

A New Species of *Eimeria* from the Eared Dove *Zenaida auriculata* (Aves: Columbidae) in Brazil

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Summary. Thirty-four out of 142 (23.9%) eared doves, *Zenaida auriculata* Des Murs, 1847 had oocysts of an *Eimeria* species described here as a new species. Sporulation is exogenous and fully developed oocysts are spheroid to subspheroid, 23.8 μm (22.1-26.4) x 20.3 μm (19.2-22.1); the shape index (length/width ratio) is 1.2. The oocyst wall is bilayered, with a slightly pitted outer layer and a brown inner layer. There is no micropyle or oocyst residuum, but a prominent elongated polar granule is present. Sporocysts are elongated, 13.1 μm (12.0-14.4) x 7.4 μm (7.2-7.7); the shape index is 1.8 μm with a smooth, thin wall. A large Stieda body is present, but there is no sub-Stieda body. The sporocyst residuum consists of numerous, nearly uniform granules scattered randomly. Sporozoites are elongate with a large, clear refractile body in the posterior end and a smaller refractile body in the anterior region.

Key words: birds parasite, Brazil, coccidia, *Eimeria zenaidae* sp. n.

INTRODUCTION

The Columbidae consists of about 300 species of primarily granivorous and fructivorous birds with a cosmopolitan distribution (Bennett and Peirce 1990). In the neotropical region, 65 species are present (Stotz *et al.* 1996), 21 of which have been recorded in Brazil (Sick 1984).

Columbids of the genus *Zenaida* Bonaparte, 1838 are widely distributed in the New World (American Ornithologists' Union 1983). The eared dove, *Zenaida auriculata* Des Murs, 1847, is common in the neotropics

and occurs from the Antilles to Tierra del Fuego (Sick 1984) in arid scrub areas, in open areas such as fields and farms and around human dwellings (Donatelli *et al.* 1994). In some regions of Brazil, *Z. auriculata* is an important agricultural pest because of its large numbers (Donatelli *et al.* 1994), while in other regions, such as in areas of arid scrub, this dove is an important food source (Aguirre 1976).

During a survey of Columbiformes parasites, carried out in the municipality of Junqueirópolis, São Paulo State, Brazil, we found a new species of *Eimeria* in the faeces of *Z. auriculata*. This is described below.

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MATERIALS AND METHODS

One hundred and forty-two adult specimens of *Z. auriculata* were captured using gauze-traps (IBAMA 1994) in the municipality of Junqueirópolis, State of São Paulo, Brazil, from February to October,

1998. The doves were housed individually in cages for 2 h to obtain fecal samples, and then tagged and released. The fecal samples were examined microscopically after flotation, using Sheather's sugar solution. To determine the time to sporulation, fecal samples were placed in 2.5% potassium dichromate ($K_2Cr_2O_7$) at 23-28°C. Photomicrographs were obtained using a Zeiss microscope and Kodak TMAX 100 film. Thirty-four oocysts and sporocysts were measured and compared to those of *Eimeria* spp. previously reported in Columbiformes. All measurements and means are in μm with the range given in parentheses followed by the shape index (length/width ratio).

RESULTS

Of 142 adult specimens of *Z. auriculata* examined, 34 (23.9%) had coccidian oocysts. A morphological comparison of these oocysts revealed differences between them and those of other *Eimeria* spp. from Columbiformes, as described below.

Eimeria zenaidae sp. n. (Figs 1-3)

Oocysts spheroid to subspheroid (Figs 1, 3), length 23.8 (22.1-26.4), width 20.3 (19.2-22.1), shape index (length/width) 1.2, wall of uniform thickness (1.7) and bilayered, composed of a slightly pitted outer layer, 1.2 thick, and brown inner layer 0.5 thick. One prominent elongated polar granule is present, but a micropyle and oocyst residuum are absent (Fig. 1). Sporocysts elongated (Figs 2, 3), length 13.1 (12.0-14.4), width 7.4 (7.2-7.7), shape index 1.8 (1.7-1.9), with smooth, thin, single-layered wall. A large Stieda body is present, but there is no sub-Stieda body. Sporocyst residuum

composed of numerous, nearly uniform granules scattered randomly (Fig. 1). Sporozoites elongate with a large, clear refractile body in the posterior end and a smaller refractile body in the anterior region (Figs 1-3).

