



comment

bovine tb and badgers

The study of wildlife ecology is a fascinating subject, where processes in one part of the natural system can have profound effects on other, apparently unconnected components. Ecological processes impact on pathogen dynamics, particularly in wild animal populations, and their understanding can be of crucial importance in developing effective disease management strategies. Bovine tuberculosis (bTB) is a case in point; this is a serious disease problem which costs taxpayers and farmers a great deal of money. While the human health risks are minimal, there is a potential for human infection and the impact on the farming industry is significant. Badgers were first implicated in the spread of bTB to cattle herds in southern England in the 1970s; since then further evidence has emerged to support the contention that badgers are indeed involved. The extent of their involvement, however, has always been unclear. Nevertheless, badger culling has often been part of historic strategies to control the potential for spread to cattle, first by gassing setts and later by various strategies involving trapping and shooting. There is currently a debate as to whether badger culling should once again form part of the control strategy for this disease.

Back in the early 1980s a handful of ecologists ventured to suggest that it was possible that the impact of culling itself on the behaviour of badgers could potentially increase the risk of spreading disease. In 1996 an independent review by Sir John Krebs recommended a field trial, and a study was designed whereby two potential culling policy options – ‘proactive’ and ‘reactive’ culling of badgers – could be scientifically assessed. Implementation of what has become one of the largest field

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experiments ever undertaken, at a cost to taxpayers of £50 million, was the responsibility of the *Independent Scientific Group on Cattle TB* chaired by Professor John Bourne. After nearly 10 years of work, involving meticulous attention to scientific rigour, the ISG's report, *Bovine TB: The Scientific Evidence*, has now been published. In summary, the ISG conclude that neither the proactive or reactive culling of badgers can be recommended as a means of controlling bTB in cattle. Reactive culling, where badgers were trapped on and around farms where TB outbreaks had occurred, led to an overall increase in cattle TB of approximately 26%. Proactive culling, where the strategy was to trap as many badgers as possible annually in cattle TB hot-spots, resulted in a 23% reduction in cattle TB in the core of the culled area, while there was an increase of similar magnitude on the edge, thus negating any potential benefits over the time and scale of the study. These somewhat counter-intuitive negative effects of culling were explained by what has been termed the ‘perturbation effect’, which is simply the disruption of the stable social structure typically found in undisturbed badger populations, leading to increased movement and enhanced contact, both between badgers and between badgers and cattle. Indeed, it is entirely plausible that past culling policies have exacerbated the spread of bTB.

As the ISG's results have emerged, they have been challenged, mostly from the farming and veterinary communities. Some of the criticism claimed that the trial was scientifically compromised. In response the ISG have made clear that the trial design, field activities, data collection and management, data analysis and other aspects of their work have

The culling of badgers to control the spread of bovine tuberculosis has been going on for over 30 years. **Chris Cheeseman** reviews the effectiveness of this strategy, in the light of a new study.

been subjected to ongoing independent audit. The results of the trial have been subjected to the rigours of peer review, prior to being published in some of the most prestigious and demanding international scientific journals. Another criticism has centred on the charge that not enough badgers were killed, and that if badgers were gassed in their setts, for example, the positive effects of culling would increase and the negative effects would diminish. Trapping efficiency in the trial was high and consistent with design expectations, and even if more badgers could have been killed, there is no evidence to suggest that this would have resulted in additional benefits in terms of decreased cattle breakdowns. The existing control strategy for this disease includes regular herd testing to identify infection in cattle, combined with the slaughter of reactors. In addition, new pre-movement testing requirements for cattle have been introduced, reflecting the scientific evidence that more rigorous application of cattle-based measures plays a central role in the control of this disease. Other work is underway to examine vaccines and improved farm husbandry to reduce disease transmission risks from wildlife. Even putting aside arguments about wildlife conservation, in a country where our indigenous fauna is under ever increasing pressure, the conclusion from the recent badger culling trial is profoundly simple: *we cannot disrupt badger populations by culling without potentially making the cattle TB problem worse.*

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