

BOVINE TUBERCULOSIS IN CATTLE AND BADGERS: Q AND A

FOR DECADES discussion and controversy has raged about bovine tuberculosis (bTB). For the Badger Trust it has sidelined other major issues—notably persecution—because of the insistence, led by farming unions that bTB will be solved only if badgers are slaughtered (culled is the word they prefer to use). Unperturbed by conclusive scientific evidence, the result of the near 10-year £50 million taxpayer-funded research programme by the Independent Scientific Group (the ISG) that killing large numbers of badgers would have no meaningful impact on the spread and control of this disease, they have continued to call for widespread “targeted” action. Badger Trust totally rejects this argument. But to put the issue into some context here we answer some of the points most frequently raised about bTB.

Q: What is bTB and how does it relate to the human version?

A: TB in cattle is a debilitating, highly infectious and progressive respiratory infection, very similar to human TB, caused by the organism *Mycobacterium Bovis* (*M. Bovis*), which forms lesions or “tubercles” (hence the name) most often in the lungs. Clinical signs of the disease are rarely visible in the early stages so detection relies on routine screening using the tuberculin “live test”. Before milk was pasteurised bovine TB in humans was common and often fatal. Today it’s rare. The human form of TB is more usually caused by *Mycobacterium tuberculosis* (*M. tuberculosis*).

Q: What does bTB do to cattle?

A: Grossly infected animals become emaciated, weak and lethargic and eventually die. But in countries with established test-and-slaughter eradication policies this doesn’t happen because the disease is detected in its relatively early stages. TB in warm-blooded mammals is a world-wide problem. Cattle are the main hosts—hence the name, bovine TB—but the disease affects many other mammals, from bison in Canada, to brush-tailed possum in New Zealand, buffalo in southern Africa and white-tailed deer in the United States.

Q: How do cattle catch TB?

A: Principally from other cattle by breathing in bacilli expelled by infected animals as tiny aerosol droplets. It may also be caught through contamination of feeding and watering sites and from infected wildlife, including badgers and deer and possibly from other farmed animals such as deer and camelids (llamas, alpacas etc). The risk of disease spread is greatest in enclosed, poorly ventilated areas—notably over-wintering barns and sheds where cattle spend months confined together—but any contact between cattle, at shows and markets, for example, in livestock lorries or at single-fence farm boundaries where they can come into contact with other cattle are other obvious transmission points.

On its website Defra says: *“Cattle-to-cattle transmission is a serious cause of disease spread”*. The Independent Scientific Group (ISG) in its final report describes cattle-to-cattle transmission as very important in high incidence areas and *“the main cause of disease spread to new areas”*.

That said it's worth adding that despite years of research, transmission routes (for example cattle to badger and badger to cattle) are still not properly understood.

Q: How do badgers catch TB?

A: From each other, from cattle (probably through infected urine and faeces) and possibly from other infected farm animals and wildlife. Badgers spend most of their life below ground sharing the same air space, tunnels and chambers with other badgers, but decades of research at Woodchester Park (by what was the Central Science Laboratory, now part of Fera, the Food and Environment Research Agency) has shown that infected badgers and TB-free badgers often share the same setts. This might be explained by acquired immunity in a proportion of badgers or simply that badgers do not easily infect each other.

Q: So not all badgers are infected?

A: Far from it. Most badgers are healthy. The Randomised Badger Culling Trials (RBCT) which form the basis of the ISG's final report and recommendations showed that even in bTB hotspots less than one in seven badgers were infected and when road-killed badgers from seven hotspot counties were examined the figures were almost the same (15 per cent infected).

Q: What does TB do to badgers?

A: The disease chiefly affects the lungs and kidneys. Infected animals lose weight and body condition and experience breathing problems. Though debilitating, bTB in badgers is rarely fatal. Generally, infected badgers do not show any signs of illness. Badgers suffering from the advanced stages of bTB become severely emaciated and as disease carriers are then described as excretors - this means they can potentially shed live bacilli. Levels of bTB in badgers in hotspot areas jumped sharply immediately following the foot and mouth outbreak in 2001-2002 when the routine bTB test and slaughter programme for cattle was stopped. So there's good evidence to suggest controlling bTB in cattle will reduce bTB levels in badgers.

Q: Why is so much attention focused on badgers in the bTB debate and so little on other wildlife, including deer?

