



**Professor Richard Wall**  
**B.Sc.(Dunelm.), M.B.A.(Open), Ph.D.(Liv.)**

Professor of Zoology

**Area of research**

Veterinary Entomology: Parasitology and Ecology

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**Summary**

My research focuses on the ecology, behaviour and control of arthropod parasites and disease vectors of veterinary importance. I also have interests in pastureland ecology and the effects of insecticides on decomposition processes. A key feature of my approach has been the use of fundamental ecological and epidemiological principles to inform practical control applications. Further information about my [research and research group](#).

**Topics I am interested in:**

- Ticks and tick borne disease
- Myiasis and mange
- Essential oils for ectoparasite control
- Impacts of climate change on ectoparasites

**Ticks and tick-borne disease**

Apparent changes in tick distributions and the prevalence of tick borne disease (TBD) within Europe have been reported over the last 10-20 years. Climate change may be responsible in part for this, but changes in habitat management, host movement patterns and changes in abundance, particularly deer, may be equally important. The recent removal of compulsory tick treatment for companion animals entering the UK from continental Europe is a further factor which has raised fears about the potential for the introduction of new tick species or new tick-borne pathogens. Given the complexity of the climate/vector/host/pathogen interactions, it is difficult to differentiate the impact of the various risk factors to allow confident predictions about future tick-borne disease epidemiology. In our ongoing studies we examined the distribution and prevalence of ticks infesting domestic dogs in Great Britain; the results show that 50% of veterinary practices surveyed reported that at least 15% of dogs selected at random were carrying ticks and 15% of practices reported that more than 50% of dogs carried ticks. *Borrelia* was detected in 2% of ticks tested, *Babesia* spp. in 2% and *Anaplasma* in 2%. We are currently examining the potential for urban green spaces to act as epidemiological bottlenecks for TBD. Conservation strategies which encourage the greater integration of green-spaces into the urban and peri-urban environments and their management for wildlife and biodiversity, provide important recreational spaces but also facilitate an increase in abundance of hosts such as small mammals and deer. This is likely to lead to an increase in the abundance and distribution of ticks and an increased exposure of people and companion animals to ticks in environments such as gardens and parks. Changes may also be associated indirectly with social and economic trends, often mediated by climate, which influence outdoor activity, exposure and the risk of being bitten.

**Essential oils for ectoparasite control**

The control of ectoparasites of veterinary importance using synthetic neurotoxic insecticides has been progressively undermined by the development of insecticide resistance. In addition, restrictions on the use of some insecticides because of their effects on human health and the environment have led to

increased research into the development of alternative approaches to ectoparasite management. My research is investigating the use of botanical alternatives, particularly essential oils; we are currently testing and commercialising essential oil formulations for practical use by pet and livestock owners, particularly to help manage infestations of mites, lice and ticks. We are working closely with our commercial partner AgriEnt Limited (<http://www.agrientlimited.com/>).

Further information about my [research and research group](#).

## Memberships

### Organisations

[School of Biological Sciences](#)

### Other sites

- [Infection-immunity](#)

### Research groups

- [Plant and Agricultural Sciences](#)
- [Ecology and Environmental Change](#)

## Recent publications

- Lihou, K & Wall, R, 2019, '[Sheep blowfly strike: the cost of control in relation to risk](#)'. *animal*.
- Abdullah, S, Helps, C, Tasker, S, Newbury, H & Wall, R, 2019, '[Pathogens in fleas collected from cats and dogs: Distribution and prevalence in the UK](#)'. *Parasites and Vectors*, vol 12.
- Arias-Robledo, G, Stark, T, Wall, RL & Stevens, JR, 2019, '[The toad fly \*Lucilia bufonivora\*: its evolutionary status and molecular identification](#)'. *Medical and Veterinary Entomology*, vol 33., pp. 131-139
- Abdullah, S, Helps, C, Tasker, S, Newbury, H & Wall, R, 2018, '[Prevalence and distribution of \*Borrelia\* and \*Babesia\* species in ticks feeding on dogs in the U.K.](#)'. *Medical and Veterinary Entomology*, vol 32., pp. 14-22
- Duplan, F, Davies, S, Filler, S, Abdullah, S, Keyte, S, Newbury, H, Helps, CR, Wall, R & Tasker, S, 2018, '[Anaplasma phagocytophilum, Bartonella spp., haemoplasma species and Hepatozoon spp. in ticks infesting cats: A large-scale survey](#)'. *Parasites and Vectors*, vol 11.
- Goode, P, Ellse, L & Wall, R, 2018, '[Preventing tick attachment to dogs using essential oils](#)'. *Ticks and Tick-borne Diseases.*, pp. 921-926
- Robledo, GA, Stevens, J & Wall, R, 2018, '[Spatial and temporal habitat partitioning by calliphorid blowflies](#)'. *Medical and Veterinary Entomology*.
- Chivers, CA, Vineer, HR & Wall, R, 2018, '[The prevalence and distribution of sheep scab in Wales: A farmer questionnaire survey](#)'. *Medical and Veterinary Entomology*.
- Abdullah, S, Davies, S & Wall, R, 2018, '[Spectrophotometric analysis of lipid used to examine the phenology of the tick \*Ixodes ricinus\*](#)'. *Parasites and Vectors*, vol 11.
- Sands, BO, Mgidiswa, N, Nyamukondiwa, C & Wall, RL, 2018, '[Environmental consequences of deltamethrin residues in cattle faeces in an African agricultural landscape](#)'. *Ecology and Evolution*, vol 8., pp. 2938-2946

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