mites. Five of the samples were nests. Mites belonging to the following taxa were found: Astigmata—Analgidae (three species), Falculiferidae (four species) and an unidentified Pyroglyphidae species; Mesostigmata—a single species of Macronyssidae; Prostigmata—a single species each of Cheyletidae, Ereyetidae, Harpirhynchidae and Syringophilidae. *Diplaegidia columbigallinae* Cerný, 1975 and *Byersalges talpacoti* Cerný, 1975 were the most frequent species. Known associations of each mite species to other columbiform birds are reported.

Key words: Acari, ectoparasites, feather mites, quill mites, ruddy ground-dove.

Introduction

Mites associated with birds have different relationships with their hosts, ranging from accidental association to true ecto- and endoparasitism (Zumpt, 1961; Balashov, 2006; Krantz & Walter, 2009). The ruddy ground-dove, *Columbina talpacoti* (Temminck, 1810) is a very common columbid bird (Columbiformes) in Brazil, well adapted to urban environments. According to Sick (2001), it lives in open areas, coffee plantations and swampy areas. They are frequently seen on buildings, window sills and roofs, from Mexico to Bolivia, Argentina, Brazil and Paraguay. In Brazil, Valim *et al.* (2004) examined 12 samples of ruddy ground-dove in the state of Rio de Janeiro, finding four mite species. Here we present records of mites on *C. talpacoti* from the State of São Paulo.

Materials and Methods

Feathers, nests and corpses of Columbiformes and other birds are commonly received in our laboratory for scientific studies. These refer to birds accidentally killed or that died naturally. The 51 samples (44 corpses; two feather samples, each corresponding to a bird, and five nests) of *C. talpacoti* examined in this study were received between 2005 and 2010 from the following localities of São Paulo State: Campinas (22°49'11"S; 47°4'12"W, alt. 604 m), Pedreira (22°40'56,49"S; 46°52'49,53"W, alt. 671 m), Jaguariúna (22°42'20"S; 46°59'09"W, alt. 584 m), Holambra (22°37'59"S; 47°03'20" alt. 590m), Itapira (22°26'00"S; 46°49'18"W, alt. 643 m) and Valinhos (22°58'14"S; 47 59'45"W, alt. 660 m). Each sample was provisionally identified using

Sick (2001) and Sigrist (2006) and the identification was later confirmed by David Vilas Boas Filho, of the Department of Animal Biology, Laboratory of Entomology and Acarology, UNICAMP.

To collect mites, the birds were initially placed in 70% ethanol solution containing a few drops of detergent and agitated vigorously, filtering the solution through Whatmann filter paper number 5. Mites were then transferred with a brush, under magnifying glass, to a vial with lactophenol, where they remained for at least four days. They were then mounted in Hoyer's medium (Flechtmann, 1975). Feathers were examined under a stereomicroscope, removing mites with forceps. Quills from caudal and wing feathers were isolated, opened with scissors and examined under a stereomicroscope. Two techniques were used to examine the respiratory system of the corpses. Initially, 70% ethanol solution was injected with a syringe through one nostril until the solution started leaving through the other nostril, flushing out the mites (Yunker, 1961). Afterwards, an incision was made from nostrils to ears and the nasal cavities, larynx, trachea and air-sacs were examined under a stereomicroscope (Fain, 1957). To collect mites from the skin and subcutaneous tissues, the ventral feathers were removed and the subjacent skin was cut off with scissors to be examined under a stereomicroscope. Nests were taken apart and also examined under a stereomicroscope.

Mites were identified using the keys of Baker *et al.* (1956), Fain (1965), Zumpt (1961), Kethley (1970), Gaud & Atyeo (1996), Krantz & Walter (2009) and by consulting original descriptions. They were photographed and measured with Image Manager IM50, and a Leica camera attached to a Zeiss Axioplan-2 microscope. Voucher samples were included in the collection of the Departamento de Biologia Animal, Instituto de Biologia, UNICAMP, and photographs of nests, birds and mites will be added to a future virtual collection.

