



BRIEFING PAPER

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Badger Culling in England

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Summary

In February 2018, [Defra announced](#) the first of a number of regular reviews of the Government's long-term [Strategy for achieving Officially Bovine Tuberculosis Free status for England](#), which was published in April 2014. The Government also launched two consultations in February 2018: the first on [extending the number of new badger culls](#) being licenced by Natural England every year; the second on allowing some [culling in in the Low Risk Area](#) for bTB. Both consultations close on 15 April 2018.

This is a devolved area. Details of policy in devolved administrations can be found in the Library Briefing Paper [CBP-8188](#)

England bTB Strategy

The Government Strategy set out the rationale for action to address the problem of bovine TB (bTB), and the range of measures intended to eradicate it by 2038. The Government's policy is that badger culling should play a role in the control of bTB. This was disputed by some experts, and the effectiveness of badger culling as a means of controlling bTB remains contentious. Control of bTB, including badger culling as a bTB policy measure, is devolved. In England, the Government has implemented a badger culling policy since 2011, firstly by conducting pilots and then as a part of the eradication strategy.

There are an [estimated](#) 485,000 badgers in England and Wales based on data collected between 2011 and 2014. The [Wildlife Trusts estimate](#) that 50,000 badgers a year are killed on roads in the UK.

Badger Pilots 2013-14

Badger culling pilots ran for two years in the autumn of 2013 and 2014, with culls taking place in West Gloucestershire and West Somerset. Farmers in each area were licensed to control badgers by shooting, or trapping and shooting, with a target cull of 70% of the estimated badger population. The aim of these was to determine whether shooting was a humane and effective method of culling badgers. The exact location of these and all subsequent areas has not been made public, because of concerns about protests from those opposed to badger culls.

Badger Culls 2015-2017

Following the conclusion of the pilot culls, the Government commenced a limited rollout of the cull in 2015. A new area in Dorset was added and the culls continued their third year in the areas in Somerset and Gloucestershire.

In 2016, the Government announced a wider rollout of the badger cull and made changes to the licence conditions. Seven new culling areas were permitted in Cornwall, Devon, Dorset, Gloucestershire and Herefordshire. In December 2016, Defra published a consultation on a proposal to license a supplementary form of badger control "after a cull has been successfully completed over at least four years". Following the consultation, the Government announced that supplementary culling licenses would be granted for the pilot areas for a further five years.

In September 2017, the Government announced that culling licenses had been granted for a further 11 areas: one in Cheshire, four in Devon, one in Dorset, two in Somerset and three in Wiltshire, bringing the total to 21 cull areas. The total area of land in England where badger culling was licensed in 2017 was 8,560km². A total of 19,274 badgers were [culled](#), of which 11,638 were shot and 7,636 were trapped and then shot.

Monitoring, assessment and costs

An Independent Expert Panel (IEP) was appointed to monitor the effectiveness, humaneness and safety of controlled shooting during the 2013 pilots. This was in addition to ongoing monitoring by Natural England and the Animal and Plant Health Agency (APHA).

The IEP's report in April 2014 raised concerns about the humaneness of shooting as a culling method, and concluded that standards needed to be improved if culling was to continue in the pilot areas. The Government announced that the culls would continue, with amendments to improve effectiveness in the proportion of badgers killed and time taken for shot badgers to die. The Chief Veterinary Officer (CVO) has also reviewed the culls on a yearly basis, and concluded in 2017 that given the accumulation of evidence from previous years it would not be necessary for the CVO to assess future badger culls.

However, after initially supporting the cull the British Veterinary Association Council reviewed its position after examining data for the first two years in April 2015. Raising concerns about humaneness it called for badgers to be trapped and shot only.

Very limited testing of TB in culled badgers has been carried out, but results have not been published. The Government is currently exploring the options for collecting data from culled badgers in the future.

In addition to the number of badgers culled, the Government publishes data on the costs of policing and monitoring the culls. For 2017, Defra's [Badger control value for money analysis](#) set out the estimated costs and benefits. Actual costs are not yet available.

1. Background

The Eurasian badger (*Meles meles*) was first identified as a possible wildlife reservoir of infection for cattle in the UK in the early 1970s.¹ However, bTB has a very complicated epidemiology and the role of badgers in transmission of the disease is still not fully understood and remains a controversial subject.² There are an [estimated](#) 485,000 badgers in England and Wales based on data collected between 2011 and 2014.³ The [Wildlife Trusts](#) estimate that 50,000 badgers a year are killed on roads in the UK.⁴

Policy for dealing with bTB is devolved in the UK. The incidence of bTB and wildlife varies across the UK, and as such the control of bTB (bTB) is approached differently among the devolved administrations, with different policies on badger control and TB testing in cattle. This briefing focuses on badger culling in England since the policy was introduced in 2012.

Under existing legislation, cattle must be routinely tested for TB in the UK. In England and Wales, the respective Governments have published strategies to work towards the eradication of bTB, while Northern Ireland's strategy is currently under consultation. These policies add to existing requirements on testing in cattle. Scotland achieved Officially Tuberculosis Free (OTF) status in 2009. Policy in England has included badger culling since 2013, allowing the controlled shooting of badgers under licence. Further details on the policy in devolved administrations can be found in the Library Briefing Paper [CBP-8188](#).

