

Prevalence of haemosporidian parasites in house sparrows (*Passer domesticus*) in the center of Barcelona

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INTRODUCTION AND OBJECTIVE

Avian malaria is a insect-borne disease of wild and domestic birds, caused by Apicomplex protozoan parasites of the genus *Plasmodium*, *Haemoproteus* and *Leucocytozoon* (Atkinson *et al.*, 2008).

This disease impacts individual fitness and population dynamics, mainly through a reduction of the number of offsprings (Asghar *et al.*, 2015), an impairment of parental care capacity (Merino *et al.*, 2000), produces a highmortality in susceptible species, like the one seen on the native bird communities of Hawaiian islands (Van riper *et al.*, 1986) and decrease survival of juveniles during winter (Dadam *et al.*, 2019).

Objective: Assess the occurrence of haemoparasites (*Plasmodium*, *Haemoproteus*, and *Leucocytozoon*) in house sparrows in Barcelona.



Figure 1. Map of Ciutadella park of Barcelona.



Figure 2: Example of a cage trap used to capture house sparrows

METHODOLOGY

108 House sparrows were captured during 2021 and 2022 in the Ciutadella park of Barcelona (Figure 1), using cage traps (Figure 2). They were marked, aged, sexed and blood sampled from the jugular vein.

DNA was extracted form blood using the commercial IndiMag Pathogen Kit, screened for haemosporidian parasites using three PCR protocols (Bell *et al.*, 2015) and sequenced.

RESULTS

The overall prevalence of *Plasmodium* was 19.4%, while *Haemoproteus* and *Leucocytozoon* where not detected. All positive house sparrows (21 out of 108) were infected with *Plasmodium relictum*, except one, which was infected with *Plasmodium cathemerium*.

The proportion of individuals being infected with *Plasmodium* did nor differ by age (Figure 3) or sex (Figure 4).

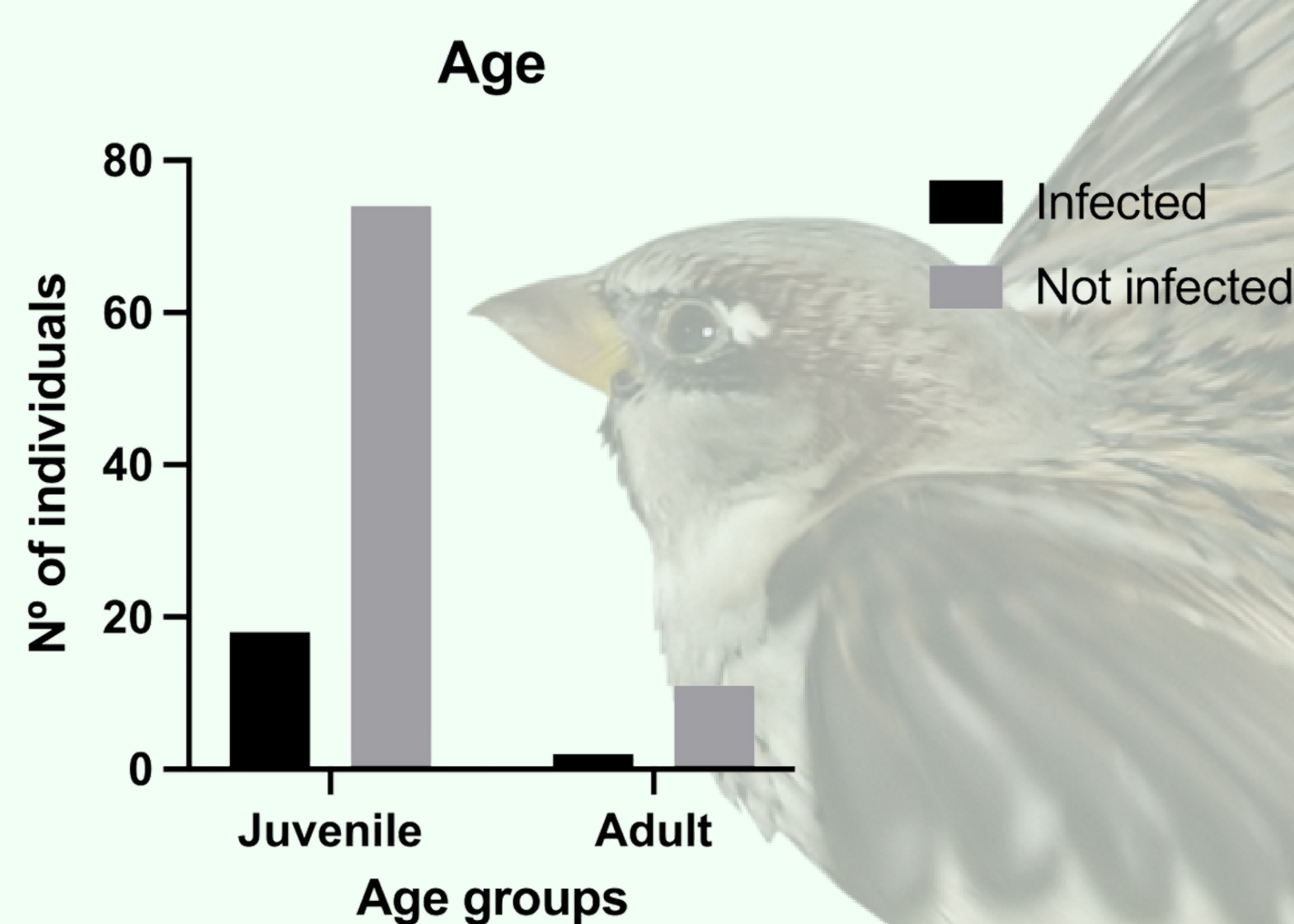


Figure 3: Number of house sparrows infected and non-infected with *Plasmodium* spp. grouped by age.

