



Badger Culling: Policy to 2010 - Krebs Trials and No Cull decision

Standard Note: SN/SC/3751

Last updated: 11 March 2014

Author: Dr Elena Ares

Section Science and Environment Section

Following the findings of the UK Randomised Badger Culling Trial (RBCT), or Krebs Trials, the previous Government decided in 2008 not to introduce a badger cull as part of bovine TB control measures. The Trial concluded that a reactive cull of badgers resulted in significant increases in bovine TB and a proactive cull, while controlling TB in the cull area, contributed to an increase in TB in surrounding areas, and would not be cost effective

Library note SNSC 5873 on [Badger Culling](#) summarises developments since 2010, including the current Government's decision to cull badgers using controlled shooting. Library Note SNSC 6387 covers details of the [controlled shooting pilots](#) in England. Library Note SNSC 6447 covers developments in [TB vaccination of badgers and cattle](#). Library Note SNSC 6801 covers [Bovine TB Statistics](#)

This information is provided to Members of Parliament in support of their parliamentary duties and is not intended to address the specific circumstances of any particular individual. It should not be relied upon as being up to date; the law or policies may have changed since it was last updated; and it should not be relied upon as legal or professional advice or as a substitute for it. A suitably qualified professional should be consulted if specific advice or information is required.

This information is provided subject to [our general terms and conditions](#) which are available online or may be provided on request in hard copy. Authors are available to discuss the content of this briefing with Members and their staff, but not with the general public.

Contents

1	Introduction	3
1.1	Bovine TB	3
1.2	Badgers	4
2	The Krebs Trial (RBCT)	5
2.1	The study	5
2.2	The results	5
	Early findings: suspension of reactive culling	5
	Preliminary analysis of the RBCT	5
3	Other studies	7
3.1	Defra badger road traffic accident survey	7
3.2	Irish Four Areas Trial	7
4	Control of Bovine TB	10
4.1	Strategic framework	10
4.2	Additional control measures: Badger culling consultation	11
5	Independent Scientific Group on Cattle TB (ISG) Final Report	13
5.1	Prof David King's Response	13
5.2	Reactions to the Reports	14
5.3	Government Response	16
6	No Cull Decision	17

1 Introduction

1.1 Bovine TB

Tuberculosis (TB) is a very serious notifiable disease affecting both humans and animals caused by various species of bacteria called Mycobacteria. *Mycobacterium bovis* is the bacterium that causes the disease in cattle, but it can also infect a number of other species including badgers and humans.

The Defra website provides historical information:

During the 1930s, a large proportion of dairy cows were infected with *M. bovis*. Many were kept near large cities to provide urban dwellers with fresh milk and most were closely confined, in poorly ventilated cowsheds, which are ideal conditions for the disease to spread. Many infected cows developed TB in the udders and shed *M. bovis* in the milk. Because most milk was drunk raw (untreated), milk-borne human *M. bovis* infection was a major public health risk and an important source of TB in humans. During this time, over 50,000 new cases of human TB were recorded each year in Great Britain and it was estimated that 2,500 people were dying annually from TB caused by *M. bovis*.¹

The compulsory culling of TB infected cattle began in 1950 and brought about a dramatic reduction of the disease in cattle. However it persisted in the South West of the UK. In 1971 a dead badger infected with TB was discovered on a farm that had suffered a TB outbreak which seemed to suggest that badgers are a source of TB in cattle. The continuing problem of bovine TB in cattle was therefore ascribed to the presence of the disease in a wildlife reservoir (badgers).

Over the years, a number of measures have been tried to control the disease by culling badgers, although none of these have been entirely successful. The Interim Strategy, adopted in 1986, involved the culling and removal of badgers from farms where a TB incident was confirmed, and where it was thought that badgers were the likely source of the disease. In spite of this however, the annual incidence of TB increased and the disease returned to areas from which it had not been recorded for a long period of time.² Subsequent studies have shown that the strategy may have actually contributed to the spread of the disease (see next section).

Because of the continued spread of the disease, the Government asked an independent group under the chairmanship of Professor John Krebs to carry out a further review of the evidence. One of the key recommendations of the group was that the relationship between the presence of the disease in cattle and badgers be established scientifically. This led to the creation of the Randomised Badger Culling Trial (RBCT).

In the financial year 2002/3, the British Government spent £73M on TB measures which included £31M in farmer compensation, £29M on TB testing and veterinary service costs and £13M for research into the disease.³

¹ www.defra.gov.uk/animalh/tb/abouttb/index.htm [On 13 August 2008]

² www.defra.gov.uk/animalh/tb/abouttb/atbreview.htm [On 13 August 2008]

³ www.defra.gov.uk/science/documents/publications/2004/GodfreyReport_BovineTBEpidemiology.pdf

Whilst there are a significant number of wild animals that can be infected with TB, they only appear to have importance as a disease reservoir for cattle in a small number of cases:

Although various wild and feral species can become infected with *Mycobacterium bovis* (Allen 1991), the most important reservoir hosts so far discovered are the European badger (*Meles meles*), the Australian brushtail possum (*Trichosurus vulpecula* Kerr) and various species of deer.⁴

Possums are a significant problem in New Zealand, where they were introduced and are considered a pest, rather than in Australia where they are native and endangered. Because they are a pest that causes serious ecological problems of various kinds, aims to limit their numbers in New Zealand are less controversial.

