



Do badgers spread Bovine tuberculosis to cattle?

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Sadly, given the plans by the UK Government to cull many thousands of badgers in further trials to determine whether removing badgers lessens the occurrence of Bovine tuberculosis (bTB) in cattle, it appears the epidemiology of this disease is still not well understood.

Badgers are regarded as a maintenance host and a reservoir of the disease that costs UK cattle farmers millions of Pounds each year. Not only because infected cattle need to be destroyed, but also because they need to be regularly tested and farms need to implement biosecurity measures to keep badgers away from cattle at night. Get rid of the badgers, say the farmers, and bTB has a chance of being eradicated.

This is despite overwhelming scientific evidence that badger culls are not likely to be effective and could even exacerbate the problem. Undaunted, the Government will proceed in England though Wales, having evaluated the same available information, will not cull badgers.

Recently, a paper was published in the journal PLOS Pathogens that showed how little is yet understood about bTB in cattle and badgers. Using advanced molecular genetic techniques, the researchers showed that:

- Fine-scale genetic analyses reveal gaps in the current understanding of bTB epidemiology;
- Whole genome sequencing is sensitive enough to differentiate bTB strains involved in outbreaks on neighbouring farms;
- Badgers in outbreak areas can have identical as well as very different genetic bTB strains to those among infected cattle;

<http://www.b-r-a-v-e.co.uk>

- Strain persistence among cattle sampled years apart raises the possibility of latent infections, environmental persistence and inter-herd transmission of bTB.

This data calls for considerably more research to be conducted before any badger culling can be contemplated. You can see our analysis of the research here.

There are also some further aspects of bTB to consider:

- Other research has shown that deer also harbour bTB, and it is important to remember that there are about 1.5 million deer in the UK versus about 300,000 badgers. While deer have been implicated in bTB transmission to cattle in the USA and France, somehow this is not considered relevant in the UK.

- Mycobacterium is a diverse genus of bacteria. Some species cause tuberculosis in humans, birds, seals, voles, goats, deer, pigs, cattle. One species causes leprosy. But most species are free-living in soil and water.

- Given this ancestry, it is not surprising that Mycobacterium bovis can also survive for long periods outside the host. Some studies indicate such environmental persistence can be on the order of 14 months under the right conditions, but more dedicated studies are needed. Mycobacterium avium that causes tuberculosis among birds has been shown to survive for 47 months in bird droppings. Such long environmental persistence can account for repeated infections among cattle even in the absence of badgers.

- It is entirely possible that bTB outbreaks can be caused by inter-herd transmission without involvement of alternative hosts like badgers. Cattle are regularly moved across the UK, and either not be adequately tested before such moves, or test negative while they might be harbouring the disease.

In short, killing badgers is not the answer and it is surprising that the move is so strongly being supported by Government while the epidemiology of the disease is not nearly fully understood.