



## Research note

# Ereynetidae (Acari: Prostigmata) in *Chrysomus ruficapillus* (Passeriformes: Icteridae) from Brazil

## *Ereynetidae (Acari: Prostigmata) en Chrysomus ruficapillus (Passeriformes: Icteridae) de Brasil*

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### Abstract

During nasal mite research, a total of 122 *Chrysomus ruficapillus* (Vieillot, 1819) were examined. The mite *Boydaiia agelaii* occurred in 47.5% of the hosts. This record represents the first report of the mite in a bird in Brazil's natural wild environment.

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**Keywords:** *Boydaiia agelaii*; Speleognathinae; Chestnut-capped Blackbird

### Resumen

Un total de 122 *Chrysomus ruficapillus* (Vieillot, 1819) fueron examinados para la obtención de ácaros nasales. *Boydaiia agelaii* se presentó en el 47.5% de los huéspedes. Este trabajo registra por primera vez a esta especie de ácaro en asociación con un ave silvestre en Brasil.

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**Palabras clave:** *Boydaiia agelaii*; Speleognathinae; Varillero Congo

Birds can be parasitized by nasal mites (consumers of blood) belonging to Rhinonyssidae Trouessart, 1895 and by tissue feeders that compose Ereynetidae Oudemans, 1931 (Pence, 1975; Skoracki, Zabłudovskaya, & Bochkov, 2012). These endoparasites inhabit the respiratory system of birds, and are found preferentially in the membrane lining the nasal turbinates. They can also be found in the anterior portion of the nostrils, larynx, trachea, lungs, air sacs, and conjunctival (Amaral & Rebouças, 1974).

In particular, the family Icteridae originates in the Americas and is restricted to the New World. In Brazil the family consists of 40 species, of which 19 occur in Rio Grande do Sul (Bencke

et al., 2010; CBRO, 2014). *Chrysomus ruficapillus* (Vieillot, 1819) occurs in Brazil, Uruguay, Argentina, Bolivia, Paraguay and French Guiana (IUCN, 2014; Narosky & Yzurieta, 2003). According to Belton (1994), the species is one of the most abundant in Rio Grande do Sul, being found in flocks ranging from a just a few to thousands of birds. They inhabit almost all parts of the state where there are wetlands, or rice paddies (Fallavena, 1988).

The aim of the study was to investigate the presence of nasal mites in *C. ruficapillus* (Icteridae) in Brazil, contributing to the knowledge of biodiversity in the country.

One hundred and twenty-two specimens of *Chrysomus ruficapillus* from the municipality of Rio Grande, Rio Grande do Sul, Brazil (32°24.36' S, 52°49.38' W) were examined. The capture, transport and euthanasia of these birds was licensed by the Instituto Chico Mendes de Conservação da Biodiversidade (ICMBio n°41095-3) and approved by the Comitê de Ética e

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Experimentação Animal da UFPEL (CEEA/UFPEL n°147). The capture took place on private property Granjas 4 Irmãos S. A., where a trap (2.5 m × 2.5 m × 2.5 m) was installed with water and food available for birds.

After euthanasia, the birds were placed individually in labeled plastic bags, transported to the Laboratório de Parasitologia de Animais Silvestres (LAPASIL/UFPEL), and frozen until processing.

In order to collect the mites, a cut was made from one of the nostrils which reached the external orifice of the corresponding ear, this process was repeated on the opposite side. Next, the nasal turbinates were cut lengthwise and the top of the head was bent backwards to form a right angle with the lower part (Fain, 1956, *apud* Amaral & Rebouças, 1974). Afterwards, the cavity was washed with a water jet through a 150 µm sieve, and the resulting content, as well as the nasal cavity, was examined under a stereomicroscope Olympus SZ61.

The mites were fixed in 70% ethanol and mounted between slide and coverslip with Hoyer's medium, and photographed on an Olympus BX 41 microscope with a connected camera system. Identification was based on morphological characteristics according to Pence (1975). The parameters calculated were prevalence, mean abundance, and mean intensity of infection according to Bush, Lafferty, Lotz, and Shostak (1997). The photomicrographs were prepared with Adobe Microsoft Photoshop CS5. Vouchers were deposited in the Coleção de Artrópodes at (LAPASIL/UFPEL) (n° 468–477).