The UK has one of the densest badger populations in Europe as set out by Natural England in one of its information sheets:

Great Britain supports some of the highest densities of badgers *Meles meles* in Europe, with over 30 per square kilometre in some areas. National surveys carried out in the 1980s and 1990s showed that the population increased by 77% over this period.⁵

Within Europe the only other country that has a significant problem with infection from wildlife is the Republic of Ireland, as is illustrated by this summary of where the major research on vaccines is being carried out:

53. Other countries are also researching into cattle and wildlife TB vaccines: New Zealand is seeking a vaccine for possums; the Republic of Ireland for cattle and badgers; and the USA for deer. Research into vaccines in the UK is underpinned by strong collaborative projects with the Republic of Ireland and New Zealand. The UK is also participating in a cattle vaccine research project in Ethiopia.⁶

1.2 Badgers

Badgers are a native species that is widespread and common throughout much of the UK. They live in family or social groups of related mature and young adults and cubs. Each group defends a territory containing water and a variety of food sources to support the group throughout the year. Within their territory, badgers live in a number of underground tunnel systems known as setts. Some setts are always occupied, others are not. Badgers are creatures of habit and are extremely loyal to their setts, using the same pathways to foraging areas.⁷

Two surveys give estimates for the UK badger population size:

The first survey (Cresswell, Harris & Jefferies, 1990) estimated the pre-breeding number of badgers in Britain to be approximately 250,000 (range 230,000 – 276,000). The second survey (Wilson, Harris & McLaren, 1997) suggested an increase in the number of social groups of 24% since the first survey. Although the authors did not publish a population estimate, applying the same figure of 5.9 badgers per social group gives a population estimate of about 296,000 (range 271,000 – 322,000). In a separate exercise, the authors used changes in badger activity levels to estimate that the

⁴ D.U Pfeiffer, *The Role of a Wildlife Reservoir in the Epidemiology of Bovine Tuberculosis*, 1994

⁵ Natural England, [Technical Information Note TIN005](#), Problems with badgers in rural areas, September 2007

⁶ EFRA Committee, Fourth Report Session 2007-08, *Badgers and cattle TB: the final report of the Independent Scientific Group on Cattle TB*, 27 February 2008

⁷ English Nature, *Badgers - Guidance for planners*, June 2005

badger population had increased by 77% since the first survey. Multiplying the first population estimate of 250,000 by this figure gives a higher population estimate of 442,500 (no confidence limits given).⁸

Badgers and their setts are protected by law under the *Protection of Badgers Act 1992*. They are also protected by the *Wildlife and Countryside Act 1981*, making it illegal to injure, kill or take a badger under any circumstances unless a licence has been granted. The Bern Convention prohibits causing the local disappearance of, or serious disturbance to, badgers.

The *Protection of Badgers Act 1992* contains a provision allowing the issuing of licences for the removal of badgers for the prevention of disease. It has been Government policy not to issue such licenses whilst the Randomised Badger Culling Trial (RBCT) has been in progress.⁹

2 The Krebs Trial (RBCT)

2.1 The study

As a response to the Krebs review recommendations, the Independent Science Group (ISG) was established to design and implement a scientific study to establish a link between badgers and bovine TB. The study (also known as the UK Randomised Badger Culling Trial - RBCT) took place in parts of the country where there had been a history of large numbers of TB cases in cattle and which were considered to be areas of increased TB risk. Ten such areas were identified and a 'triplet' assigned to each of them. Each triplet consisted of three 100km² trial sites and a different approach to badger culling in those areas followed. The study was the largest ecological study ever conducted.

Three approaches were trialled in the triplets:

reactive: badgers are culled on and around farms following TB outbreaks but not elsewhere

proactive: as many badgers as possible are culled in the whole area and badger numbers are kept as low as possible

survey: no badgers are culled but the land is surveyed for details of badger activity

2.2 The results

Early findings: suspension of reactive culling

As a result of initial findings from the RBCT in 2003 the reactive culling aspect of the study was suspended. This was due to a 27% increase in bovine TB outbreaks in reactive culling areas of the trial compared to areas in which no culling took place.¹⁰ The ISG advised that reactive culling could not be used to control bovine TB.¹¹

Preliminary analysis of the RBCT

On 14 December 2005, the interim results from the RBCT were published in *Nature* online. The results showed that:

⁸ Defra, *Badger management as part of a balanced approach to the control of bovine TB*, Public consultation, Partial Regulatory Impact Assessment, December 2005

⁹ Defra, *Badger management as part of a balanced approach to the control of bovine TB*, Public consultation, Partial Regulatory Impact Assessment, December 2005

¹⁰ Defra Press Release 457/03, *Suspension of badger culling in reactive areas*, 4 November 2003

¹¹ Defra, *Badger management as part of a balanced approach to the control of bovine TB*, Public consultation, December 2005

- Proactive culling reduced the incidence of bovine TB by 19% within the cull area, although increased it by 29% up to 2 km outside the cull area.
- Reactive culling increased bovine TB by 25%

These apparently contradictory findings were explained in a follow up study which found that the culling of badgers disrupts their territorial behaviour.¹²

When the population is stable, badgers do not move around the landscape a great deal and separate family groups do not intermingle. When some badger groups are removed through culling, the remaining badgers' territories can therefore change, becoming larger to fill the void created. This disruption also creates a situation whereby different badger group territories become overlapped. This is important as only a percentage of badgers have the disease, and the disease does not normally spread widely in the badger population. When different badger groups start to intermingle, it becomes more likely that TB will spread to new badger groups. In addition, the new larger badger territories increase the likelihood that cattle will be exposed to badger groups that are infected with the disease. These are likely to be the reasons why TB increased in reactive culling areas.