Type-host: eared dove, *Zenaida auriculata* Des Murs, 1847 (Aves: Columbidae).

Type location: municipality of Junqueirópolis, State of São Paulo, Brazil (21° 31' S, 51° 27' W).

Prevalence: 34/142 (23.9%) *Z. auriculata* examined were infected.

Site of infection: unknown, oocysts collected directly from host feces.

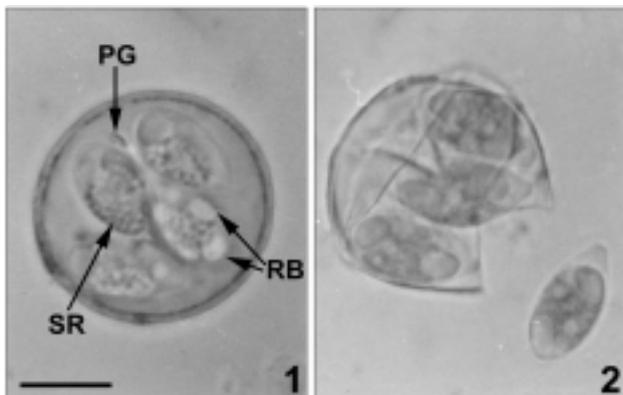
Time of sporulation: most oocysts sporulated within 38 h at 23-28°C.

Type specimens: phototypes of oocysts are deposited in the collection of the Museum of Natural History of the Institute of Biology, State University of Campinas (UNICAMP), Campinas, State of São Paulo, Brazil (accession numbers ZUEC 08 and 09).

Etymology: the specific name is derived from the generic name of the host.

DISCUSSION

There have been so far recorded only two coccidian species parasitising columbids of the genus *Zenaida*: an unnamed *Eimeria* sp., reported by Conti and Forrester (1981) infecting *Zenaida asiatica* and *Zenaida macroura* in Florida, USA and *Eimeria palumbi*, described by McQuistion (1991) parasitising



Figs 1, 2. Photomicrographs of sporulated oocysts of *Eimeria zenaidae* sp. n. **1** - typical oocyst showing the polar granule (PG), sporocyst residuum (SR) and refractile bodies (RB); **2** - broken oocyst with a free sporocyst; note the large Stieda body. Scale bar 10 μm .

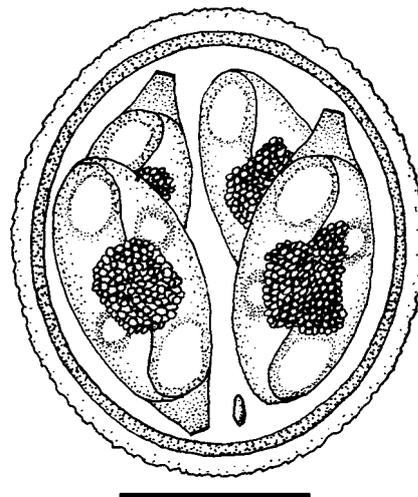


Fig. 3. Composite line drawing of a sporulated oocyst of *Eimeria zenaidae* sp. n. Scale bar 10 μm .

Zenaida galapagoensis in the Galapagos Archipelago, Equator.

This is the first report of an *Eimeria* species in *Z. auriculata*. The morphological characteristics of *E. zenaidae* sporulated oocysts were compared to those of other *Eimeria* spp. previously described in Columbiformes. Only *Eimeria palumbi* McQuiston, 1991, found parasitising *Zenaida galapagoensis* from the Galapagos Archipelago, resembled the species described here in the size of its oocysts and sporocysts. However, the oocysts of *E. zenaidae* can be easily distinguished from those of *E. palumbi* by the absence of the residuum, the presence of a conspicuous elongated polar granule and by the slightly pitted aspect of the outer wall. The sporocysts of *E. zenaidae* differ from those of *E. palumbi* by the presence of an extremely large Stieda body and the presence of two refractile bodies, a large, clear one in the posterior end and a smaller one in the anterior region. Based on these characteristics, we consider the species described here to be a new coccidian for which the name *E. zenaidae* is proposed.

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