

Infection connections: Badger surveillance project reveals how TB infects their social networks

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Researchers at the University of Exeter and the AHVLA's National Wildlife Management Centre have shown that the social lives of badgers are related to their risk of infection with bovine tuberculosis (TB).

By equipping more than 50 wild badgers with electronic 'proximity collars' that automatically tracked their social contacts, Exeter PhD Student Nicola Weber built a network of contacts across the population and analysed patterns of infection. She found that TB-infected animals were less well-connected to their own groups than uninfected badgers, but at the same time infected individuals formed important links for the flow of infection between groups.

The research, which is published today in the journal *Current Biology*, suggests this unusual social arrangement may stabilise the spread of TB infection across the population.

Professor Robbie McDonald from the University of Exeter said: "This study has revealed an important link between social networks and TB infection. Infected animals were likely to be less important for spread within groups while at the same time being more important for spread between groups.

"Social stability is thought to mitigate disease spread, perhaps by maintaining the distinctive position of these individuals. Culling badgers

perturbs social structures and we think our findings may help understanding of so-called 'perturbation', where culling has been linked to increases in TB in badgers.

"Curbing TB infection in wildlife remains a challenge. Vaccination has the potential to disrupt disease flow, without perturbing social network structures," said McDonald.

Tuberculosis infection in cattle is a major animal health challenge in the UK and Ireland. In 2012, more than 8 million tests were conducted on cattle and 38,000 cattle were slaughtered to control TB. This testing and the resulting compensation are costly; controlling TB costs the UK taxpayer around £100m every year.

The study of the spread of disease through analysis of social networks has applications beyond [badgers](#). The network analyses involved are similar to those used in people and so these techniques can be used to learn about how infection is transferred in a range of behaviourally complex hosts including humans, livestock and wildlife.

More information: *Current Biology*, Weber et al.: "Badger social networks correlate with tuberculosis infection"

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