Proactive culling reduced the incidence of the disease as it reduced the badger population to the extent that, although territories were disrupted, the numbers of badgers were low enough that cattle were not exposed to increased numbers of them. However, the culling resulted in the destabilisation of territories in areas up to 2km outside of the culling area and TB was increased in these areas as a result.

These results are consistent with earlier studies that showed that culling can either result in an increase or decrease in bovine TB.

The authors concluded:

Our finding that widespread culling of badgers has simultaneous positive and negative effects on the incidence of TB in cattle has important implications for the development of sustainable control policies. We would expect the overall reduction in cattle TB to be greatest for very large culling areas (with consequently lower perimeter:area ratios), although in absolute terms the costs, as well as the benefits, will be greatest for large areas. Detailed consideration is needed to determine whether culling on any particular scale would be economically and environmentally sustainable.¹³

New Scientist reported following the publication of the two studies:

Taken together, the studies confirm that proactive culling prompts roaming badgers to spread TB beyond the culling zone. "Even with widespread culling, you help some farmers but make things worse for others," says Donnelly. Culling will only work if the culling zones are vastly extended and badgers are prevented from roaming outside them, or if culling takes place right up to a natural border.

The results leave the government with a dilemma. "If they ban culling, they could end up with a serious problem of patchy illegal culling, which would probably make matters worse for local cattle," says Donnelly. "But if they go ahead with culling, some farmers will be unhappy because they're on the periphery."

¹² R Woodroffe *et al*, "Effects of culling on badger *Meles meles* spatial organization: implications for the control of bovine tuberculosis", *Journal of Applied Ecology*, February 2006, vol 43 p1

¹³ C Donnelly *et al.*, "Positive and negative effects of widespread badger culling on tuberculosis in cattle", *Nature*, 14 December 2005

The Badger Trust conservation group wants the government to shift the focus towards preventing the spread of TB among cattle by improving diagnosis and testing. Its spokesman Trevor Lawson says that since Northern Ireland introduced such measures in November 2004, rates of TB there have fallen by 40 per cent.¹⁴

Bob McCracken, former president of the British Veterinary Association, came to an alternative conclusion on the report:

A bTB policy that largely ignores one of these species [badgers or cattle] (as is currently the case) will never succeed. Furthermore, a policy that seeks to remove infected badgers and relaxes the controls on the movement of cattle is equally doomed to failure. It is important to recognise and accept that both cattle and badgers are major sources of infection, and any new control programme must address the prevention of transmission by both species.

[...]

This will necessitate the removal of infected badgers, especially within bTB endemic areas.

Work within the UK and Ireland clearly demonstrates that intensive culling of badgers over large areas can be effective in reducing the incidence of bTB. [...] Some suggest that [the perturbation effects on the population and increase in bTB on the perimeter] negate the benefits of badger culling. Far from discouraging a policy of badger culling, such findings indicate that the increase at the edges of culling areas occurs only because [of] the high incidence of infection in the badger population. If the badgers involved in the increased perturbation were not infected, an increased incidence of bTB would not be observed. If bTB is to be controlled and eradicated we must have an effective strategy and one that has a long-term goal.

[...]

We are no longer debating the removal of infected badgers; we are discussing how best to do so.¹⁵

3 Other studies

3.1 Defra badger road traffic accident survey

Defra tested dead badgers killed on roads for TB infection 2002 to 2004. The study aimed to find evidence of a link between badgers and bovine TB. The study found that, on average, one in seven badgers was infected with the disease. However, the prevalence of the disease in badgers was not found to clearly correlate with bovine TB cases.¹⁶

3.2 Irish Four Areas Trial

In February 2005, nearly 350 veterinary surgeons signed a letter sent to Margaret Beckett MP, Environment Minister, demanding a cull of badgers in the areas worst affected by bovine TB in order to halt the spread of the disease.¹⁷

These calls were stimulated by the results of a study from the Republic of Ireland known as the Four Areas Trial. The study found that proactive culling of badgers reduced the incidence of herd breakdowns by some 58% in the removal areas.¹⁸

¹⁴ "Badger culls don't solve TB problem", *New Scientist*, 17 December 2005, p8

¹⁵ "Facing facts on bovine TB", *Off the record: News from the BVA*, February 2006

¹⁶ Defra Press Release 345/05, *TB prevalence – Defra's badger road traffic accident survey published*, 3 August 2005

