Do differences in water flow influence parasitic prevalence in tadpoles of Alytes (Anura: Alytidae)?

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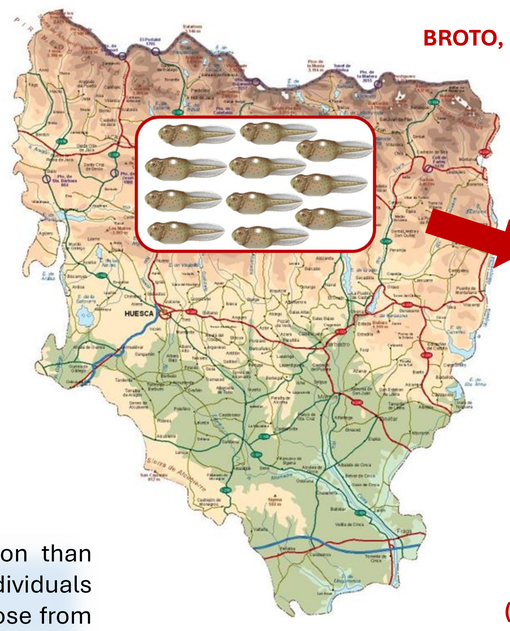
INTRODUCCIÓN AND ODJECTIVES

The prevalence of parasites in amphibians reflects the interaction between environmental and ecological factors, such as water dynamics and host density, influencing transmission and population health.

- Analyse how habitat characteristics influence the prevalence of parasitic infection in tadpoles of the genus *Alytes*.
- Assess the value of herpetological collections as a source of information for ecological and parasitological studies.

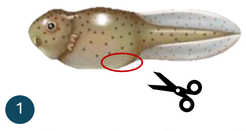
MATERIAL AND METHODS

Five hundred *Alytes* tadpoles were captured and added to the MNCN-CSIC Herpetological Collection. For the coprological study, 30 specimens from running water and 30 from stagnant water were selected, and their digestive contents were examined under a microscope to identify parasites.

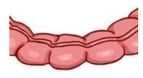


HERPETOLOGY COLLECTION (MNCN-CSIC, MADRID, SPAIN)

Coprological analysis

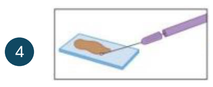


1 Extraction of a small intestinal portion

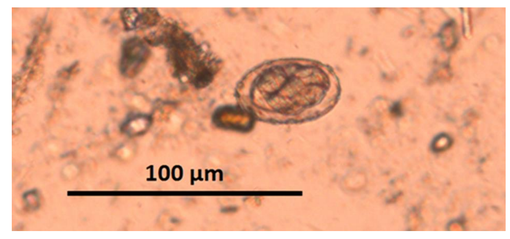


2 Extraction of intestinal contents

3 Sample preserved in cold ethanol 70º



4 Extension on slide (0.25 ml) and visualization under microscope



PREELIMINARY RESULTS

Tadpoles from stagnant waters showed a significantly higher prevalence of infection than tadpoles from running waters. Similarly, the parasite load was considerably higher in individuals from stagnant waters, which had a clearly higher abundance of helminth eggs than those from running waters (Fig. 1).

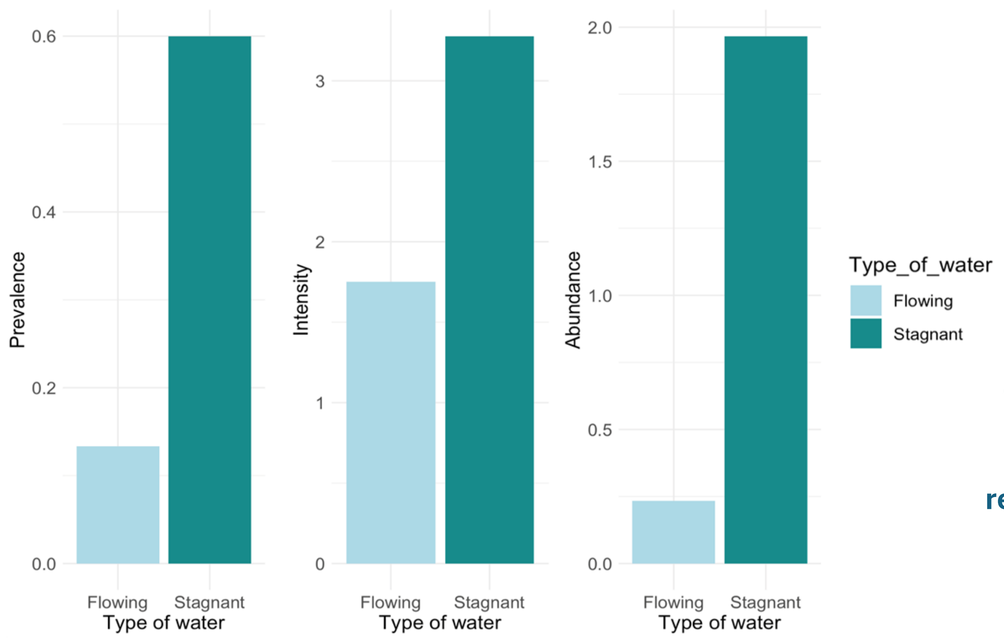


Figure 1. Comparison of the prevalence, intensity, and abundance of parasitic infection in Alytes tadpoles from habitats with running water and stagnant water.