Of the 122 specimens of *C. ruficapillus* examined, 58 (47.5%) were positive for the nasal mite *Boyardia agelaii* Fain and Aitken, 1968 (Ereynetidae: Speleognathinae) (Fig. 1). Two hundred and

twenty-one specimens of mites were collected, of which 188 were adults (females), and 33 larvae. The mean abundance of infection was 1.81, and mean intensity of infection was 3.81. We also collected Rhinonyssidae mites that are in the process of identification and will be presented in another specific paper. There are few studies on nasal mites in the parasitological indices, since the character of most of the studies is taxonomic. In North America, Pence (1973a) reported the number of birds parasitized by *Boyardia quiscali* Brooks and Strandtmann 1960 and the number of mites found allowed for the calculation of the mean intensity of infection of 3 mites per host for 4 species of Icteridae. Pence (1973b) presented a list of host-parasites for nasal mites of various species of birds, in which he reported 82 birds individuals of Icteridae, distributed in 10 species; of these 10 hosts (12.2%) were parasitized by *B. quiscali*. Spicer (1987) examined 13 Icteridae hosts belonging to 4 species and found only *Boyardia sturnellae* Clark, 1960 (= *Coboydaia sturnellae*), with a prevalence of 7.7%.

Skoracki et al. (2012) presented a review of Prostigmata associated with birds, which listed several species of *Boyardia* and their respective hosts. *Boyardia agelaii* was reported parasitizing Icteridae birds in the Western Hemisphere. The hosts recorded in association with the nasal mite were *Chrysomus icterocephalus* (Linnaeus, 1766), *Agelaius humeralis* (Vigors, 1827), and *Dives atroviolaceus* (Orbigny, 1839) in South America; *Agelaius phoeniceus* (Linnaeus, 1766), *Molothrus ater* (Boddaert, 1783), and *Quiscalus mexicanus* (Gmelin, 1788), in North America. Other *Boyardia* species have been reported in Icteridae in North America, such as *Boyardia loxiae* (Fain, 1963) in *Icterus galbula* (Linnaeus, 1758), and *B. quiscali* in *Quiscalus*