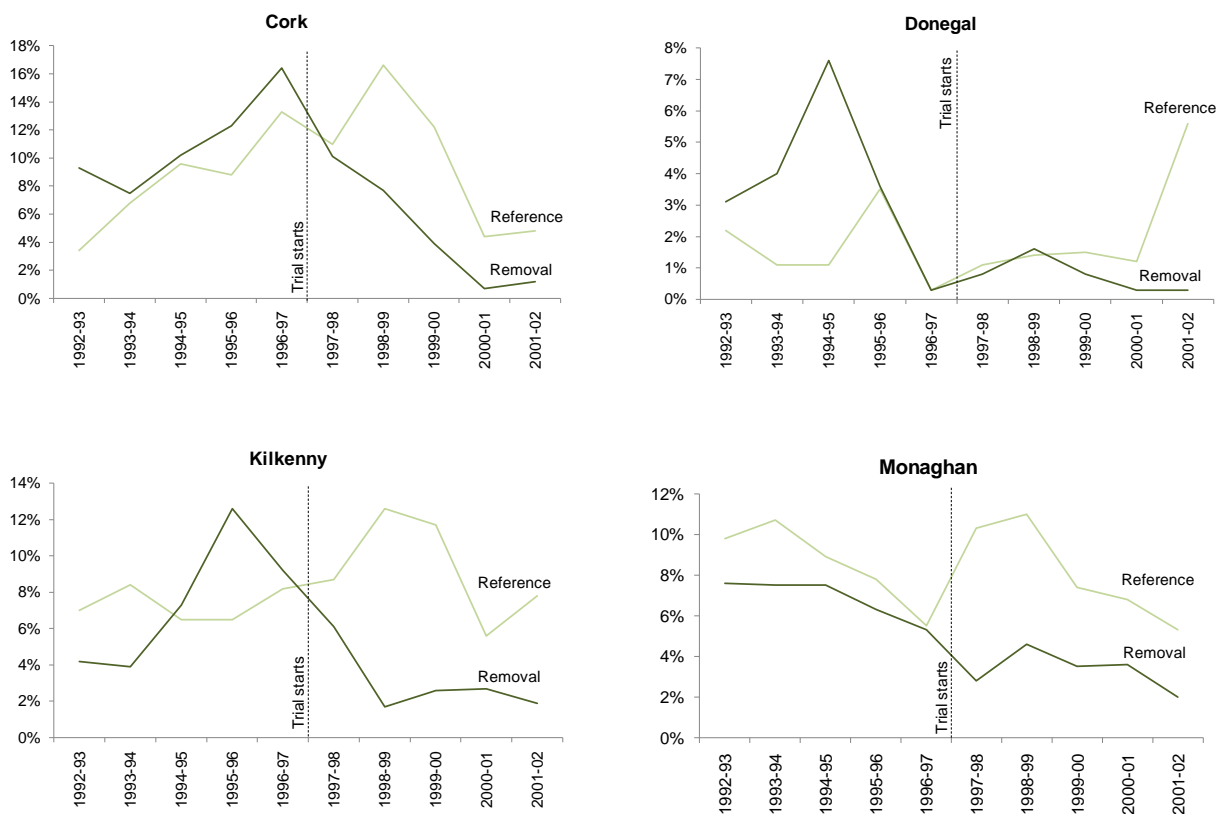
¹⁷ "Vets urge action on bovine TB", *Farmers Weekly Interactive*, 25 February 2005

The study was conducted from September 1997 to August 2002. It compared the effectiveness of proactive and reactive badger removal policies in paired areas within four counties in Ireland: Cork, Donegal, Kilkenny and Monaghan. Within each county matched removal and reference areas were identified with an average area of 245.1 km². Badger removal was “proactive and intensive” within the removal areas, but reactive within the reference areas, where it was only undertaken in response to a severe outbreak of bovine TB.

The study compared the number of herds restricted due to the detection of a bovine TB infection in the reference and removal areas in order to estimate the probability of a herd surviving without infection under each approach to badger control.

Charts 1 to 4 show the percentage of herds with confirmed restrictions for tuberculosis in the reference and removal areas of the four counties during the period 1 September 1992 to 31 August 2002. This period covers the five years preceding the trial and the five years during the trial. The years run from 1 September to 31 August in each year.

Charts 1-4: Percentage of herds with confirmed restrictions for bovine TB in reference and removal areas of the Four Counties trial, 1992-2002



Source: J.M. Griffin et al., [The impact of badger removal on the control of tuberculosis in cattle herds in Ireland](#), 2005

As the charts show, the percentage of herds with confirmed restrictions for bTB was lower in the removal areas than in the reference areas in each of the four counties by the end of the trial period, despite having been higher in those areas in the year before the trial started in three of the four counties.

¹⁸ C Donnelly *et al.*, “Positive and negative effects of widespread badger culling on tuberculosis in cattle”, *Nature*, 14 December 2005

When looking at the results it must be noted that no comparison was made with a no-cull area. In addition, as already mentioned, findings from the Krebs trials carried out in the UK indicated reactive culling results in increased TB in cattle. Trials of reactive culling in the UK were stopped in 2003 as a result of an observed 27% increase in bovine TB outbreaks in areas where reactive culling was being tested. This means that some of the cases seen in the reference area are likely to have been as a result of reactive culling.

