

The role of ground beetles as intermediate hosts for *Mastophorus muris*

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INTRODUCTION

We previously found that the prevalence and abundance of the *Mastophorus muris*, a cosmopolitan gastric spiruid nematode, were consistently higher in female bank voles than in males in our study sites in NE Poland. Furthermore, both prevalence and abundance were significantly higher in lactating voles but not in pregnant ones. Bank voles are generally considered to be omnivorous. However, during pregnancy and lactation, when protein requirements are high, bank voles enrich their diet with arthropods or vertebrate tissues. We hypothesize that due to increased content of invertebrates in their diet, including the intermediate hosts of *M. muris*, reproductively active female bank voles are exposed to infection with this nematode species. As we often found semi-eaten ground beetles in rodent traps, in the present study, we assessed the role of ground beetles as intermediate hosts for *M. muris*.

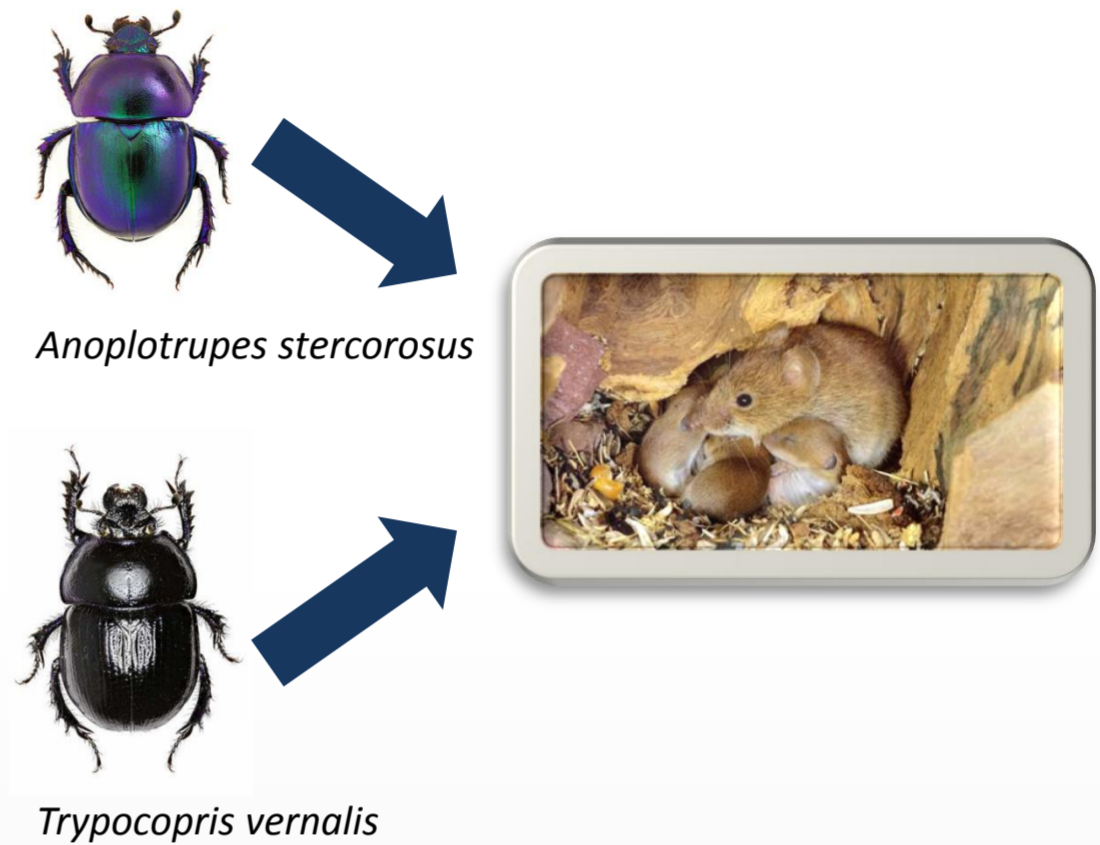


Figure 1. *M. muris* life cycle



MATERIALS AND METHODS

Two common ground beetles species (*Anoplotrupes stercorosus*, *Trypocopris vernalis*) were collected using pitfall traps in our rodent trapping in NE Poland. Collected individuals were identified, dissected, and then any parasites present were counted, transferred to a glass slide and examined under the light microscope. Larvae were stored in 70% ethanol for molecular analysis. Polymerase Chain Reaction (PCR) with specific primers was applied to search for *M. muris* DNA.