Results

The mite taxa collected and the corresponding incidence, in parentheses, are subsequently shown (unless specified, incidences correspond to proportions of infested birds):

Astigmata – Analgidae: *Diplaegidia columbae* Buchholz, 1869 (Fig. 1A, B) – 69.6%; *Diplaegidia columbigallinae* Cerný, 1975 (Fig. 1C, D) – 76.1%; Dermoglyphidae: *Dermoglyphus giganteus* Dabert & Ehrnsberger, 1993 (Fig. 1E, F) – 15.2%; Falculiferidae: *Byersalges phyllophorus* Gaud & Barré, 1988 (Fig. 2A, B) – 67.4%; *Byersalges talpacoti* Cerný, 1975 (Fig. 2C, D) – 82.6%; *Falculifer* sp. (Fig. 3A, B) – 8.7%; Laminosioptidae: *Fainocoptes* sp. (Fig. 3C) – 6.5%; and an unidentified species of Pyroglyphidae (Fig. 3D) – 2.3%.

Mesostigmata – Macronyssidae: *Ornithonyssus bursa* (Berlese, 1888) (Fig. 3E) – 80.0% of the nests.

Prostigmata – Cheyletidae: *Ornithocheyletia columbigallinae* Fain & Bochkov, 2002 (Fig. 3F) – 11.4%; Syringophilidae: *Castosyringophilus mucuya* (Casto, 1980) (Fig. 4A) – 2.2%; Ereynetidae: *Ophthalmophagus striatus* (Crossley, 1952) (Fig. 4B) – 2.3%; and an unidentified species of Harpirhynchidae (Fig. 4C) – 15.9%.

Discussion

Astigmata: *Diplaegidia columbae* is particularly common in *Columba livia* (Gmelin, 1789), and has been reported from North America on the following columbiforms: *Zenaida asiatica* (Linnaeus, 1758) and *Z. macroura* (Linnaeus, 1758) (González *et al.*, 2004), *Stigmatopelia senegalensis* (Linnaeus, 1766), *Streptopelia chinensis* (Scopoli, 1786), *S. roseogrisea* (Sundevall, 1857) and *Z. auriculata* (Des Murs, 1847) (Gaud, 1976). This is the first record of this mite on *C.*