The Chief Scientific Adviser to Defra, Howard Dalton, made a statement on 1 March 2005 with the following conclusions about the Irish trial:

- The reviewers and I agree that the qualitative conclusions from the study are sound, despite the fact that the design and analysis of the Four Areas trial can be criticised, based mainly on the grounds of choice of study site and that there were no control areas in which no culling took place.
- The reviewers comments and the Four Area Trial itself can be considered as part of the evidence base.
[...]
- Although these results show that badgers do affect the incidence of bovine TB in cattle in the Republic of Ireland, issues of practicality, cost-effectiveness, social acceptability of interventions and applicability to GB remain to be addressed.¹⁹

The findings from the Four Areas Trial are consistent with the preliminary results of the RBCT. The ISG discussed why badger culling reduced bovine TB so effectively in the study:

One explanation for the greater beneficial effect of culling in the Irish studies is that greater reductions in badger density may have been achieved, both because land occupier compliance was higher and because the culling method (snaring) was probably more efficient than that used in the RBCT (although arguably less publicly acceptable, being perceived as less humane). None of the three previous studies has investigated effects of culling on neighbouring areas. However, in two of these studies we would expect such effects to be weak because culled areas were isolated from neighbouring cattle and badger populations by coastline, rivers or motorways.²⁰

This view was echoed in a paper published in 2010 looking at the duration of a culling effect after culling stopped in the UK trial areas

There has been one other large-scale replicated trial of the effects of badger culling on cattle TB incidence, albeit without the randomised allocation of treatments, or the no-culling control [18]. This study, conducted in the Republic of Ireland and known as the Four Areas Trial, found reductions in cattle TB incidence ranging from 51% to 68% over a five-year culling period [18]. One explanation for the larger beneficial effect of ongoing culling observed in the Four Areas Trial is that greater reductions in badger density may have been achieved, because (i) land occupier compliance was higher; (ii) the use of snares, rather than cage traps, probably allowed a higher proportion of badgers to be captured; and (iii) the culling areas were selected to have geographical barriers such as coastline and rivers which would impede badger recolonisation. However, since culling is still ongoing in the Four Areas, that study provides no data on

¹⁹ Independent Scientific advice on the Irish 'four areas' badger culling trial; statement by Defra's Chief Scientific Adviser, 1 March 2005

²⁰ C Donnelly *et al.*, "Positive and negative effects of widespread badger culling on tuberculosis in cattle", *Nature*, 14 December 2005

the duration of impacts post-culling which can be compared with the results presented here.²¹

As pointed out culling continues in Ireland so it is not possible to know whether the culling is having an effect on long term incidence of TB in badgers. As in the UK the Irish Government's intention is to replace culling with vaccination as soon as a viable option is available. As summary of Irish Government policy can be found in a Parliamentary [adjournment debate](#) from 2009.

A peer reviewed report on the Irish Four Area Trials can be found [here](#).²²

4 Control of Bovine TB

4.1 Strategic framework

On 1 March 2005, Defra published a strategic framework for tackling bovine TB²³:

Defra has published a set of ground rules that will help Government, vets, farmers, and wildlife groups tackle bovine TB. The Strategic Framework, designed to improve control of the disease over the next ten years, outlines new commitments, defines responsibilities, and signals the development of a stronger regional approach. Developed in consultation with stakeholders last year, the review was needed to address the increasing incidence and spread of the disease, and rising cost to the taxpayer and farmers.

Animal Health Minister Ben Bradshaw said:

"There is no quick solution to the problem of bovine TB. We are fully aware of the impact this disease has on the farms it hits, and that's why it's vital that any measures to control it are based on sound evidence. Defra spent over £15m in the last financial year on research into bovine TB and, while the scientific work continues, we are rolling out a range of short term measures to contain the spread of disease. A stakeholder group is also working on recommendations to help develop a proposal for pre-movement testing of cattle. It is vital, however, that people recognise this isn't just a matter for Government. The effective control of this disease will only be possible in partnership with farmers, vets and wildlife groups. We all have responsibilities when tackling TB and this new strategy defines how we can work together to beat this disease."²⁴

The strategy itself discussed badger culling:

4.3.4 In this area, scientific results are always likely to be subject to debate and variable interpretation. It is important to recognise that, without undermining the commitment to policy development based on sound science, decisions may have to be made taking account of scientific uncertainty. In considering the evidence on badger controls, we will, as well as assessing the scientific merits of options, need to focus on costs, practicality of delivery, conservation implications and take into account wider public opinion in informing policy decisions on badger or other wildlife controls. This is consistent with seeking to adopt a more sustainable approach.

²¹ Jenkins HE, Woodroffe R, Donnelly CA (2010) [The Duration of the Effects of Repeated Widespread Badger Culling on Cattle Tuberculosis Following the Cessation of Culling](#), February 2010

²² Griffiths *et al*, [The impact of badger removal on the control of tuberculosis in cattle herds in Ireland](#), Preventative Veterinary Medicine, 15 October 2004

²³ Defra, *Government strategic framework for the sustainable control of bovine tuberculosis in Great Britain*, 1 March 2005, www.defra.gov.uk/animalh/tb/pdf/tb-strategicframework.pdf

²⁴ Defra Press Notice 90/05, *Defra publishes new strategic framework for tackling bovine TB*, 1 March 2005

Analysis of the evidence from the trial in the Republic of Ireland is already underway. Evidence from the RBCT is being analysed as it emerges. We have set out below the points to be considered in developing policy decisions on badger management or other wildlife controls. All points are equally important and will be reviewed regularly in light of developments in the evidence base.²⁵

The strategy also reiterated Defra's commitment to the prevention of cattle to cattle transmission of the disease through surveillance and control measures. However, on 25 July 2005, the ISG said that there was growing evidence to suggest that there is a need to put an even greater focus on reducing cattle to cattle transfer of the disease.²⁶

The Godfrey Report set out the problem as follows:

4.5.1 Control of cattle-to-cattle transmission is important to minimise the problems associated with individual outbreaks, and, if cattle-to-badger infection occurs, to prevent the establishment of new reservoirs in previously uninfected wildlife.

