

FAQ - Will dogs in New Zealand be at greater risk from the nematode *Spirocerca lupi* if the 11 new species of dung beetles are released?

Dung beetles have been implicated overseas as important intermediate hosts for this unpleasant nematode that can cause serious disease or even death in dogs and other canids. However, we do not consider that the introduction of the 11 proposed species of dung beetles in NZ will increase the risk of dogs contracting this parasite in NZ because:

1. In South Africa only dung beetles specializing on omnivore dung were parasitized by *S. lupi*¹. Our 11 species show a preference for large mammalian herbivore dung. The lead and second authors of a publication investigating transmission of this disease¹ do not believe the 11 species present a risk to NZ (Du Toit and Scholtz, personal communication). Indeed, Prof. Clarke Scholtz stated to ERMA (now EPA) that these species will not be a vector of disease http://dungbeetle.org.nz/wp-content/uploads/2012/08/enr_report_supporting_documents.pdf.
2. Although there is a single record of *S. lupi* being detected in a dog imported to NZ from Singapore^{2,3} *Spirocerca lupi* is not established in NZ⁴.
3. *Spirocerca lupi* appears to be confined to tropical or sub-tropical regions⁵.
4. NZ does not have a wild canid population (feral dogs, coyotes, wolves, foxes) providing a reservoir for the nematode⁶.
5. Anthelmintic drugs are effective as prophylactics against *S. lupi*. Prevention and control in South Africa have been briefly reviewed⁷ and are discussed on various websites e.g.: http://www.chai.org/en/companion/health/caring_dog_spirocercalupi.htm
6. Evidence from Australia indicates that introduced pastoral dung beetles are not vectoring *S. lupi* there. Pastoral dung beetles have been present in Australia for decades but records of infection are extremely rare and confined to northern Australia⁸⁻¹⁰.
7. NZ already has a self-introduced species of Australian dung beetle *Onthophagus granulatus* which is one of a suite of native species that readily exploit dog faeces in Australia¹¹. Given that *Onthophagus* spp can be infected with *S. lupi*^{7,12}, then it seems that NZ has had a potential *S. lupi* intermediate vector. So why haven't we had a *S. lupi* problem in New Zealand; perhaps because of reasons 2, 3, 4 and 6 above?

References

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- ⁷ Gottlieb Y., Markovics A., Klement E., Naor S., Samish M., Aroch I., Lavy E. 2011. Characterization of *Onthophagus sellatus* as the major intermediate host of the dog esophageal worm *Spirocerca lupi* in Israel. *Veterinary Parasitology* 180: 378-82.
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- ¹⁰ Trueman KF, Parker R, Bock RE, Roeger HM 1980. *Spirocerca lupi* in a dog. *Australian Veterinary Journal* 56, 511.
- ¹¹ Faithfull, I., 1992. Records of native dung beetles *Onthophagus pexatus* Harold, *O. auritus* Erichson and *O. granulatus* Boheman (Coleoptera: Scarabaeidae) at dog scats and their potential for biocontrol of dog dung. *Victorian Entomologist* 22 (5), 105–108.
- ¹² Chhabra, R. C. 1979. Some studies on *Spirocerca lupi* (Rudolphi 1809) Chitwood, 1933. *Agra University Journal of Research* 3, 83-85. (Abstract only accessed)