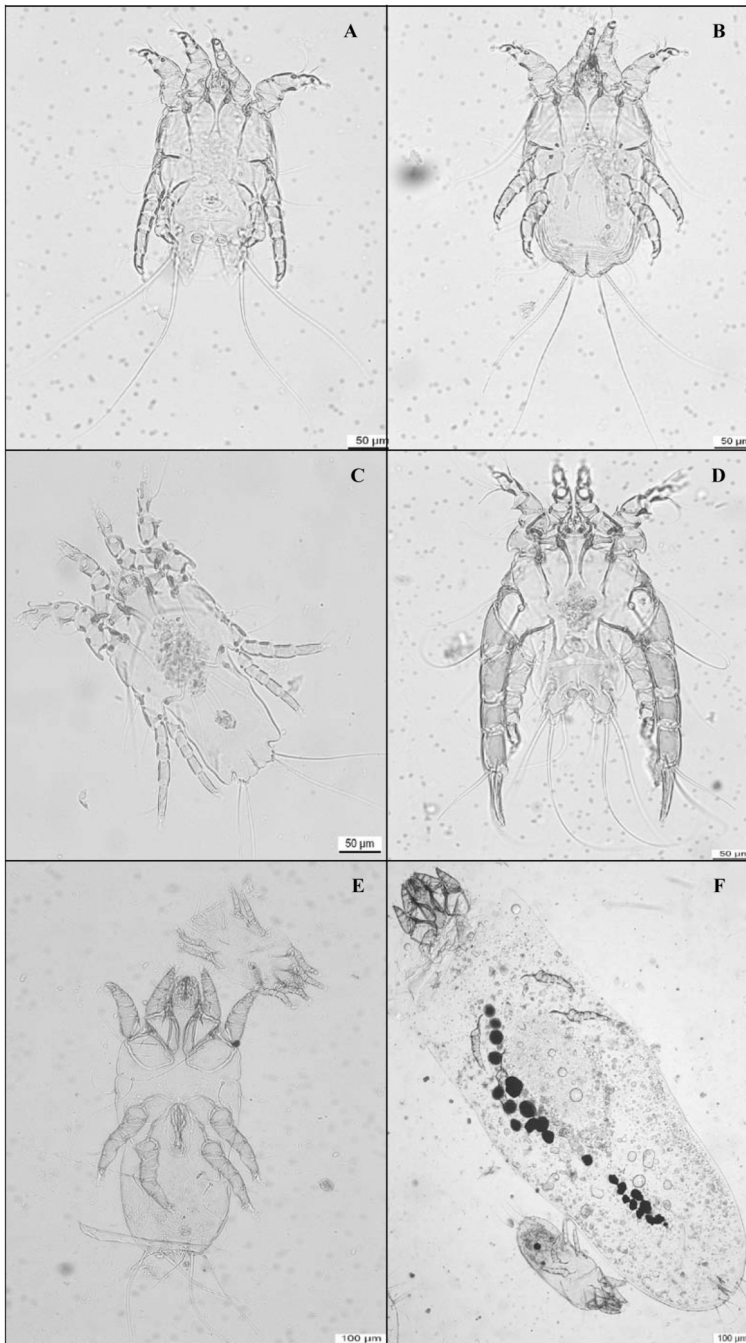


FIGURE 1. (A) *Diplaegidia columbae* male; (B) *Diplaegidia columbae* female; (C) *Diplaegidia columbigallinae* female; (D) *Diplaegidia columbigallinae* male; (E) *Dermoglyphus giganteus* male; (F) *Dermoglyphus giganteus* female.

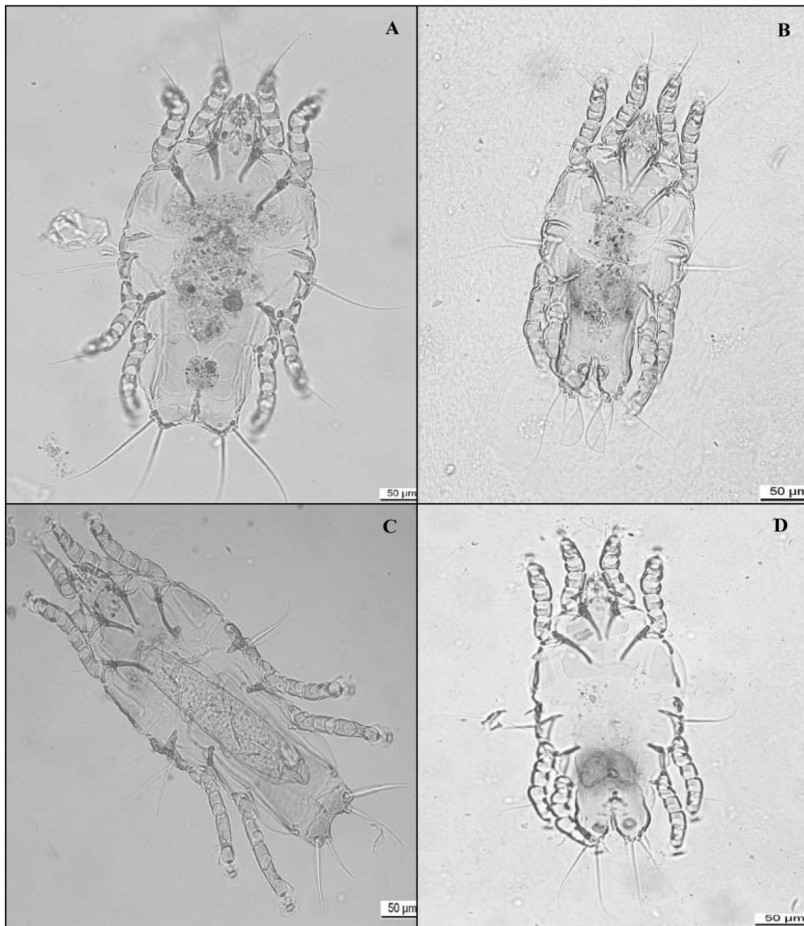


FIGURE 2. (A) *Byersalgies phyllophorus* female; (B) *Byersalgies phyllophorus* male; (C) *Byersalgies talpacoti* female; (D) *Byersalgies talpacoti* male.

talpacoti. *Diplaegidia columbigallinae* was originally described from *C. talpacoti* from Surinam. In Brazil, it was found on the same host by Valim *et al.* (2004).

