

## **RCVS Fellowship Day 2017**

### **Fellows in Focus: Do badgers kill cows or cows kill badgers?**

Dick Sibley BVSc, HonFRCVS

Bovine tuberculosis (bTB) should be a veterinary issue, but it had spilled out to become a political issue on which everyone had an opinion. This made life difficult, said Dick Sibley, Director and Principal of West Ridge Veterinary Practice in Devon.

Showing a photograph of a dairy cow and a caged badger taken the previous week, he explained that both animals were now dead – the cow had reacted to the skin test for bTB, and the badger had been trapped in an area where badger culling was being conducted as part of bTB control measures.

His practice, he said, lay in the centre of three badger culling zones in Devon. Every night during a culling operation, local farmers were going out to kill badgers in what he described as ‘the naïve belief’ that culling them would be effective in dealing with the problem of bTB. The practice was nervous that, in three years’ time, the farmers would complain that culling had not worked.

Mr Sibley was studying a 300-cow intensive dairy herd on a farm in east Devon as a model for developing a practical solution to bTB. It was located outside the badger culling areas and surrounded by effective boundaries, including a town, a main road, some quarries and the sea. Infectious disease had been controlled in the herd over the past 10 years and it performed exceptionally well, producing nearly twice as much milk as the national average. The cows were housed all year round, and disease was not tolerated. However, the herd had been under restriction due to bTB for the past five years, and almost 100 cattle had been slaughtered as a result of the disease.

He had been challenged to deal with the problem. The herd was closed, so the disease was either circulating in the cows or in the badgers on the farm and in the neighbourhood, or in both species, with transfer between the two. The source of infection had to be established.

He explained how this had been done.

Environmental sampling had provided evidence of *Mycobacterium bovis* in the badger population, with 70% of the badger latrines sampled yielding at least one positive faecal sample. Therefore, there was a significant environmental challenge to grazing cattle; while none of the adult cows on the farm grazed, the youngstock did.

Novel testing programmes had been employed to see if infected animals were remaining undetected in the herd. An extremely sensitive and specific phage test, adapted from one used to detect low levels of *Mycobacterium paratuberculosis*, the causative agent of Johne's disease, detected 30 infected animals that had not been found by skin testing.

Further testing established that a significant number of cows were shedding *M bovis* in their faeces. None of these animals had been detected by the skin test and had remained in the herd because they had not been classified as reactors.

So, in addition to the environmental challenge on the farm, there was an infectious load within the herd itself.

He said that, over the past two years, the infectious load within the herd had been decreasing as the infected cows were dealt with. However, there was evidence of clustering of the infection within the herd, which was worrying. More than half the phage-positive animals had been born within a three-month period in 2011-2012. This seemed to be due to more than just chance. Looking back at the farm history, it became clear that the mother of one of the currently infected cows had been taken as a bTB reactor after the cow was born. Mr Sibley strongly suspected that the cluster of infected animals had picked up *M bovis* as young calves, either in the calving pens, in the dry cow yards or in the rearing pens. They had carried the infection latently throughout their lives. It had taken four years to find them, and most had had more than 30 skin tests for bTB over their lifetimes, and none had reacted.

Returning to the question of whether badgers infected cows or vice versa, the situation was dynamic, said Mr Sibley. Infected cattle shed significant numbers of *M bovis* in their faeces. Cow pats were perfect feeding areas for badgers, as they were good habitats for invertebrates. Badgers picked up the infection and in turn started shedding bacteria in their faeces, re-infecting the pastures. The challenge was to break the infectious cycle between wildlife and cattle.

The enhanced testing programme for cattle would help to reduce their contribution to the environmental load, he said. But the situation regarding what could be done about the badgers' contribution to the environmental load had been confounded by politics, public opinion and legislation. In his view, he felt it would be negligent to spend the farmer's money to remove the infection from his cattle, only for him to turn his youngstock out on to pastures that had been contaminated by infected badgers.

He had therefore challenged the Save Me Trust, a wildlife charity founded by Queen guitarist Brian May, and asked what it would do to tackle the problem. As a result, the charity visited the farm and helped find a vaccine for use in the badgers. A major vaccination programme was now underway, with

the aim of establishing whether annual vaccination of the badgers would reduce the environmental load. The only other options would be to fence the badgers out – something that would be technically challenging and hugely expensive – or to cull them.

The enhanced testing, using phage, was not the solution to bTB, he said. The programme he described was needed only in the relatively few cattle herds that had a chronic infection. Dealing with the undetected reservoir of infection in cattle was an issue in large herds with a high risk of spread, where there was endemic infection and a high contact rate. In most herd situations, the current statutory herd testing programme worked well. For most herds, the bTB problem was not a testing issue, it was a biosecurity issue and all stakeholders had to deal with this. Some infection would be a result of cattle movement and some would be related to the wildlife reservoir. Dealing with biosecurity was key to overall control.