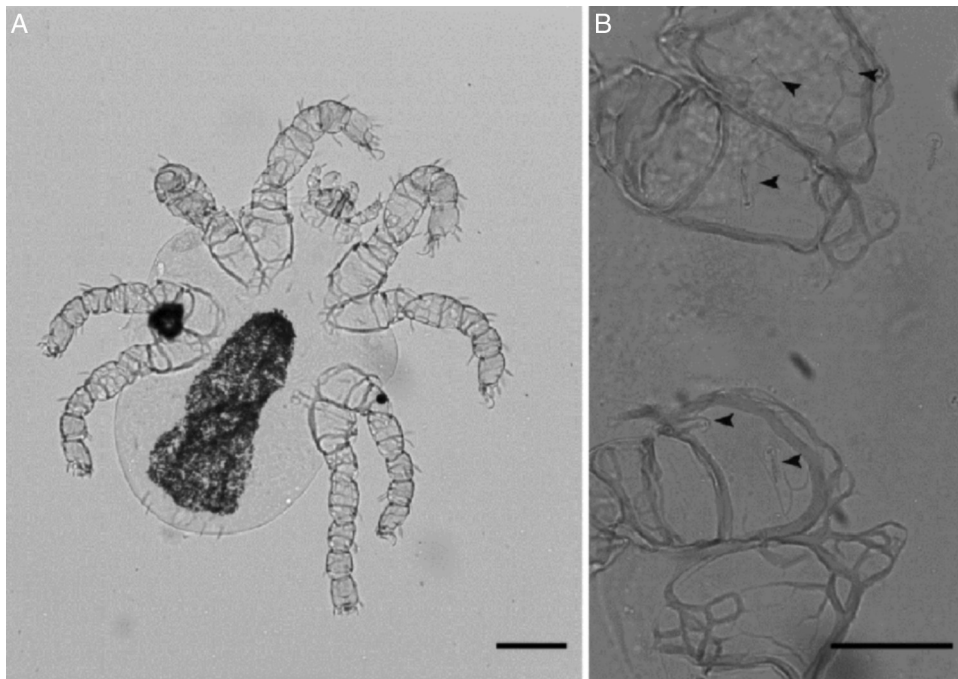


Figure 1. *Boyardia agelaii* Fain & Aitken, 1967 (Ereynetidae: Speleognathinae) parasite of *Chrysomus ruficapillus* (Vieillot, 1819) (Passeriformes: Icteridae) from south Rio Grande do Sul, Brazil. A, ventral female view. Bar = 90 µm; B, arrows indicate the detail of the thighs showing the barbulate setae on coxal formula 2-1-2-0. Bar = 60 µm.

*quiscula* (Linnaeus, 1758), *Q. mexicanus*, *M. ater* and *A. phoeniceus* (Linnaeus, 1758).

*Boydaia agelaii* was reported in *C. ruficapillus* from a zoo in Europe by Fain and Aitken (1968) (Skoracki et al., 2012), differing from this study in which the parasites were collected in free-living hosts in southern Brazil.

In this context, *Chrysomus ruficapillus* as a new host for *Boydaia agelaii* in Brazil is reported, and for the first time the species is found parasitizing this species in the wild.

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## References

- Amaral, V., & Rebouças, M. M. (1974). *Métodos para o estudo de ácaros Rinonissídeos*. São Paulo: Instituto Biológico de São Paulo.
- Belton, W. (1994). *Aves silvestres do Rio Grande do Sul: Distribuição e biologia*. São Leopoldo, Brasil: Editora UNISINOS.
- Bencke, G. A., Dias, R. A., Bugoni, L., Agnes, C. E., Fontana, C. S., Maurício, G. N., et al. (2010). Revisão e atualização da lista das aves do Rio Grande do Sul, Brasil, Iheringia, Zoologia. *Porto Alegre*, 100, 519–556.
- Bush, A., Lafferty, K., Lotz, J., & Shostak, A. (1997). Parasitology meets ecology on its own terms: Margolis et al. revisited. *The Journal of Parasitology*, 83, 575–583.
- CBRO – Comitê Brasileiro de Registros Ornitológicos. (2014). *Listas das aves do Brasil* (11ª ed.). <http://www.cbro.org.br> (retrieved 24.10.14)
- Fain, A. (1956). Les acariens de la famille Epidermoptidae et Rhinonyssidae parasites des fosses nasals d'oiseaux au Ruanda-Urundi et au Congo Belge. *Annales du Musée Royal du Congo Belge Tervuren*, 60, 1–176.
- Fallavena, M. A. B. (1988). Alguns dados sobre a reprodução do Garibaldi, *Agelaius r. ruficapillus* (Icteridae, Aves) em lavouras no Rio Grande do Sul. *Revista Brasileira de Zoologia*, São Paulo, 4, 307–317.
- IUCN. *Red List of Threatened Species Version* (2014). <http://www.iucnredlist.org> (retrieved 03.03.15)
- Narosky, T., & Yzurieta, D. (2003). *Guía para la identificación de las aves de Argentina y Uruguay* (15ª Ed.). Buenos Aires: Asociación ornitológica de La Plata.
- Pence, D. B. (1973a). The nasal mites of birds from Louisiana. VII. The Ereynetidae (Speleognathinae). *The Journal of Parasitology*, 59, 364–368.
- Pence, D. B. (1973b). The nasal mites of birds from Louisiana. IX. Synopsis. *The Journal of Parasitology*, 59, 881–892.
- Pence, D. B. (1975). *Keys, species and host list, and bibliography for nasal mites of North American birds (Acarina: Rhinonyssidae, Turbinoptinae, Speleognathinae and Cytoditidae)*. Special Publications. Lubbock, TX: The Texas Tech Press.
- Skoracki, M., Zabludovskaya, S. A., & Bochkov, A. V. (2012). A review of Prostigmata (Acariformes: Trombidiformes) permanently associated with birds. *Acarina*, 20, 67–107.
- Spicer, G. S. (1987). Prevalence and host-parasite list of some nasal mites from birds (Acarina: Rhinonyssidae, Speleognathidae). *The Journal of Parasitology*, 73, 259–264.