Dermoglyphus giganteus was reported in quills of *Columbina passerina* (Linnaeus, 1758) from Florida, United States (Dabert & Ehrnsberger, 1993). This mite is reported for the first time on *C. talpacoti*.

Byersalgies phyllophorus is reported on *C. talpacoti* for the first time in Brazil. It has been previously collected from *C. passerina* from Barbados, Dominican Republic, Guadeloupe, Jamaica, Puerto Rico and Saint Lucia, and it was collected on *C. talpacoti* from Colombia, Guyana and Surinam (Gaud & Barré, 1992). *Byersalgies talpacoti* has been previously collected in Surinam, Colombia, Trinidad, Nicaragua, Honduras, El Salvador, United States, Brazil, Argentina and Bolivia from many other columbid birds, including *Columbina picui* (Temminck, 1813), *C. minuta* (Linnaeus, 1766), *C. passerina*, *Claravis pretiosa* (Ferrari-Perez, 1886), *C. squammata* (Lesson, 1831), *Uropelia campestris* (Spix, 1825) (Atyeo & Winchell, 1984), *Z. asiatica* and *Z.*

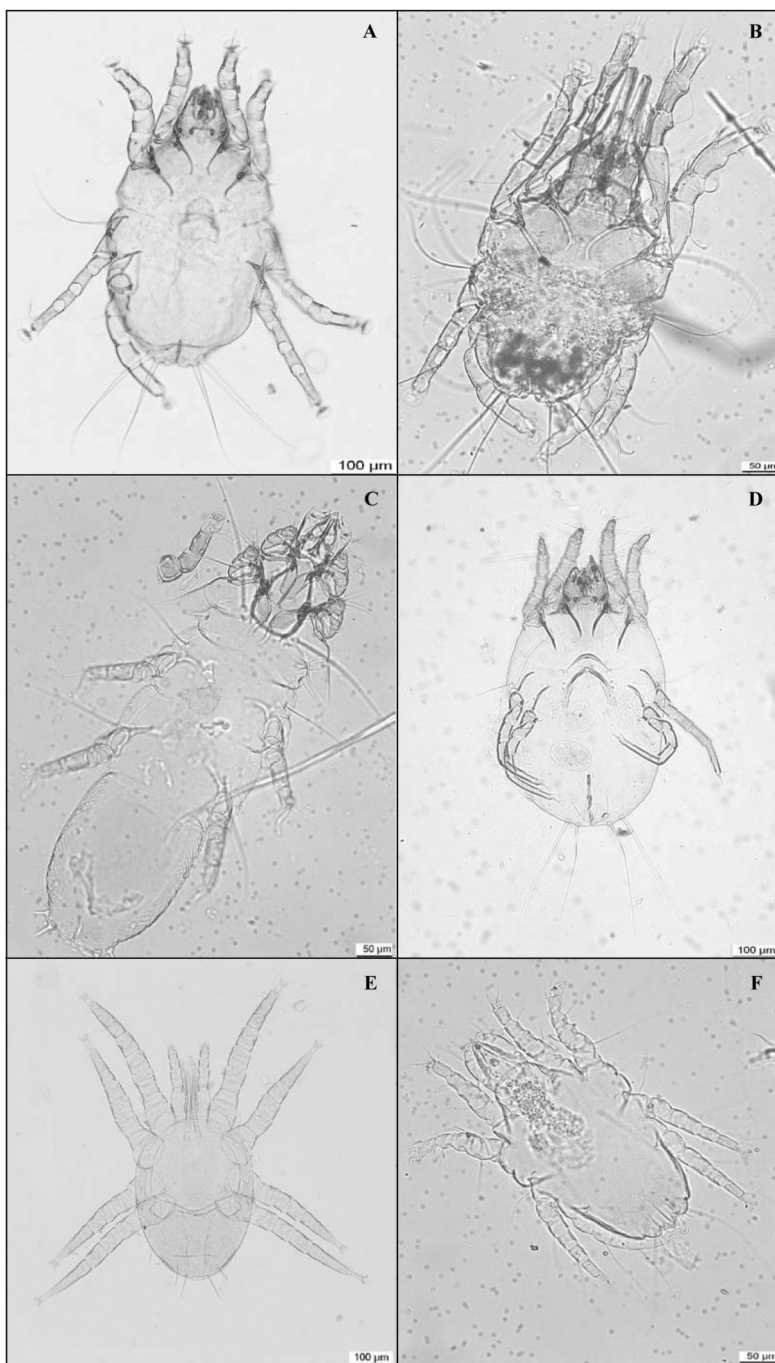


FIGURE 3. (A) *Falculifer* sp. female; (B) *Falculifer* sp. male; (C) *Fainocoptes* sp. female; (D) Pyroglyphidae sp. female; (E) *Ornithonyssus bursa* female; (F) *Ornithocheyletia columbigallinae* nymph.

aurita (Temminck, 1809) (Gaud & Barré, 1992). Species of *Falculifer* Railliet are found worldwide on many columbiforms (Ventura, 1968; Atyeo & Winchell, 1984). Our collection of an unidentified *Falculifer* sp. represents a new record for a species of this genus on *C. talpacoti*.

