

**Do sheep worms occur in
wild hares and rabbits in Australia?**

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Declaration

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Abstract

Areas of common grazing between hares (*Lepus europaeus*), rabbits (*Oryctolagus cuniculus*) and sheep (*Ovis aries*) are widespread in south eastern Australia. For much of the year, lagomorphs are exposed to the infective larvae of the nematode parasites of livestock on farm pastures. Given that gastrointestinal parasites are a major problem for sheep graziers and that in experimental circumstances sheep helminths are able to develop in rabbits and hares, free-living lagomorphs were investigated regarding carriage of ovine nematode parasites under field conditions. 110 hares and 88 rabbits were shot by hunters in paddocks previously grazed by sheep or in vineyards near sheep pastures. Lagomorphs were acquired from November 2010 to August 2012 from the Adelaide region of South Australia, the western district of Victoria and central western New South Wales. Total helminth counts and examinations of spicule morphology were performed. PCR was utilized to confirm findings. My study revealed that the ruminant worm, *Trichostrongylus colubriformis*, is common in hares (prevalence 32.7%) and also, occasionally, occurs in rabbits (prevalence 3.4%). Statistical analysis showed no significant effects of age or sex of either hares or rabbits, in prevalence of worms ($P > 0.05$). Chi-Square and Fisher Exact tests were performed and showed that, in general, nematode parasite infestations were not significantly different in hares or rabbits ($P > 0.05$) for all regions examined. However, while the ruminant nematode *T. colubriformis* occurred more frequently in hares, rabbits were more commonly infected with the lagomorph-specific *Trichostrongylus retortaeformis* (prevalence 61.4%). The lagomorph worm *Graphidium strigosum* was mainly found in rabbit stomachs obtained from New South Wales. The ruminant nematode *Trichostrongylus rugatus*, was identified infecting four hares and one rabbit from the Adelaide region, South Australia, and is reported for the first time in wild lagomorphs. Cross-transmission of nematodes between lagomorphs and sheep in the natural environment is much more prevalent than previously believed. Further studies will contribute important information to assist sheep producers manage nematode gastrointestinal parasites and may also lead to newly identified causes for the declines of lagomorph populations in various parts of the world.

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