

Notes and Comments

Non-invasive detection and molecular confirmation of coccidia in free-ranging wild birds on Maranhão Island, northeastern Brazil

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Brazil harbors one of the richest avifaunas worldwide, and parasitological surveys have demonstrated considerable diversity of gastrointestinal parasites in both captive and free-ranging birds (Melo et al., 2021; Lemos et al., 2024). Maranhão Island, located in northeastern Brazil, comprises mangrove ecosystems, sandbanks, and transitional coastal environments that support resident and migratory species (Develey, 2021). The interaction between wildlife and anthropogenic environments may facilitate the circulation of enteric pathogens, including coccidia of the genera *Eimeria* and *Isospora* (Chatterjee et al., 2023; Dunn et al., 2021). This study investigated the occurrence of coccidian parasites in free-ranging wild birds on Maranhão Island using a strictly non-invasive coproparasitological approach combined with molecular confirmation. A total of 136 fresh fecal samples were collected between 2022 and 2024. Birds were not captured, restrained, or handled at any stage of the study. Fecal material was collected directly from the ground immediately after visual confirmation of defecation by free-ranging individuals. Because sampling was strictly non-invasive, host identification was limited to field observation at the order level, and the exact number of species represented in the samples could not be determined. Representatives from different avian orders were identified through field observation. Sampling points were spatially distributed to minimize the likelihood of repeated collection from the same bird. Coproparasitological analyses were conducted using flotation in saturated salt solution (Willis, 1921) and spontaneous sedimentation (Hoffman et al., 1933). Of the 136 samples analyzed, 20 (14.7%) were positive for coccidian oocysts. Among these, 7 samples (5.1%) contained only oocysts, whereas 13 (9.6%) presented oocysts associated with helminth eggs. Microscopy-positive samples were subjected to nested polymerase chain reaction (nPCR) targeting fragments of the mitochondrial cytochrome oxidase subunit I (COI) gene (Dolnik et al., 2009; Yang et al., 2017). Six samples (30%) yielded amplified DNA fragments. Two amplified products were sequenced, and one was identified as belonging to the genus *Isospora* based on sequence similarity analysis, representing the

first molecular record in free-ranging wild birds from Maranhão Island.

Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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