RESULTS AND CONCLUSION

DNA of *M. muris* was detected in 18 larvae obtained from 60 beetles, with an overall prevalence of 30% [95%CI 20.9-40.8]. Our study revealed that ground beetles, *A. stercorosus* and *T. vernalis*, may act as intermediate hosts and reservoir for *M. muris* in the natural environment. Therefore, reproductively active female bank voles implementing ground beetles in their diet may become infected with this parasite.

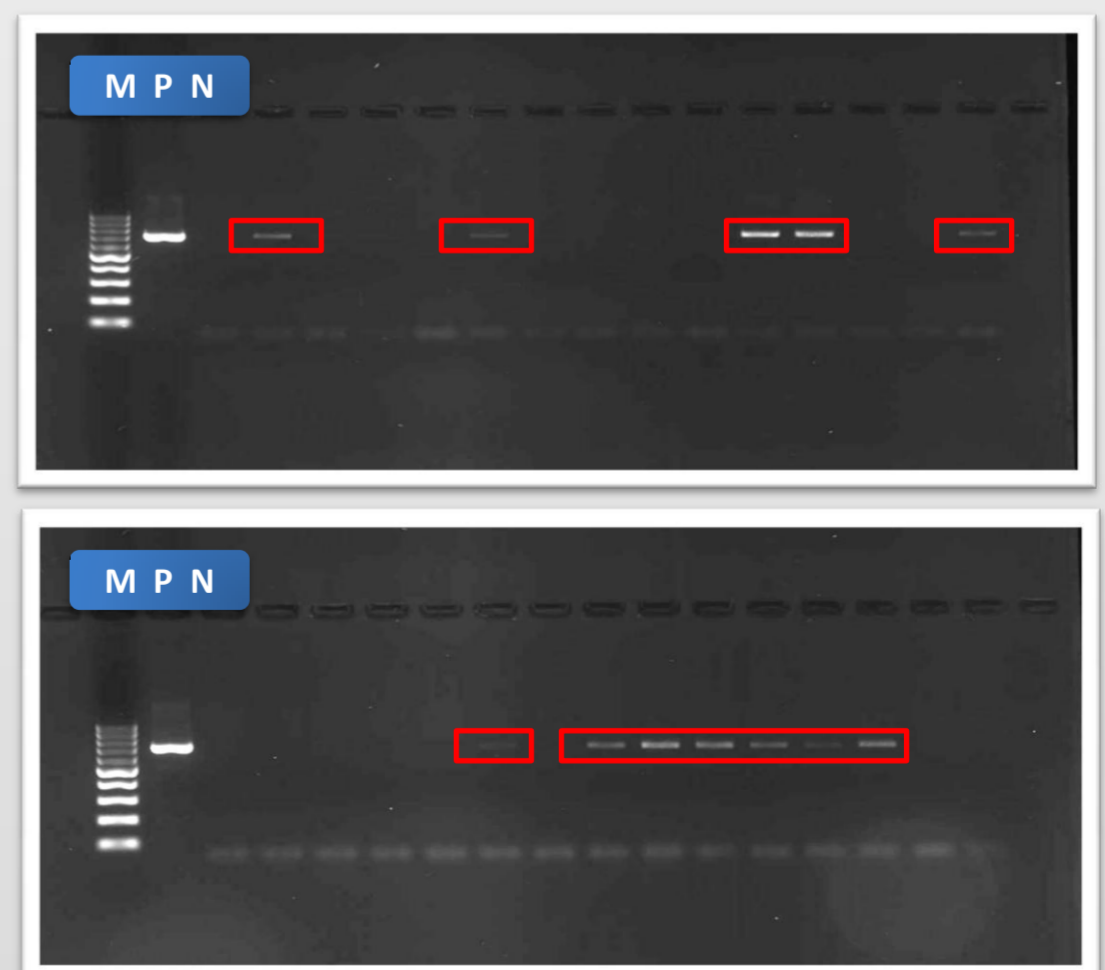


Figure 2. Agarose gel electrophoresis results of PCR; M – marker, P – positive control, N – negative control