[...]

4.5.7 The movement of infected cattle from areas of high TB prevalence to relatively disease-free localities where the infection may be transmitted to other animals is a tragedy for the farmers concerned but provides important epidemiological data. As mentioned in Section 4.2.3, such movements seem to have occurred quite frequently in the aftermath of the foot and mouth disease epidemic, and they are currently being investigated by researchers at Warwick University. Full analysis of these incidents should be a priority.

4.5.8 There are several potential policy options to reduce the risk of transferring the disease to new areas. These include the restriction of movement of cattle from areas of high disease incidence, and the mandatory testing of herds before movement is permitted. Nearly all such interventions require detailed information on individual cattle on particular farms, a situation that is now improved thanks to measures introduced after the BSE and foot and mouth disease epidemics. Most of these interventions are unpopular with farmers because to a certain extent they hinder trade. Their value can only thus be assessed within a broader cost-benefit analysis with multiple stakeholders (the individual farmer, the farming community and the country). **Science input is important in helping quantify the trade-offs involved, but our reading of the data currently available points to great dangers in initiating new disease hotspots through cattle movement. We recommend that scientific and economic research in this area be accorded high priority, and that awaiting these results Defra adopts a policy aimed at reducing as much as possible the risk of new outbreaks.** [Note added in final draft: we note a series of relevant proposals put out to consultation in Defra 2004]²⁷

4.2 Additional control measures: Badger culling consultation

On 15 December 2005 the Government announced additional bovine TB control measures. These included three main elements as described by Defra:

²⁵ Defra, *Government strategic framework for the sustainable control of bovine tuberculosis in Great Britain*, 1 March 2005, www.defra.gov.uk/animalh/tb/pdf/tb-strategicframework.pdf

²⁶ Independent Scientific Group on Cattle TB, *ISG advice to Defra on NFU proposals for the control of badgers*, 25 July 2005, www.defra.gov.uk/animalh/tb/index.htm

²⁷ Godfrey Report, *Independent Scientific Review of the Randomised Badger Culling Trial and Associated Epidemiological Research*, 4 March 2004 www.defra.gov.uk/science/documents/publications/2004/GodfreyReport_BovineTBEpidemiology.pdf

Compensation

The current compensation scheme will be replaced with a fairer scheme for both farmers and the taxpayer. The new scheme will be in place from 1 February 2006.

Pre-movement testing

Defra is introducing statutory pre-movement testing of cattle in England from 20 February 2006. This is to help reduce the risk of spreading bTB between herds in high risk areas and to herds in areas free from the disease.

Consultation on badger culling

Badger culling for the control of bTB has been a complex issue for some years. A public consultation (December 2005 – March 2006) aims to explain the issues and involve the wider public in the process to decide whether or not to cull badgers and the methods by which this could be done as part of the overall approach to control the spread of bTB in England in cattle.²⁸

The badger culling consultation document said:

The question of whether or not to cull badgers as a measure to control bovine TB in cattle is contentious. A major programme of cattle controls is already in place and new cattle measures have been announced alongside this consultation, however, these will not address the reservoir of infection in the badger population. The scientific evidence shows that intensive culling of badgers over large areas can be effective in helping to prevent the spread of bovine TB in cattle and vets advise that without badger culling satisfactory control and reduction of the disease in cattle is unlikely to be achieved. In deciding whether to introduce a badger culling policy, the Government will take into account scientific evidence, how successful a cull would be in reducing bovine TB in cattle, cost effectiveness, practicability and sustainability.

[...]

While the scientific advice suggests that badger culling can reduce bovine TB in cattle, there is uncertainty about the relative benefits of particular badger culling options. There is evidence that some options may bring little benefit or even make matters worse because of badger perturbation leading to an increase in bovine TB in herds at the edge of culling areas. However, any measures to reduce the incidence or control the spread of bovine TB is likely to benefit the general health of wildlife, including badgers, as well as cattle.

7. The Government has identified three potential options, all using some form of licensing, that could be used were badger culling to be introduced:

I. Individual licensing to help control bovine TB

Issuing individual licences to kill badgers to prevent the spread of bovine TB as and when an application is made under the Protection of Badgers Act 1992.

II. General cull over large areas

General culling over large areas, through either farmer/landowner co-ordinated groups or a combination of state and farmer/landowner involvement. This would cover high incidence areas but not be linked to a specific farm or landholding.

III. Targeted culling over specific areas linked to herd incidence

Targeted culling would involve designating an area based on affected farms, and therefore, close to herds which have a history of bovine TB. This option could be

²⁸ <http://www.defra.gov.uk/animalh/tb/index.htm>

managed and the cull implemented by local landowners, farmers or their agents operating in co-ordinated groups.²⁹

Option II appears to be more in line with the RBCT preliminary findings:

We would expect the overall reduction in cattle TB to be greatest for very large culling areas (with consequently lower perimeter:area ratios), although in absolute terms the costs, as well as the benefits, will be greatest for large areas.³⁰

5 Independent Scientific Group on Cattle TB (ISG) Final Report

The ISG published its final report in June 2007. This concluded that badger culling would be of limited use in controlling bovine tuberculosis:

Conclusions and recommendations

15. Detailed evaluation of RBCT and other scientific data highlights the limitations of badger culling as a control measure for cattle TB. The overall benefits of proactive culling were modest (representing an estimated 14 breakdowns prevented after culling 1,000 km² for five years), and were realised only after coordinated and sustained effort. While many other approaches to culling can be considered, available data suggest that none is likely to generate benefits substantially greater than those recorded in the RBCT, and many are likely to cause detrimental effects. 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 (Chapter 10).

