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Culling badgers

Bovine tuberculosis (bTB) is caused by the bacterium Mycobacterium bovis (*M. bovis*). Although it is still a relatively uncommon disease in Great Britain, its incidence is increasing, affected cow herds have to be slaughtered and we already spend more than £16 million annually on trying to control it.

Farmers believe that badgers are responsible for infecting their herds and many want an extensive badger cull. Some scientists and many wildlife organizations oppose this cull.

This Factsheet:
1. Describes how scientists have investigated the possible links between badger populations and the spread of bovine TB
2. Summarises the evidence for and against a cull
3. Describes other techniques that might be used to try to stop the spread of bovine TB

Bovine TB (bTB) s a serious problem for farmers – infected cattle have reduced productivity and suffer early death. There is strong evidence that badgers carry and transmit TB to cattle. Cattle inhale the bacterium that have been deposited in faeces, urine, sputum and pus from infected badgers. But some scientists believe that plans for extensive badger culls will be expensive, have an insignificant effect and could even make things worse!

In fact, we have been culling badgers on and off since 1930. But from June 1 2013 farmers in Gloucestershire and Somerset areas have been allowed to shoot badgers. The precise areas chosen have not been revealed but some of the factors that were considered include:

(i) the presence of badgers
(ii) TB prevalence in badgers, including the severity of the disease, together with sample sizes
(iii) husbandry practices
(iv) climate
(v) landscape variables
(vi) willingness of landowners to participate

The farmers are required to shoot, without trapping, badgers on at least 70% of their land for a 6 week period once a year for 4 years. Defra will collect the scientific evidence on whether the cull has been effective on the basis of:

1. How humane the cull is. Sample post mortems will be conducted to see if the badgers have been shot humanely. The carcasses will not be tested for signs of TB infection.
2. How effective (in terms of badger removal) the two badger pilots are. In West Gloucestershire, a target has been set for killing between 2,856 and 2,932 badgers over the six-week period - around 70 badgers a day. The target in West Somerset is between 2,081 and 2,162 badgers - around 50 badgers a day.
3. How safe the two badger culling pilots are.

Defra will then advise the government on whether the cull should be allowed nationally.

Large sections of the public, a significant number of scientists and the Wildlife Trusts – whose emblem is a badger! – are campaigning against the cull mainly because they think it will be ineffective. Even the Wildlife Trusts accept that badgers carry and transmit bTB but many argue that what we should be doing is vaccinating cows – but that is not allowed under EU rules, because when tested we couldn't be sure whether a particular cow had simply been vaccinated or had contracted the actual disease. What are the arguments for and against the cull?

Table 1 Badger cull: For and against

For	Against
It is certain that badgers are carrying TB and bTB rates have risen in areas when infected badgers have moved into an area	No rigorous, peer-reviewed scientific study has been done to investigate transmission rates from badgers to cattle and better biosecurity and vaccination may be more effective
34,000 infected cattle were slaughtered in the UK in 2012	Deer may have been the source of some of this infection
bTB cost the UK economy £90 million in 2010	Large scale culls would also be expensive – although most of the cost falls on the farmers
Several scientific studies indicate that using just one single measure – such as vaccination – will not reduce the disease significantly	More vaccination studies are needed before something as drastic as a cull should go ahead – and vaccination has already begun in Pembrokeshire and Ceredigion. An oral vaccine – much easier to give – will be available by 2015
Culls in New Zealand, Australia and the US and in the UK the Randomised Badger Culling Trial – see BOX- showed that culling did reduce the incidence of infection	It also resulted in the "perturbation" effect – the culling resulted in TB-infected badgers fleeing into previously uninfected areas
Badgers that die from the disease suffer greatly – the cull is supported by the Veterinary Association for Wildlife Management	A recent study showed that less than 12% of badgers had TB and the cull cannot distinguish between those that have it and those that do not. Vaccination is needed
The spread of badgers has contributed to the population decline of hedgehogs, bumble bee nests and ground-nesting birds. It has no predators so its population is abnormally high	More research needed

Gloucestershire Wildlife Trust trialled the first injectable badger vaccine in 2011. The vaccine reduces the severity of TB in the badgers, reducing spread between badgers and between badgers and cattle. The trial resulted in a 73% reduction in TB in the badgers.

Humans infected with TB are treated with BCG. Studies suggest that this would also be effective in about 60% of infected cattle. The government is investigating this but has concerns that it may lead to contaminated milk and beef or lead to the development of resistant strains. The European Health Commission insist on the following timetable for this approach:

3 years for field trials in the UK
1 year for analyzing the scientific evidence collected
1 year for debating legislation
5 years for "practical experience"

So, this is going to take some time!

Effect of the cull on other wildlife

Although an Environmental Impact Analysis of the cull has not been conducted the government has considered possible effects of the cull on other species (Table 2).

Table 2 Impacts of the cull on wildlife

Disturbance	From shooting, lamping, driving, increased footfall. Nocturnal species such as bats could be driven away from roosts and breeding areas could be disrupted.
Shooting	Potentially, any other animal species could be accidentally shot.
Capture of non-target species in traps	Species with European protection such as otters could become trapped. The trapper would in effect have broken the law.
Impact on food chains	Badgers feed on invertebrates but also on the eggs and chicks of ground-nesting birds,voles, mice, rats, shrews, rabbits, hedgehogs and compete with foxes. The badger cull may therefore lead to more foxes.

Randomised Badger Culling Trial (Krebs Trial)

Bovine Tuberculosis in cattle and badgers
A report by the Independent Scientific Report Group

The Krebs Trial ran for 10 years and reviewed hundreds of scientific studies into the role of badgers in the transmission of bTB. He concluded that, in Britain there was strong scientific evidence that badgers were a significant source of infection in cattle. However, most of the evidence consisted of correlations rather than evidence of cause and effect. Complete removal of badgers from an area did reduce cattle infection. Badgers have been culled, in a variety of ways, including gassing, trapping and shooting for decades but no scientific studies have been carried out to compare their relative effectiveness. The Report also considered fertility control – feeding the badgers bait containing chemosterilants that would disrupt reproduction but concluded that this would also present risks to other species – including cattle.

3 culling stregies were compared:
1. a reactive strategy which involves removing every badger from an area where cattle have become infected
2. a proactive strategy – remove all badgers from an area before cattle there are infected
3. a no cull strategy

Lord Krebs is now against the trial arguing that the cull would do little good and, via displaced badgers – cause more harm.

Acknowledgments:
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