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Intestinal parasite infection exposes grouse to canine predators

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Background

Sublethal parasite infections may cause mortality indirectly by exposing the host to predation. The best known example of this among birds is red grouse in which caecal nematode infection causes increased risk of predation and can even affect population dynamics [1]. Intestinal helminth parasites are common in forest grouse, capercaillie *Tetrao urogallus*, black grouse *Tetrao tetrix* and hazel grouse *Bonasa bonasia* [2], and these grouse are valuable prey for several species of predators. We evaluated the hypothesis that parasite infection makes the host more vulnerable to predation by comparing the intestinal parasite infection status of grouse hunted with a trained dog to that of grouse hunted without a dog. Hunting with a dog can be regarded as close simulation of natural predation because the dog presumably locates the prey by the same cues as wild canine predators.

Material and methods

We collected whole grouse intestines from hunters and received 623 samples of which the bird species, age class and sex were determined. All sample birds were shot with a shotgun during legal hunting season in September and October. Intestines were cut open and parasites visible to naked eye or stereomicroscope were extracted and identified. The associations between host sex, age, species, the month of sampling, the use of dog and the occurrence of intestinal helminths were studied using hierarchical loglinear modelling with backward elimination procedure (P = 0.05) (SPSS programme ver. 11.5). Two different models were studied, one for cestodes (all three species pooled together) and one for nematodes.

Results and conclusions

Grouse were infected by four helminth species: a nematode *Ascaridia compar* and cestodes *Skrjabinia cesticillus*, *Paroniella urogalli* and *Hymenolepis* sp. Nematode infection was not connected to dog-assisted hunting. However, there was a significant interaction between cestode infection and the use of dog ($P < 0.01$). Cestodes were more common in grouse hunted with a dog (see Figure 1).

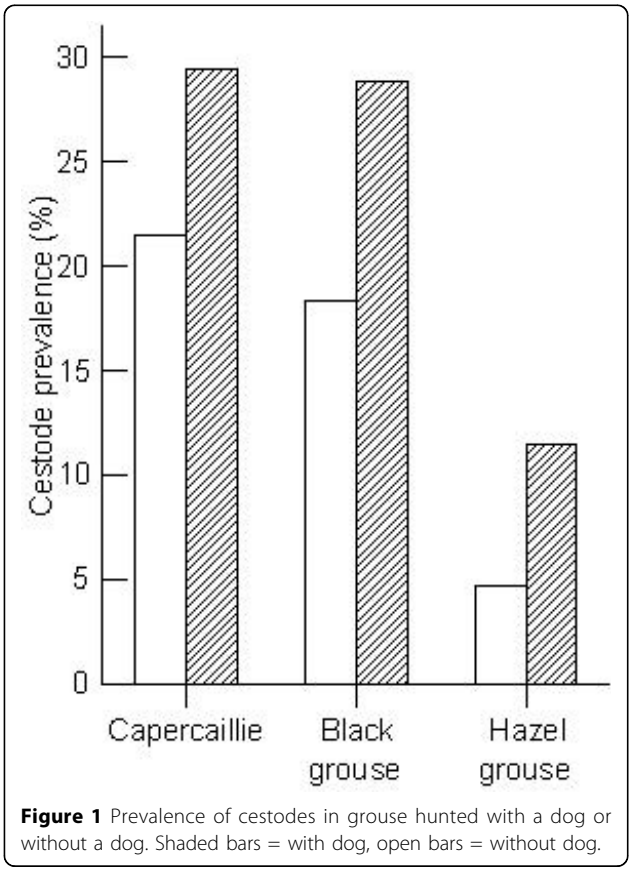

Figure 1 Prevalence of cestodes in grouse hunted with a dog or without a dog. Shaded bars = with dog, open bars = without dog.

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Cestodes were mostly parasites of juvenile grouse but even among juveniles only, cestodes were more prevalent in the dog-assisted hunting bag. The results suggest that mammalian predators prey more selectively on parasitized individuals and that intestinal parasites may contribute to the high mortality of juvenile grouse through increased predation.

This abstract is based on a recent paper published in Annales Zoologici Fennici by the same authors [3].

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