

# Hemoparasites occurrence in healthy African Grey Parrots (*Psittacus erithacus*) in mainland Portugal

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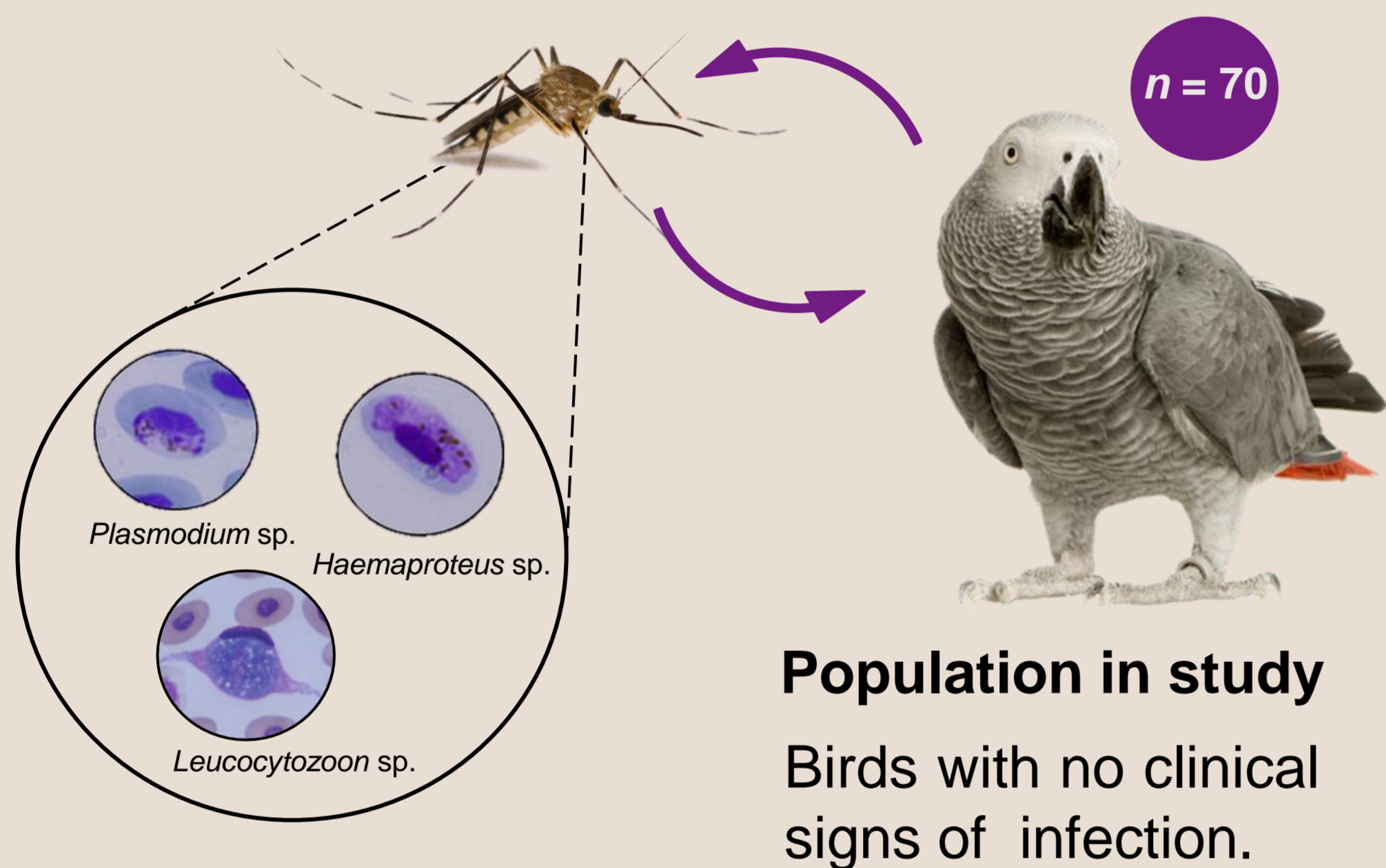
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## INTRODUCTION

