How much do badgers contribute to bovine TB in cattle?

A summary of Donnelly & Nouvellet (2013)

One study which has attempted to answer this question in England is Donelly & Nouvellet (2013).

Donnelly, C.A. & Nouvellet, P. (2013) The Contribution of Badgers to Confirmed Tuberculosis in Cattle in High-Incidence Areas in England. PLoS Currents Outbreaks

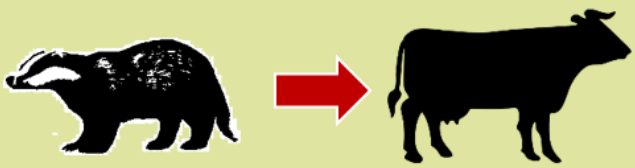
What did the study involve?

The study involved mathematical modelling using data from the proactive culling areas in the RBCT (Randomised Badger Culling Trial). The models involved a series of equations. Some parameters in these equations were already known or could be estimated using other data (e.g number of infected badgers, number of herds under restrictions, testing rates etc). The model was also used to estimate several unknown parameters in order to calculate two key figures: **1) The overall % contribution of badgers to cattle TB incidence, 2) the % of transmission which is badgers to cattle.**

The study also used analyses from an earlier study which estimated the maximum reduction in cattle TB incidence in the 10 proactive culling areas during the RBCT. All data are from confirmed TB breakdowns.

What were the results?

6% (1% to 25%) confidence interval

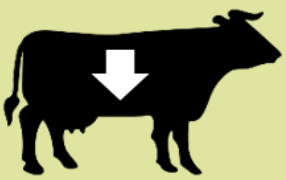


% of TB transmission which is badgers to cattle herds

52% (9% to 100%) confidence interval

The overall contribution of badgers to cattle TB breakdowns
(this includes badger to cattle transmission and onward cattle to cattle transmission to other herds)

-54% (-38% to -66%) confidence interval



Maximum decline in cattle TB incidence 18 months after culling in the RBCT

What do the results mean?

The 6% and 52% results are estimates from a model (using data from a specific area and time) and there is a lot of uncertainty around these values. Nevertheless, taken together with the results from the RBCT the findings of the study support two important conclusions:

1. **Badgers play a major role in maintaining *M. bovis* infection in cattle** (in areas like the RBCT areas where badgers are infected).
2. **Cattle to cattle transmission also plays a major role in the spreading of infection.** (as a significant proportion of events are not due to badgers, and because cattle to cattle transmission amplifies badger to cattle transmission events)

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Created on 11/06/18 by Dr Andrew Robertson. For more info on this study and my work visit www.TBKnowledgeexchange.co.uk