Mesostigmata: The macronyssid species *O. bursa* is a haematophagous nest mite that may also be found on the bodies of mature and young birds. Their hosts include both domestic and wild species, especially those that are synanthropic (Mascarenhas *et al.*, 2009). This is the first record of *O. bursa* on *C. talpacoti*.

Prostigmata: Cheyletidae includes mites that are parasitic on birds and mammals. *Ornithocheyletia columbigallinae* was first described from *Columbina* sp. from Brazil. This is the first reference of *C. talpacoti* as a host of this mite.

The quill mite *C. mucuya* was described from *C. passerina* from the USA and was subsequently collected from *Metriopelia melanoptera* (Molina, 1782) from Argentina and *C. talpacoti* from Brazil (Skoracki & Glowska, 2008).

Ophthalmophagus striatus was the only nasal mite found in this study. It was described from domestic pigeon in the USA, and later reported in the same country from *C. passerina* (Pence & Casto, 1976). This is the first record of this mite in *C. talpacoti*.

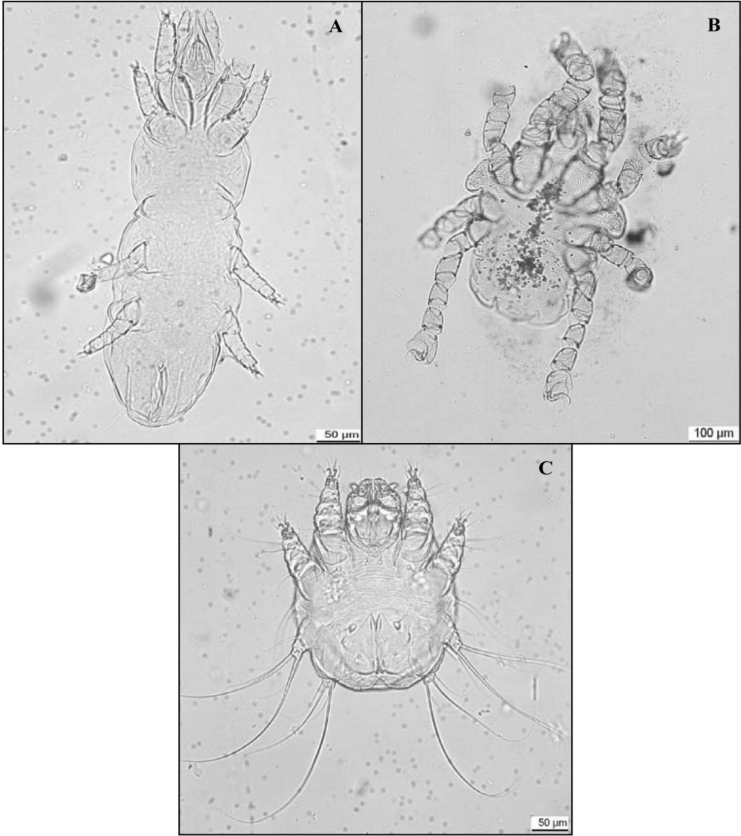


FIGURE 4. (A) *Castosyringophilus mucuya* nymph; (B) *Ophthalmophagus striatus*; (C) Harpirhynchidae sp. female.

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