related to their body length

related to the sampled locations

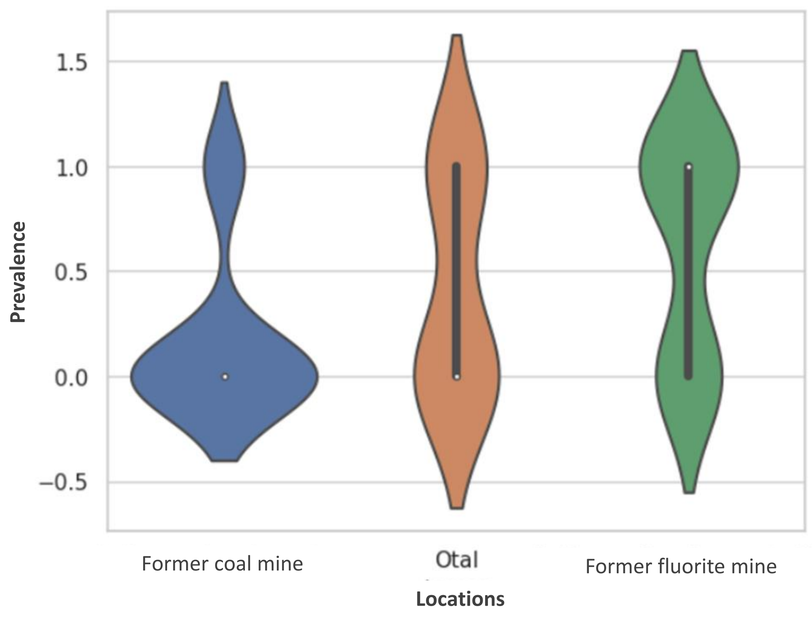


Figure 3. Distribution of infection prevalence in Alytes tadpoles from three locations in the province of Huesca: former coal mine (running water), Otal mine (standing water) and former fluorspar mine (standing water).

Regarding the relationship between body length and infection, a positive association was observed in stagnant waters, with larger tadpoles tending to have a higher parasite load. In contrast, no apparent relationship between body size and degree of parasitism was detected in tadpoles in running water (Fig. 2).

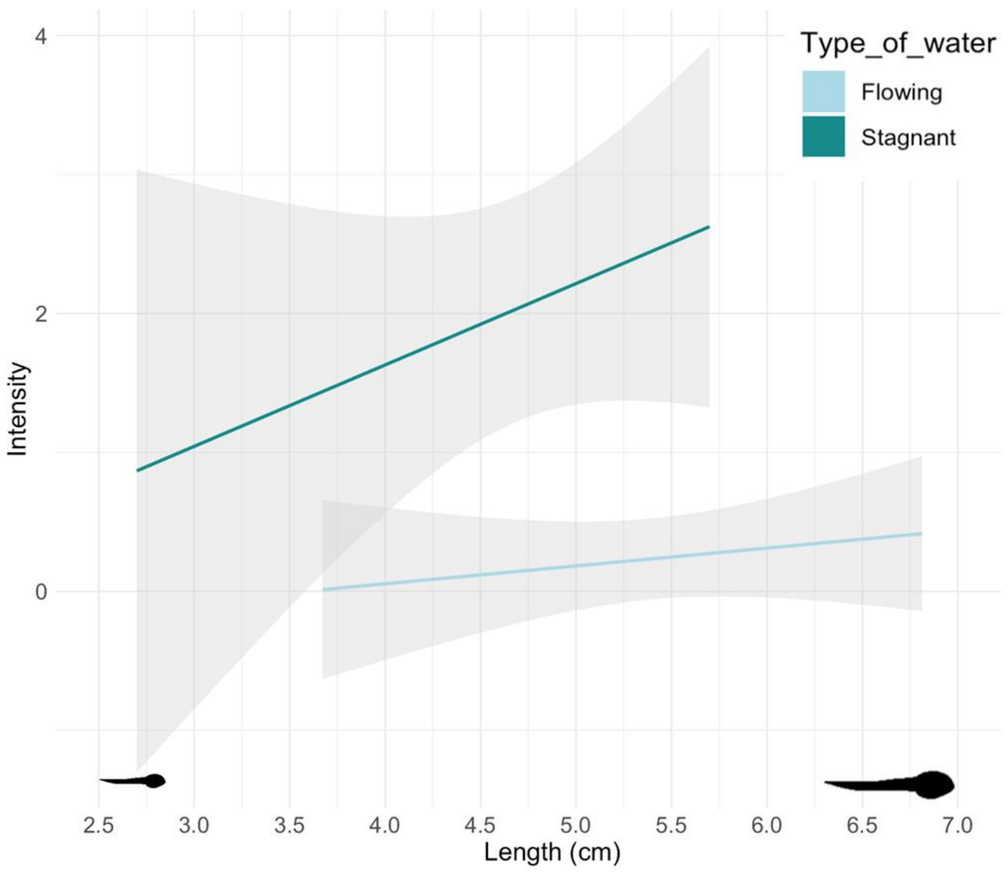


Figure 2. Relationship between body length and parasite load in *Alytes* tadpoles from habitats with flowing and stagnant water.

The tadpoles from the old coal mine, characterised by running water, showed very low prevalence values and a narrow distribution, indicating reduced and relatively homogeneous infection among individuals.

In contrast, tadpoles from the Otal and fluorspar mines, both with stagnant water, exhibited a clearly higher prevalence, with wider and asymmetrical distributions (Fig. 3). This reflects not only more frequent infection in these habitats, but also greater variability among individuals, suggesting that stagnant water conditions favour parasite transmission.

Overall, the figure shows an effect of habitat type on parasite prevalence: stagnant waters are associated with a higher probability of infection, while flowing waters seem to limit the transmission and establishment of parasites.

CONCLUSIONS

- Proven that **scientific collections can hold more diversity** than is known about.
- In flowing water, the parasite infection is low and hardly changes with size, indicating that this **environment may hinder parasite transmission**.
- Possible **relationship of body length with hibernation** associated with longer time in the water, and in turn, related to the prevalence of parasitic infection.

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