

Phthiraptera and Gamasida Parasites of *Columbina picui* (Temminck) (Columbiformes: Columbidae) in the State of Rio Grande do Sul, Southern Brazil

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Abstract

Thirty-two specimens of *Columbina picui* (picui ground-dove) were examined, and a collection of arthropods was made by washing the external surface of the body and the nasal cavity. The species in the order Phthiraptera found and their respective prevalences, mean abundance and mean intensity were: *Columbicola passerinae* (84.4%; 10.3; 12.2), *Hohorstiella passerinae* (21.9%; 0.7; 3.1) and *Physconelloides eurysema* (3.1%; 0.1; 2). The gamasid mites found in the birds and their respective prevalences, mean abundance and mean intensity were: *Pellonyssus marui* (31.3%; 1.2; 3.9), *Ornithonyssus bursa* (15.6%; 0.2; 1.2) and *Mesonyssus* sp. (6.3%; 0.1; 1). *Columbicola passerinae*, *H. passerinae*, *P. eurysema*, *O. bursa*, *P. marui* and *Mesonyssus* sp. were recorded for the first time infecting *C. picui* in Brazil. Except for *O. bursa*, the other species are reported for the first time in the state of Rio Grande do Sul, Brazil.

Keywords: chewing lice, mites, picui ground-dove.

Phthiraptera e Gamasida parasitos de *Columbina picui* (Temminck) (Columbiformes: Columbidae) no sul do Rio Grande do Sul, Brasil

Resumo

Foram examinados 32 espécimes de *Columbina picui* (rolinha-picui), sendo que a coleta de artrópodes foi realizada por meio de lavagem da superfície externa do corpo e da cavidade nasal. As espécies da ordem Phthiraptera encontradas e suas respectivas prevalências, abundância média e intensidade média foram: *Columbicola passerinae* (84,4%; 10,3; 12,2), *Hohorstiella passerinae* (21,9%; 0,7; 3,1) e *Physconelloides eurysema* (3,1%; 0,1; 2). Os ácaros Gamasida encontrados nas aves e suas respectivas prevalências, abundância média e intensidade média foram: *Pellonyssus marui* (31,3%; 1,2; 3,9), *Ornithonyssus bursa* (15,6%; 0,2; 1,2) e *Mesonyssus* sp. (6,3%; 0,1; 1). *Columbicola passerinae*, *H. passerinae*, *P. eurysema*, *O. bursa*, *P. marui* e *Mesonyssus* sp. são relatados pela primeira vez parasitando *C. picui* no Brasil. Exceto *O. bursa*, as demais espécies são relatadas pela primeira vez no estado do Rio Grande do Sul, Brasil.

Palavras-chave: malófagos, ácaros, rolinha-picui.

1. Introduction

The picui ground-dove, *Columbina picui* (Temminck, 1813), occurs in South America and is found in Argentina, Chile, Uruguay, Paraguay, Bolívia, Colombia, Peru and Brazil (Del Hoyo et al., 1997). In Rio Grande do Sul it has been observed in all seasons of the year and is found in the whole state except in those areas of the northeast with an altitude of more than 800m (Belton, 2004).

There are only records of chewing lice (Insecta: Phthiraptera) from *C. picui* in South America, where they were cited *Hohorstiella passerinae* Hill and Tuff, 1978 in Argentina (Cicchino, 1978), *Columbicola passerinae* (Wilson, 1941) (Clayton and Price, 1999) and *Physconelloides*

eurysema (Carriker, 1903) (Price et al., 1999) both in Argentina and Bolívia.

2. Material and Methods

Thirty-two individual of *C. picui* from the municipalities of Pelotas and Capão do Leão, Rio Grande do Sul, Brazil were examined with the objective of identifying their chewing louse and gamasid mite parasites. Twenty-nine birds were collected using a compressed air rifle between December, 2006 and June, 2007, and euthanasia was accomplished by injection of 2% lidocaine hydrochlorid

in the cerebral stem; three were donors after death at the *Núcleo de Reabilitação da Fauna Silvestre (NURFS) e Centro de Triagem de Animais Silvestres (CETAS)* of the Federal University of Pelotas (UFPEl). These three birds were examined for arthropod collection immediately after death.

An adaptation of the technique of Lipovsky (1951) was used for the collection of arthropods on the feathers and body where each bird was individually bathed in buckets with 10L of water and washing-up liquid (50mL) for approximately 10 minutes, and the contents were sieved using a 63 µm sieve. The nasal mites were collected using an adaptation of the technique of Fain (1957) cited by Amaral and Rebouças (1974) which consisted of opening the nasal fossas with an incision splitting the nostril to the external orifice of the ear to the corresponding bilateral side thus permitting that the upper head be opened up. The interior of the nasal fossas was washed and its contents and mucosa examined by stereo microscope. The collected arthropods were fixed in 70 °GL alcohol for later mounting and identification.

The chewing lice were permanently mounted according to the technique of Palma (1978) and identified according to Hill and Tuff (1978), Cicchino (1978), Clayton and Price (1999) and Price et al. (1999).

The mites were cleared in lactophenol and mounted in permanent preparations. The Macronyssidae mites were identified according to Radovsky and Estébanes-Gonzalez (2001), and the Rhinonyssidae according to Crossley Junior (1952).

The encountered examples were deposited in the arthropod collection of the *Laboratório de Parasitologia de Animais Silvestres, Departamento de Microbiologia e Parasitologia* of the UFPEl, with the numbers 283-344.

The parameters of prevalence, mean abundance and mean intensity of parasitism were evaluated according to Bush et al. (1997).

