

Prevalence of endoparasites in the European hedgehog (*Erinaceus europaeus*) within regions of the East midlands

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Background

Hedgehogs are common hosts to a diverse range of parasites, however heavy burdens can lead to impaired fitness. In particular lungworm is known to have deleterious effects on hedgehog health (Gaglio, *et al*, 2010). In Great Britain little research has been conducted on the parasitofauna of hedgehogs. Therefore, the purpose of this study was to identify species of endoparasites prevalent in the European hedgehog within regions of the East midlands.

Methodology

A total of sixty faecal samples were collected from wild hedgehogs located at rehabilitation centres within four regions (fig 1). Morphological analysis allowed for species identification and observational method included a modified McMaster technique with Sheather's sugar solution (56% sucrose) as flotation.

References:

Epe, C., Coati, N., Schnieder, T., (2004) Results of parasitological examinations of faecal samples from horses, ruminants, pigs, dogs, cats, hedgehogs and rabbits between 1998 and 2002. Dtsch. tierärztl. Wschr. Vol 111. No (6). pp 243-247.
Gaglio, G., Allen, S., Bowden, L., Bryant, M., Morgan, E.R., (2010) Parasites of European hedgehogs (*Erinaceus europaeus*) in Britain: epidemiological study and coprological test evaluation. European Journal of Wildlife Research. Vol 56. No (6). pp 839-844.
Lindsay, D.S., Dubey, J.P., Blagburn, B.R., (1997) Biology of *Isospora* spp. from Humans, Nonhuman Primates, and Domestic Animals. Clinical Microbiology Reviews. Vol 10. No (1). pp 19-34.
Majeed, S.K., Morris, P.A., Cooper, J.E., (1989) Occurrence of the lungworms *Capillaria* and *Crenosoma* spp in British hedgehogs. Journal of Comparative Pathology. Vol 100. No (1). pp 27-36.

Results

Figure 1 displays the total percentage of parasites prevalent in each region and figures 2, 3, 4 & 5 display micrographs taken during coprological analysis. Overall, nematodes were the most ubiquitous, comprising of 56% *Capillaria* spp (fig 2) and 23% *Crenosoma striatum* (fig 3). The trematode, *Brachylaemus erinacei* (fig 4) was prevalent in 21% of the samples and no species of cestode were identified. Protozoan oocysts (fig 5) were present in 76% of the samples and due to previous studies (Epe, *et al*, 2004) were established as *Isospora*.

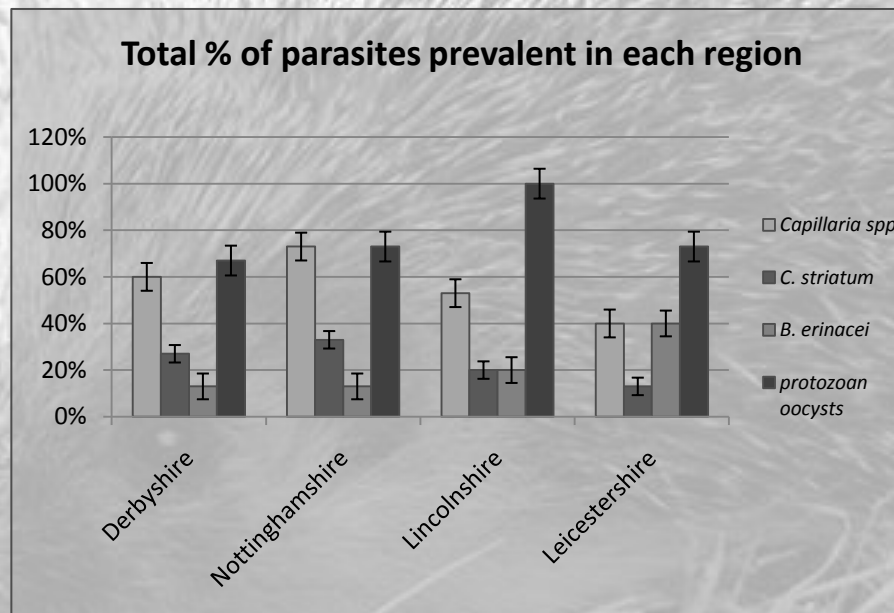


Figure 1, Total prevalence of each species of parasite within each region



Figure 2, eggs of *Capillaria* spp



Figure 3, *C. striatum* larvae



Figure 4, *B. erinacei* eggs

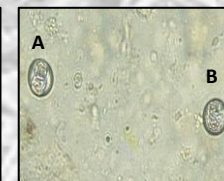


Figure 5, Protozoan oocysts (A) sporulated, (B) unsporulated

Discussion

Both nematode species use mollusc intermediate hosts, which are a common food source for hedgehogs. However, prevalence of *C. striatum* was expected to be higher as these parasites are host specific to the European hedgehog. The number of protozoan oocysts was unexpectedly high, in contrast to the significantly low presence of trematodes and complete absence of cestode species.

Limitations and improvements

Methodological approach could cause potential limitations in obtaining accurate results. Majeed, *et al*, (1989) reported histological analysis for *Capillaria* spp and *C. striatum* proved more reliable than coprological analysis. Conversely, Lindsay, *et al*, (1997) claimed coprological analysis to be an extremely effective method for detecting protozoan oocysts. Future research could include further methodological experimentation. Studies into the distribution of intermediate hosts could also prove beneficial.

Conclusion

In summary this study has helped determine which species of parasite are most prevalent as well as distinguishing regional abundance.