16. In contrast with the situation regarding badger culling, our data and modelling suggest that substantial reductions in cattle TB incidence could be achieved by improving cattle-based control measures. Such measures include the introduction of more thorough controls on cattle movement through zoning or herd attestation, strategic use of the IFN test in both routine and pre-movement testing, quarantine of purchased cattle, shorter testing intervals, careful attention to breakdowns in areas that are currently low risk, and whole herd slaughter for chronically affected herds (Chapters 7 and 10).

17. Continued research will be critical to refine cattle-based TB control strategies. Further refinement and field experience of the IFN test, more detailed interrogation of existing data, particularly cattle testing and tracing data, will be of value. The involvement of independent expert scientists, as a complement to the excellent scientific expertise already available to Defra through its Executive Agencies, will ensure the application of the most appropriate and up-to-date approaches and is likely to generate the most effective control strategies.³¹

5.1 Prof David King's Response

In response to this report the chief scientific adviser Prof David King convened a group of scientists, at the Government's request, to review the evidence. He submitted his own conclusions to Defra Ministers in July 2007:

Conclusions

²⁹ Defra, *Badger management as part of a balanced approach to the control of bovine TB*, Public consultation, December 2005

³⁰ C Donnelly *et al.*, "Positive and negative effects of widespread badger culling on tuberculosis in cattle", *Nature*, 14 December 2005

³¹ , Defra, Final Report of the Independent Scientific Group on Cattle TB, *Bovine TB: The Scientific Evidence*,

- Badgers are a clear source of infection for cattle. Reducing the density of badgers in those areas of England where there is a significant level of TB in cattle reduces the incidence of TB in cattle in the same area;
- Removal of badgers should take place alongside the continued application of controls on cattle. Genuine commitment by all interested parties to the overall TB strategy is needed if TB is to be successfully controlled;
- Removal of badgers is the best option available at the moment to reduce the reservoir of infection in wildlife. But in the longer term, alternative or additional means of controlling TB in badgers, such as vaccination, may become available. Research into these should continue;
- Removal of badgers should only take place in those areas of the country where there is a high and persistent incidence of TB in cattle. It is not an appropriate measure in other areas;
- The minimum overall area within which badger removal should take place is 100 km², although increasing the area would increase the overall benefit;
- Where there is inaccessible land within the overall removal area, badgers should be removed on the accessible land bordering it;
- Badger removal programmes should be sustained (unless replaced or supplemented by alternative means of control);
- The removal process must be effectively and humanely carried out by competent operators. Removal which is improperly carried out, or which is fragmented in space or time, could cause detrimental effects on the incidence of cattle TB. Further consideration should be given to the way in which the removal process should be carried out;
- There is some evidence of an adverse effect on the incidence of cattle TB in the area 0.5 - 1.0 km outside the removal area. This may or may not be totally related to the removal programme, and there should be monitoring outside the removal area to detect any such effect. Measures should be taken to limit the risk of such an effect by –
 - o where possible, reducing the migration of badgers into the removal area by hard geographical boundaries such as rivers or motorways or, where these do not exist, soft boundaries (such as arable land with no cattle) which are at least 1km wide; or
 - o if immigration of badgers into the removal area cannot be prevented or sufficiently inhibited, then, subject to epidemiological findings, sustaining removal (or replacing it by or combining it with measures such as vaccination once they become available).
- The incidence of TB in cattle in the removal areas should be monitored on an annual basis. After four years, the badger removal programme should be reviewed. This may entail some assessment of the prevalence of TB in badgers.
- The badger population should be monitored.³²

5.2 Reactions to the Reports

Reactions to both reports was mixed as the following article shows:

³² DIUS, Bovine Tuberculosis In Cattle And Badgers, A Report By The Chief Scientific Adviser, Sir David King, July 2007

The government chief scientist's recommendations to ministers on badger culling were "hastily written", "superficial" and "selective" according to the scientist who led the government's study into the problem of cattle TB.

John Bourne was responding to a report from Sir David King, released on Monday, which recommended that large-scale badger culls in those areas most affected by bovine TB were the most effective way to control the disease - a conclusion that ran directly counter to his group's recommendations to government.

Another scientist on Prof Bourne's group, Rosie Woodruff at University of California Davis, said Sir David's report was "pervaded" with errors. All three were being questioned by the Commons environment, food and rural affairs committee about the incompatibility of their advice. MPs repeatedly asked Sir David how his conclusions, which were based on a one-and-a-half day discussion with a five experts in the field, could be so opposed to the conclusions of Prof Bourne's Independent Scientific Group (ISG).

