

Bovine TB and Badgers – Some Facts

Background

Bovine TB is one of a number of diseases that affect cattle. Its incidence has increased in the last decades of the 20th century and early 21st century. It is a particularly serious problem for farmers since not only do infected cattle get slaughtered, but restrictions on the movement of cattle are imposed until the herd tests negative on two occasions 60 days apart. Farmers are only compensated for their slaughtered cattle. It is a different disease from that regularly seen in humans, and although bovine TB may infect humans, today the disease poses no significant health problems directly to us in the UK.

Bovine TB has been found in a whole range of wildlife species including rats, squirrels, foxes, deer and badgers, the latter having been implicated in transmitting the disease to cattle. For this reason the government invested £50 million in a controlled badger culling trial commencing in 1998 (see below).

The Science

A huge scientific culling trial, the Randomised Badger Culling Trial or RBCT (DEFRA 2007), was commissioned by the government to assess the role of badgers in transmitting bovine TB to cattle. It was overseen by an Independent Scientific Group (ISG) over nearly 10 years with the killing of 11,000 badgers. Whilst they did find that badgers do contribute significantly to the disease in cattle, they recommended that ***'Given its high costs and low benefits we therefore conclude that badger culling is unlikely to contribute usefully to the control of cattle TB in Britain, and recommend that TB control efforts focus on measures other than badger culling'***. They also showed that as the result of disruption to the social groups of badgers through culling (perturbation), levels of bovine TB in cattle may increase in certain areas. Cattle to cattle transmission is considered to be the main cause of bovine TB spread in cattle. In the second half of the last century a bovine TB epidemic in UK was controlled solely through cattle based measures of preventing disease transmission from cattle to cattle. Lapse in these control measures has contributed to the current epidemic.

In recent years an injectable vaccine for badgers has been licensed for use as a non-lethal intervention in the control of bovine TB in badgers. Large scale vaccination has been undertaken in Wales by the Welsh Government, and increasingly has been used selectively in the field by a number of groups in England including the Badger Trust and some Wildlife Trusts such as the LRWT.

Current situation on badger culling post the RBCT

History

Despite the scientific findings of the RBCT, the British Coalition Government and subsequently the Conservative Government decided to introduce a programme of culling badgers in England from 2013. Initial pilot culls in west Somerset and west Gloucestershire were to assess only whether the methodology was humane, safe and effective in killing up to 70% of badgers, initially over 6 weeks. Licensed syndicates shot and cage trapped 940 and 921 badgers over periods extended to 9 and 11 weeks in each area, respectively. Care for the Wild, an international non-governmental animal charity; estimated the cost to be about £4,000 per dead badger (total £7.3 million). ***NB An Independent Expert Panel concluded the culls significantly failed to meet appropriate standards of effectiveness and humaneness.*** Nevertheless, the Government continued culling in Somerset and Gloucestershire in 2014, and included Dorset in 2015, *without any independent review.*

Subsequently, the Government has expanded the culling programme, with no independent scientific oversight, increasing to 43 zones in 2019 with between a further 37,000 and 64,000 badgers expected to have been killed (final figure not yet publicly released). After six years of this programme, up to 130,000 badgers have been killed.

Scientific analysis since the RBCT

Continuing on from the RBCT, the work of Donnelly & Nouvellet (2013) significantly indicated that fewer than 1 in 17 (6%) bTB outbreaks in cattle are the result of badger-to-cattle transmission and that the remainder are within or across herds of cattle, or lapses in biosecurity. Equally importantly, Carter *et al.* (2012) show that vaccinating badgers reduces the risk of a badger showing bTB infection by more than 50% and that when 1/3rd of a social group has been vaccinated then the risk of unvaccinated cubs showing bTB is reduced by 79%. Vaccination, then, would further reduce the risk of badger-to-cattle transmission of bTB.

In 2018 a major Government sponsored review of its policy of controlling bovine TB in cattle, conducted by Oxford University Professor Sir Charles Godfray (DEFRA 2018) concluded that it is wrong to over-emphasize the role of wildlife in the spread of the disease. It suggested that culling (or possibly a non-lethal intervention, currently vaccination) of badgers can have a 'modest impact'. In particular, the review emphasized the limitations in the current cattle testing regime and the poor take-up of on-farm biosecurity measures to reduce the spread of bovine TB on farms.

Analysis of 4 years of the recent badger cull programme in Gloucestershire and Somerset suggests some but variable evidence of a reduction in bTB incidence in cattle in the cull zone, but it cannot be confirmed from the results that any reduction is actually contributable to badger culling (Downs *et al.*, 2019). The researchers themselves state that the impact of the cull cannot be separated from other measures aimed at reducing bovine TB in cattle such as cattle movement controls, better TB testing and greater biosecurity, which were also undertaken in the area at the same time.

Further Downs *et al.* (ibid) state that because of the variety of different characteristics in the farming landscapes across the countryside, such as differences in badger or cattle populations and densities, the results gained so far from the badger cull programme cannot be taken as an indication that a badger cull in other areas may result in possible reductions in bTB incidence in cattle.

To complicate matters further, Ham *et al.* (2019) have recently reinforced evidence of the perturbation effect that culling a population of badgers causes. They showed that culling leads to surviving badgers roaming further. They covered 61% more land each month than they had before the cull began and visited 45% more fields each month leading to a 20-fold increase in the chance of visiting neighbouring badger territories each night. These changes potentially may lead to an increase in the risk of TB transmission both to cattle and to other badgers.

LRWT's Overview

Our view is that the available evidence from *independent* scientific sources clearly does not justify the widespread culling of badgers and consequently we will oppose any application to cull badgers for the control of bovine TB in cattle. Measures to reduce cattle to cattle transmission such as improved TB testing, better control of cattle movements and increased on-farm biosecurity must be significantly improved, alongside the use of targeted badger vaccination where considered appropriate.

Irrespective, development of a suitable cattle vaccine, acceptable to other trading countries, is likely to be the best control strategy for this disease in the future.

Carter *et al.* (2012) BCG Vaccination Reduces Risk of Tuberculosis Infection in Vaccinated Badgers and Unvaccinated Badger Cubs <https://doi.org/10.1371/journal.pone.0049833>

Department for Environment, Food and Rural Affairs (2007). Bovine TB: The Scientific Evidence: Final Report of the Independent Scientific Group on Cattle TB.

Department for Environment, Food and Rural Affairs (2018). A strategy for achieving Bovine Tuberculosis Free Status for England: 2018 review.

Donnelly, C. A., & Nouvellet, P. (2013). The contribution of badgers to confirmed tuberculosis in cattle in high-incidence areas in England. *PLoS Current Outbreaks*, 5, 1–11

Downs, *et al.* (2019) Assessing effects from four years of industry-led badger culling in England on the incidence of bovine tuberculosis in cattle, 2013–2017, *Scientific Reports*, 9, 1, (2019).

Ham *et al.* (2019) Effect of culling on individual behaviour *Meles meles* behaviour: Potential implications for bovine tuberculosis transmission. *Journal of Applied Ecology*. DOI:[10.1111/1365-2664.13512](https://doi.org/10.1111/1365-2664.13512)