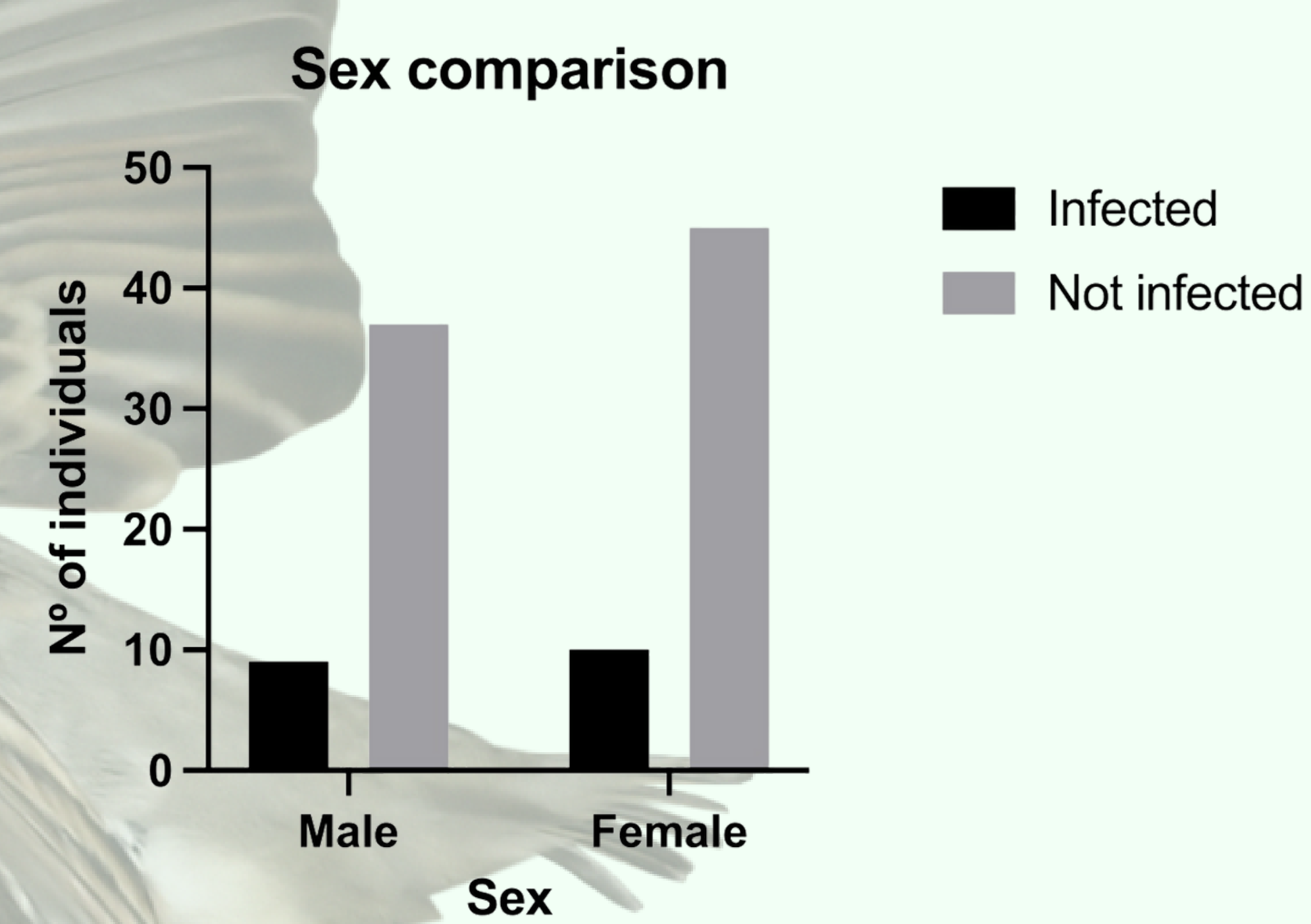


Figure 4: Number of house sparrows infected and non-infected with *Plasmodium* spp. grouped by sex.

DISCUSSION AND CONCLUSION

House sparrows in Barcelona are infected by *Plasmodium* spp. in a lower intensity than other areas in Spain and Europe.

Leucocytozoon and *Haemoproteus* have not been found in our study, despite having been detected in Barcelona. This lack of infection could be explained by differences in the specific competence and abundance of potential insect vectors or their feeding patterns.

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