Sir David praised the "excellent" work of the ISG and said his group did not challenge the scientific data, but their interpretation of it. He said he agreed with their estimate that badgers were responsible for up to 40% of cattle infections in some areas. "If we really want to eliminate TB in cattle herds then it's not going to happen while there's still TB in wildlife," he said.

Prof Bourne reacted angrily to the chief scientist's report. "It was clearly hastily written and because of that it is superficial," he said. He added that the disagreement between the two interpretations hinged on the effect culling had on other badgers in the area. One surprise result from a trial was the extent to which surviving badgers move around in response to culling, which led to an upsurge in infection around the culling area.³³

As a result of the debate the Environment, Food and Rural Affairs Select Committee carried out its own inquiry into the findings of both reports. It concluded the following in February 2008:

Our conclusion is that there is no simple solution that will control cattle TB. The Government must adopt a multi-faceted approach to tackling the disease, using all methods available. The Government's strategy for cattle TB should include: more frequent cattle testing, with more frequent and targeted combined use of the tuberculin skin test and the gamma interferon test; the evaluation of post-movement cattle testing; greater communication with farmers on the benefits of biosecurity measures; the deployment of badger and cattle vaccines when they become available in the future; and continued work on the epidemiology of the disease.

The Committee recognises that under certain well-defined circumstances it is possible that culling could make a contribution towards the reduction in incidence of cattle TB in hot spot areas. However, as there is a significant risk that any patchy, disorganised or short-term culling could make matters worse, the Committee could only recommend the licensed culling of badgers under section 10 of the Protection of Badgers Act 1992 if the applicants can demonstrate that culling would be carried out in accordance with the conditions agreed between the ISG and Sir David King, which indicated that there might be an overall beneficial effect. These were that culling should: be done competently and efficiently; be coordinated; cover as large an area as possible (265km² or more is the minimum needed to be 95% confident of an overall beneficial

³³ *The Guardian*, 'Official advice to cull badgers was hasty, scientist tells MPs', 25 October 2007

effect); be sustained for at least four years; and be in areas which have “hard” or “soft” boundaries where possible.³⁴

5.3 Government Response

The Government made clear in January 2008 that there was no set timetable for reaching a decision on badger culling:

Bovine Tuberculosis

Mr. David Anderson: To ask the Secretary of State for Environment, Food and Rural Affairs (1) when he expects to make a decision on policy on badger culling; and if he will make a statement; (2) what assessment he has made of research on the effects on cattle health of culling badgers as a response to bovine TB; and if he will make a statement.

Jonathan Shaw: The question of whether badger culling has a role to play in controlling bovine TB in cattle is complex and presents very difficult choices.

Results from the Randomised Badger Culling Trial [RBCT] show that small-scale badger culling can increase levels of bovine TB in cattle. However, they also suggest that co-ordinated and efficient culling carried out over areas larger than the RBCT and sustained over a number of years could prove beneficial. However, Professor John Bourne’s report said that culling could not meaningfully contribute to the control of bovine TB.

The Secretary of State has been clear that the next step is for DEFRA’s ministerial team to have discussions with interested parties. He has already met with former members of the Independent Scientific Group on Cattle TB, including Professor John Bourne, and separately with the former Chief Scientific Adviser, Professor Sir David King.

While we are keen to make progress on reaching a decision, there is no specific timetable for doing so.³⁵

However the Government did announce at the same time that it had set up a new advisory body on Bovine TB:

Bovine TB Science Advisory Body established

A new Bovine TB Science Advisory Body (bTB SAB) has been set up to provide independent advice to Defra on bovine TB-related research.

This fulfils the department’s commitment to obtaining independent scientific advice on bovine TB as set out in the government’s strategic framework for the sustainable control of bovine tuberculosis in Great Britain.

The group will provide expert oversight of Defra-funded bovine TB research, identify gaps in the current evidence base and provide independent advice on the strategic direction of, and priorities for, all Defra-funded bovine TB-related research.

The group’s Chairman is Professor Quintin McKellar, Principal and Dean of the Royal Veterinary College.³⁶

³⁴ EFRA Committee, Fourth Report Session 2007-08, *Badgers and cattle TB: the final report of the Independent Scientific Group on Cattle TB*, 27 February 2008

³⁵ HC Deb 22 Jan 2008 c1973W

³⁶ Defra Website, 15 January 2008, <http://www.defra.gov.uk/news/2008/080115a.htm>

6 No Cull Decision

The Government decided in July 2008 not to introduce a badger cull as part of bovine TB control measures in light of the findings of the RBCT, published in 2007.

Hillary Benn, the then Secretary of State for Environment, Food and Rural Affairs, made a statement to the House of Commons on 7 July 2008 in which he set out details of the Government's decision not to go ahead with a cull for the time being. This was because of the practicalities and cost of a cull and the scale and length of time required to implement it, with no guarantee of success and the potential for making the disease worse.³⁷

He went on to highlight other measures that would be taken, including allocating funding of £20m to the development of an effective TB injectable vaccine for cattle and badgers, and an oral badger vaccine.³⁸

The Minister went on to say that with no viable vaccine for badgers or cattle in the short to medium term – at least before 2015 – there needed to be a focus on disease control by both the Government and farmers. He also announced the setting up of a bovine TB partnership group to develop a plan for tackling TB in England.³⁹

³⁷ HC Deb 7 July 2008 [c1153](#)

³⁸ *ibid*

³⁹ *ibid*