A: That's really a question for Defra and farming interests to answer. Badger Trust has always taken the view that the near obsession with the alleged role of badgers has distracted attention away from more important research and cattle management issues. As to the specific question: foxes, squirrels, rats and deer are among wildlife known to suffer from TB. But in 2008 Defra said two research projects had concluded that except for two species of deer the likelihood of other mammals (excluding badgers) being a significant source of infection to cattle was extremely low. It's worth noting that all six species of deer in the UK suffer from TB.

Q: Why do so many farmers want to cull badgers?

A: They argue that bTB won't be beaten until all significant sources of the disease are tackled and to them that means killing wildlife, notably badgers. The National Farmers' Union, a key source of information for many farmers, has been especially aggressive in calling for a cull of badgers. Everyone involved in the bTB debate, which has raged for decades, accepts that the disease can have a devastating impact on farmers. That's not the issue. The debate is about the part played by badgers in spreading or maintaining TB in cattle, and whether slaughtering badgers --"culling" is an inappropriate description—is necessary to beat the disease. The Badger Trust has always argued that decisions must be based not on anecdotal evidence, certainly not on prejudice and rumour, but on science. The country invested the best part of £50 million in the culling trials conducted and analysed by the ISG. Its final report recommended a series of cattle-based measures which it said were likely to reverse the increasing trend in cattle disease incidence...and which in addition might also reduce disease in badgers. Yes, the ISG did say that "*...badgers do contribute significantly to the disease in cattle*" but it went on to say: "*...it is unfortunate that agricultural and veterinary leaders continue to believe, in spite of overwhelming scientific evidence to the contrary, that the main approach to cattle TB control must involve some form of badger population control.*" Crucially in its summary findings and recommendations the ISG said: "*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.*"

Q: Farming Minister Jim Paice has said "there's no country in the world that's got rid of TB without addressing the problem in wildlife".

A: Let's look at the facts. Here in the UK a bTB epidemic that began in the 1930s spiralled out of control and by 1960 was still infecting 16,000 of the UK's cattle. It was brought under control and all but eradicated by the cattle-based controls. No badgers had been killed or implicated. Then in the last decades of the 20th century bTB began to increase again. The reasons were not clear. Farming organisations blamed badgers. But in fact the increase followed a marked relaxation of cattle testing, slaughter and movement controls introduced

during the area-by-area eradication policy described above. The increase also coincided with the intensification of dairy farms and the growing trend towards large herds and over wintering them in sheds and barns. So to try to answer whether badgers were to blame the Government set up the Randomised Badger Culling Trial overseen by the ISG in the late 1990s. Thousands of badgers were killed in this project and as reported above the ISG concluded in 2007 that culling badgers would have no meaningful effect on the control of bTB and that farmers should concentrate on improved cattle controls. In the two years 2009 and 2010, there has been a 15% reduction in bTB due to improved testing of cattle, movement controls and improved cattle husbandry. **This improvement has been achieved without any badgers being killed.**

Q: The farming Press reports that large numbers of diseased badgers are dying in agony and that “culling” would end that misery and lead to healthy badgers living alongside healthy cattle.

A: Pure fiction. It is just a bit of clumsy public relations to try to justify a “cull”. There’s absolutely no evidence to support the claim that bTB is killing large numbers of badgers. As we’ve already said, TB in badgers is rarely fatal. Further, it is not possible to identify and kill only diseased badgers. Nor is it possible to identify and take out “diseased setts”. PCR (Polymerase Chain Reaction), a technique based on DNA, has been discounted as a tool which could do that. There are no other alternatives. A post mortem is required to reliably diagnose bTB in badgers. So a “cull” would be non-selective. Mostly healthy, non-infected badgers would die. How is that a route to “healthy badgers living alongside healthy cattle”?

Q: What about vaccination of badgers?

A: An injectable vaccine for badgers has been licensed for use and development works is continuing to produce an oral bait vaccine.

Badger Trust now strongly believes that an injectable vaccine, and ultimately an oral vaccine, provides a very positive way forward in the long-term control of this disease. The “silver bullet” remains a cattle vaccine which will not only protect cattle from the disease but will also allow the UK farming industry to export cattle to EU countries. A test is being developed which will differentiate between a vaccinated cow and an infected cow. This will require acceptance within the EU.