3. Results

Out of the 32 examples of *C. picui* examined, 84.4% were parasitised by Phthiraptera and 43.8% by Gamasida. Among the chewing lice encountered, *C. passerinae* was most prevalent (84.4%), followed by *H. passerinae* (21.9%) and *P. eurysema* (3.1%). The mean abundance, and mean intensity of *C. passerinae*, *H. passerinae* and *P. eurysema* were respectively, 10.3, 12.2; 0.7, 3.1; 0.1, 2.

The gamasid mites found in the birds and their respective prevalences, mean abundance and mean intensity were: *Pellonyssus marui* Yunker and Radovsky, 1966 (31.3%; 1.2; 3.9), *Ornithonyssus bursa* (Berlese, 1888) (15.6%; 0.2; 1.2) and *Mesonyssus* sp. (6.3%; 0.1; 1).

Out of the 29 birds positive for Phthiraptera, 7 had double infestations (*C. passerinae* and *H. passerinae*), and one bird even had a triple infestation (*C. passerinae*, *H. passerinae* and *P. eurysema*). Out of the 14 birds positive for Gamasida, two had double infestations (*O. bursa* and *P. marui*).

4. Discussion

Hill and Tuff (1978) in the United States described *H. passerinae* from specimens collected from *Columbina passerina* (Linnaeus, 1758) and *Columbina inca* (Lesson, 1847). In the same year Cicchino (1978) described the same species from *C. picui* in Argentina.

Clayton and Price (1999) recorded *C. passerinae* from *Columbina passerina* in the United States, México, British Antillean Islands, Cuba, Virgin Islands, Colombia, and Venezuela; from *Columbina talpacoti* (Temminck, 1811) in México, Colombia, and Trinidad and Tobago; from *Columbina minuta* (Linnaeus, 1766) in Guiana and Trinidad and Tobago; from *C. picui* in Argentina and Bolivia; from *C. inca* in the United States; from *Claravis pretiosa* (Ferrari-Perez, 1886) in Colombia, México and Venezuela; and from *Claravis mondetoura* (Bonaparte, 1856) in Colombia and Costa Rica.

Price et al. (1999) reported *P. eurysema* from *C. mondetoura* in Costa Rica; from *C. minuta* in Trinidad and Tobago, Guiana, Venezuela and Brazil; from *C. passerinae* in the United States, México, Salvador, Cuba, Cayman Islands, Colombia, Venezuela, and Panama; from *C. pretiosa* in México, Colombia, Brazil, Paraguay, Peru, and Venezuela; from *C. talpacoti* in Trinidad and Tobago, Nicaragua, México and Colombia; from *C. picui* in Bolivia and Argentina; and from *C. inca* in Mexico and the United States.

In Brazil, *P. eurysema* was initially described by Guimaraes (1936) parasitizing *C. minuta* in Mato Grosso. Oniki (1999) reported *P. eurysema* and *C. passerinae* in *C. talpacoti* in the same state, and Roda and Farias (1999) reported *C. passerinae* from *C. talpacoti* and *C. minuta* in Pernambuco. In Rio de Janeiro, Valim et al. (2004) found *C. passerinae*, *P. eurysema* and *H. passerinae* parasitizing *C. talpacoti* with prevalences of 50%, 50% and 17% respectively.

Ornithonyssus bursa, known as the tropical fowl mite or chicken louse, is distributed in tropical and subtropical regions as a parasite of domestic and wild birds. In domestic birds, it is recognized that intense infestations can cause irritation, anemia and even death of chicks, even abandonment of hatchlings (Flechtmann, 1985; Guimaraes et al., 2001). This mite was already reported as a causative agent of allergic dermatitis in human beings (Ribeiro et al., 1992; Semenas and Rocha, 1998). *Pellonyssus marui* was reported by Radovsky and Estébanes-Gonzalez (2001) in Mexico parasitizing other Columbiformes (*C. inca*, *C. passerina* and *Leptotila verreauxi* Bonaparte, 1855) and some Passeriformes *Hirundo rustica* Linnaeus, 1758 and *Campylorhynchus gularis* Sclater, 1861.

The low intensity of infestation of *O. bursa* and *P. marui*, is probably related to the fact that they are present in major number in the nests of the birds (Flechtmann, 1985). One male individual was infested by 27 mites of the species *P. marui*, which can indicate that this bird was in the reproductive period, because the male as well as the female participate in the care of the offspring (Efe et al., 2001).

Two birds had the nasal mite *Mesonyssus* sp., one in each bird. Amaral (1968) cited the occurrence of various species of *Mesonyssus* Fain, 1960 in Columbiformes in the State of São Paulo: *Mesonyssus zenaidurae* (Crossley Junior, 1952) in *Leptotila rufaxilla* (Richard and Bernard, 1792); *Mesonyssus cunhai* and *Mesonyssus alexfaini* in *L. verreauxi*; and *Mesonyssus melloi* (Castro, 1948) in *Columba livia* Gmelin, 1789.

The specimens of *Mesonyssus* sp. found in *C. picui* were similar to *M. zenaidurae* described by Crossley Junior (1952) parasitizing *Zenaida macroura* (Linnaeus, 1758) and *C. passerina* in Mexico. The main differences between these mites was the form of the post-stigmatic scutum and the number of opisthosomal ventral bristles found in the side of the anal plate that in *Mesonyssus* sp. there are between 13 and 17 pairs and in *M. zenaidurae* there are 11 pairs.

The representatives of the Order Phthiraptera, *C. passerinae*, *H. passerinae* and *P. eurysema*, as well as the mites *O. bursa*, *P. marui* and *Mesonyssus* sp. were first recorded parasitizing *C. picui* in Brazil; with the exception of *O. bursa* the rest of the species were recorded for the first time in the State of Rio Grande do Sul, Brazil.

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