Species belonging to the genera *Haemoproteus*, *Plasmodium* and *Leucocytozoon* are vector-borne parasites infecting blood cells and other organs in their hosts. These three parasite genera are commonly reported as being pathogenic and recent studies suggest that some species could sometimes be lethal, more frequently than previously reported. The prevalence of infection is closely related to the distribution of these vectors. These hemoparasites are widely described in countries with mild temperatures, since their vectors need warm temperatures to survive and reproduce. Climate change, namely an increase in average temperature, increases the likelihood of the spread of these vectors and, for that reason, the spread of hemoparasites.

Since there's a lack of knowledge of the infection by haemosporidia not only in *Psittacus erithacus* but also in Psittacidae family, the main objective of this study was to estimate the prevalence of haemosporidia in healthy *Psittacus erithacus* in mainland Portugal.

## MATERIAL AND METHODS



### Sampling

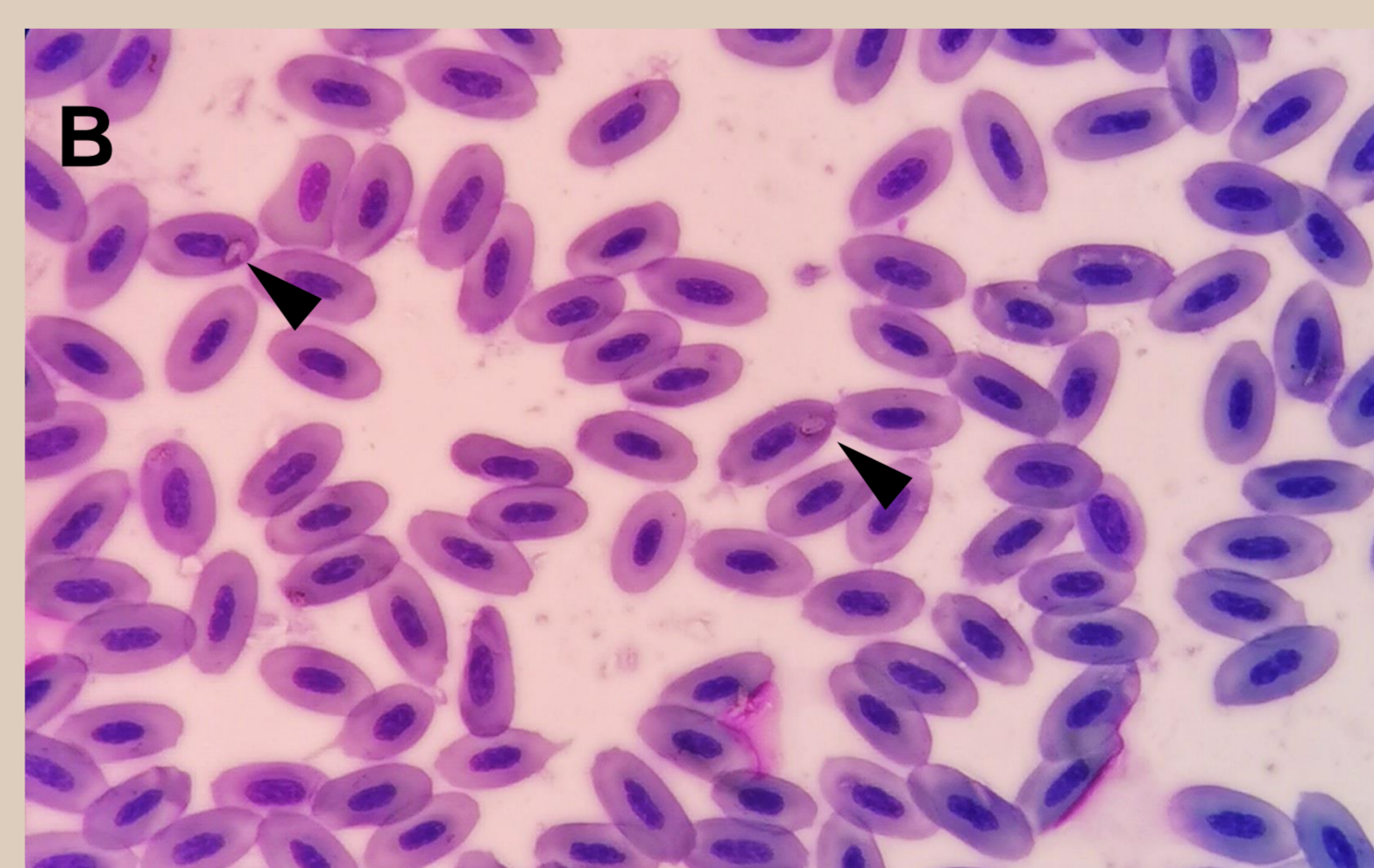
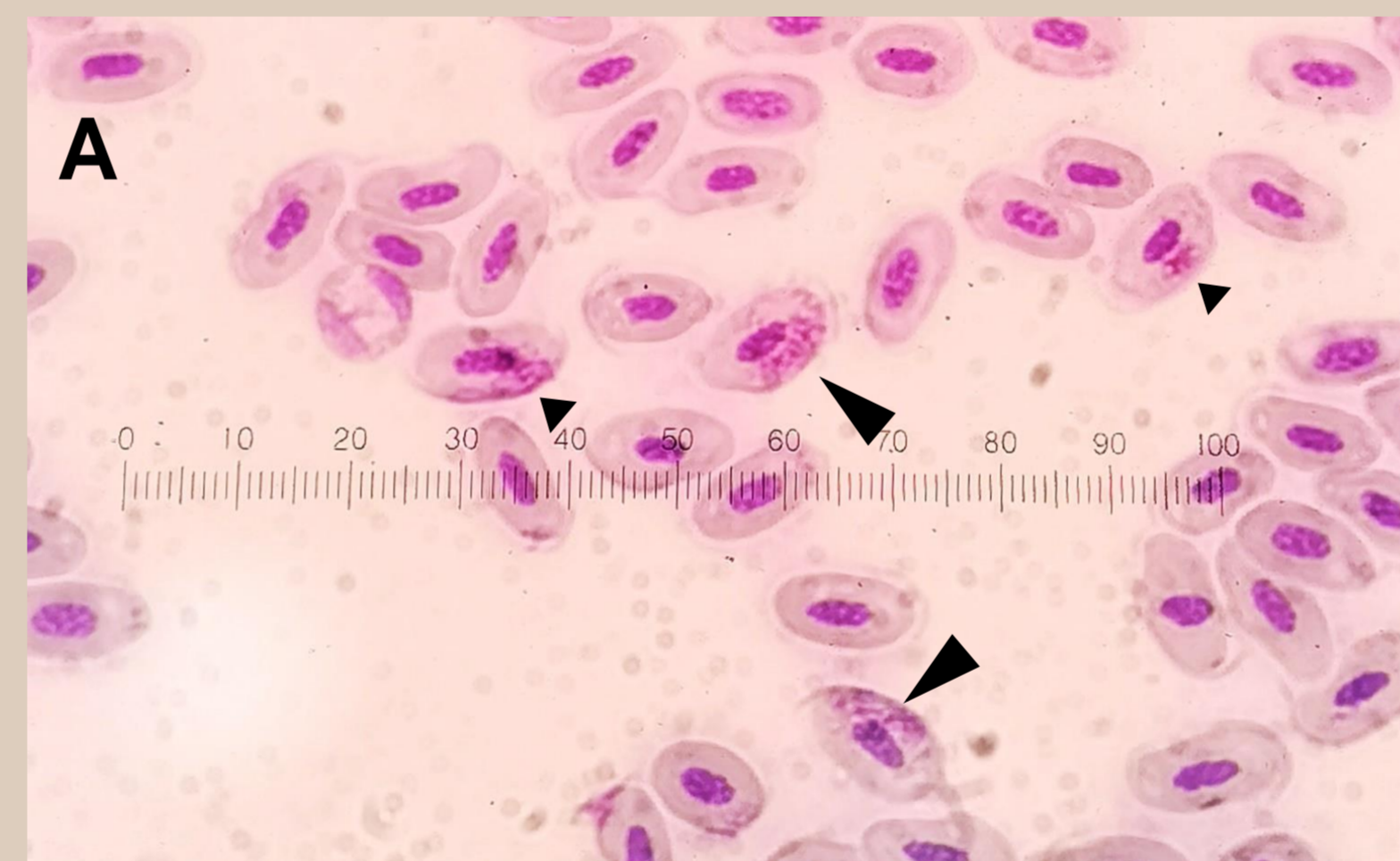
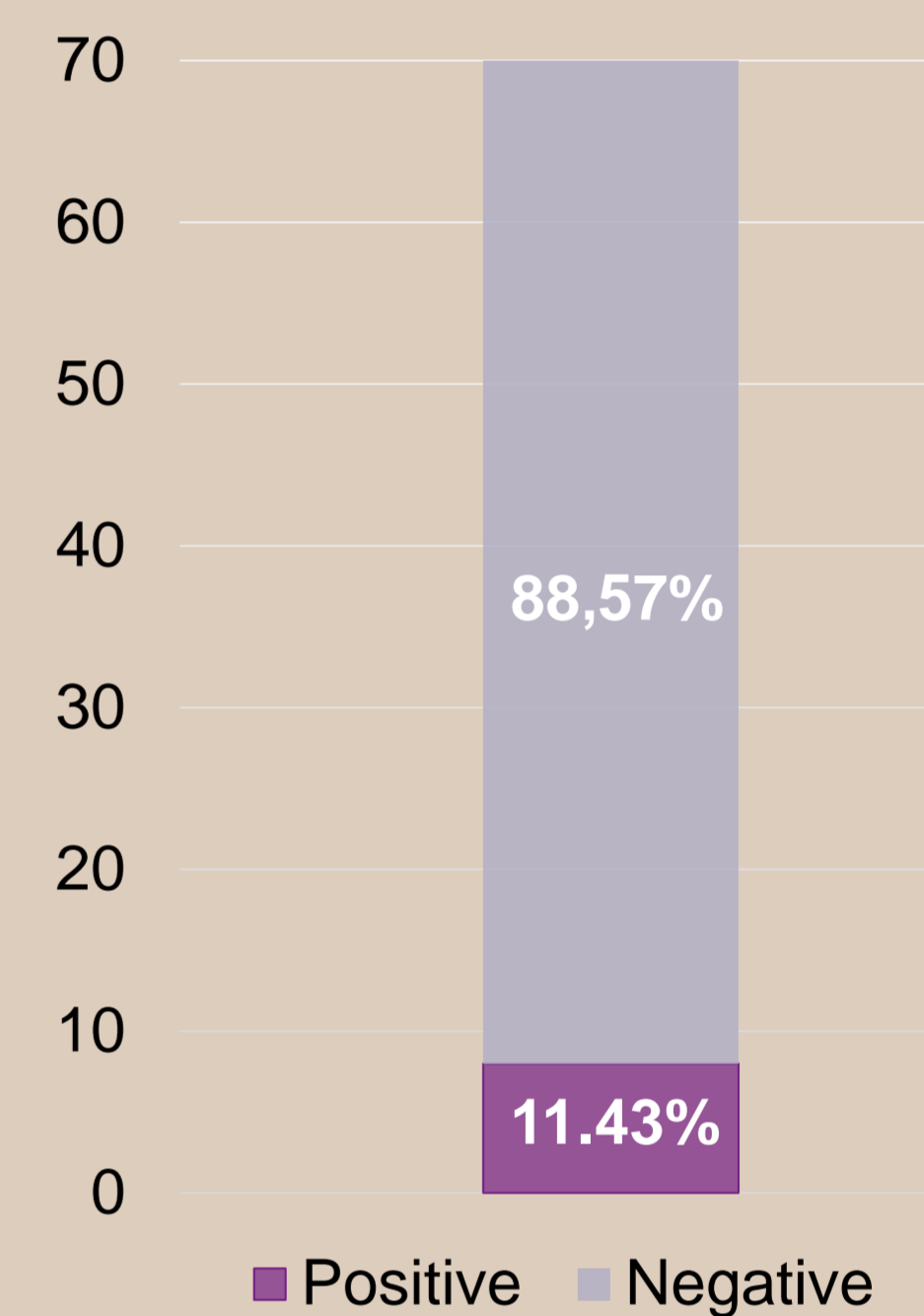
- Blood samples were collected from healthy captive adult *P. erithacus* in mainland Portugal.
- Blood samples were collected from the birds' right jugular vein.
- A direct blood smear was performed and observed with an optical microscope.

### Microscopic detection

- Blood smears were air-dried, fixed in 100% methanol and stain subsequently with Giemsa.
- Each blood smear was scan for at least 5 minutes using an Abaxis 3000-LED series microscope with Accu-Scope Plan 40x/0.65 objectives equipped with a Excelis HDS HD CAMERA & MONITOR SYSTEM for detection of haemosporidia.
- Parasites were identified according to Valkiunas (2005).

## RESULTS

- Blood smear examinations detected 8 out of 70 individuals positive for haemosporidian infection → **Prevalence of infection of 11.43%**.
- A blood smear examination allowed us to detect different degrees of maturity of *Haemoproteus* sp. gametocytes.
- Immature and mature gametocytes of *Haemoproteus* sp. were visible in red blood cells.
- In some birds only a few immature gametocytes/trophozoites were observed. For that reason, it was not possible to identify these to generic level and thus they have been recorded as *Haemoproteus/Plasmodium*.



- It was not possible the detection of *Leucocytozoon* spp. infection in any of the smears.
- Other factors such as sex predisposition or seasonal differences were not studied.
- The morphological identification of the species was not performed in this study.

**Figure A.** Mature microgametocytes (short arrow heads) and macrogametocytes (arrow heads) of *Haemoproteus* sp. in red blood cells.

**Figure B.** Ring-shaped young gametocytes of *Haemoproteus* sp. in red blood cells (arrow heads). Young gametocytes are roundish to oval with an even outline, a peripheral dark nucleus and a large white vacuole.

## CONCLUSIONS

Detection of *Haemoproteus* spp. and *Plasmodium* spp. infection is more common than *Leucozytozoon* spp. infection. This difference is not because *Leucocytozoon* spp. infection is rare, but due to the life cycle of this parasite that are detected in peripheral blood only for short periods of time. Molecular techniques, such as PCR, are used to confirm the morphological analysis of haemosporidians, providing additional information on its taxonomy.

Given the lack of data on hemosporidian distribution in Portugal, namely in Psittacidae species, this work represents an important contribution to a better understanding of the epidemiological impact of the infection in captive fauna of *Psittacus erithacus*. To the best of our knowledge, this is the first surveillance study of haemosporidia in this species in Portugal.

Knowing that these exotic captive birds can be infected, avian veterinarians must be aware of the importance of haemosporidia infection, since the impact of haemosporidians on their hosts is difficult to interpret from a clinical perspective and foreign pathogens may cause unpredictable pathogenesis when infecting naïve hosts.

## References

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