1.1 Randomised badger culling trials (RBCT)

Since the identification of badgers as a possible reservoir in the 1970s, a number of methods have been deployed to control bTB in the badger population:

A series of different strategies were developed throughout the 1970s, 1980s and 1990s to tackle this wildlife source of bTB alongside further cattle-based measures in the area. Gassing (1975-1982) and "clean ring" (1982-1986) strategies were used prior to an "interim" badger culling strategy in place between 1986 and 1997, whereby badgers were removed only from farms where a bTB incident had been confirmed by *M. bovis* culture and where, following investigation, it was thought that badgers were the most likely source.⁵

In 1996, an independent scientific review (The Krebs Report) of the link between badger and bTB was commissioned. Following publication of

¹ Defra, [Strategy for Achieving Official Bovine Tuberculosis Free Status for England](#), April 2014

² Godfray HC, et al. '[A restatement of the natural science evidence base relevant to the control of bovine tuberculosis in Great Britain](#)', Proceedings of the Royal Society of Biological Sciences, 7 August 2013

³ Judge *et al*, [Abundance of badgers \(*Meles meles*\) in England and Wales](#), Scientific Reports, volume 7, Article number: 276 (2017), doi:10.1038/s41598-017-00378-3

⁴ The Wildlife Trusts, [Badgers and bTB - Q&A](#), [website on 22 March 2017]

⁵ Defra, [Strategy for Achieving Official Bovine Tuberculosis Free Status for England](#), April 2014

the report, a controlled field experiment was set up to quantify the impact of culling badgers on bTB incidence in cattle.⁶ This Randomised Badger Culling Trial (RBCT) (also known as the Krebs Trial) took place between 1998 and 2006. It was designed by the Independent Scientific Group on Cattle TB (ISG), to investigate how bTB spread between cattle, badgers and other wildlife. In the [Final Report of the Independent Scientific Group](#) on cattle TB, published in 2007, the group concluded that badger culling was unlikely to contribute positively, or cost effectively, to the control of cattle TB in Britain. The results of the study form the base of evidence used to support Government culling policy, further details of the study and its findings are set out in Box 1.

Box 1: Randomised Badger Culling Trial

The RBCT took place ten areas with a history of high number of TB cases in cattle. In each area three 100 km² trial sites were selected, with a different approach to badger culling applied in each. Badgers were culled by cage trapping and shooting, with culling operations taking place over 5 years.⁷

The three approaches trialled were:

Reactive culling: badgers are culled on and around farms following TB outbreaks but not elsewhere (suspended in 2003 due to a 27% increase in bTB in reactive culling areas)⁸

Proactive culling: 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 activity⁹

In 2007, the final ISG report found that during the trial, culling was associated with an estimated 23% reduction in cattle TB in the proactive areas. However, proactive culling was associated with a 25% increase in cattle TB in land surrounding (within 2km) the proactive cull areas.¹⁰ A follow up study which found that the culling of badgers disrupts their territorial behaviour, causing badgers to range more widely both inside and outside culled areas.¹¹

In the [Final Report of the Independent Scientific Group](#) on cattle TB, published in 2007, the group concluded that badger culling was unlikely to contribute positively, or cost effectively, to the control of cattle TB in Britain:

We conclude that there is substantial scope for improvement of control of the disease through the application of heightened control measures directly targeting cattle. Therefore, we recommend that priority should be given to developing policies based on more rigorous application of control measures to cattle, in the absence of badger culling.'

Cattle TB incidence was also analysed in the cull areas for up to 6 years after the cull ended. The findings were included in a [review](#) published by the Royal Society of Biology in June 2013, which concluded the reduction in incidence persisted after the end of the cull, with effects diminishing over a 6-year period.

⁶ Defra, [Strategy for Achieving Official Bovine Tuberculosis Free Status for England](#), April 2014

⁷ Defra, [bTB: Randomised Badger Culling Trial](#) page, 17 June 2008

⁸ Defra Press Release 457/03, *Suspension of badger culling in reactive areas*, 4 November 2003

⁹ Defra, [bTB: Randomised Badger Culling Trial](#) page, 17 June 2008

¹⁰ [bTB: The Scientific Evidence - Final Report of the Independent Scientific Group on bTB](#), June 2007

¹¹ [bTB: The Scientific Evidence - Final Report of the Independent Scientific Group on bTB](#), June 2007

Following the findings of the UK Randomised Badger Culling Trial (RBCT) the previous Labour Government decided in 2008 not to introduce a badger cull as part of bTB control measures.¹² This changed following the 2010 election. The Coalition Government indicated that a badger cull would be introduced as part of TB control measures, announcing a consultation in September 2010.¹³

1.2 Badger policy in England

In July 2011 Defra published a [bTB Eradication Programme for England](#).¹⁴ The Programme set out a package of measures, including the proposal to pilot controlled shooting as a method of badger control in areas with high incidence of bTB. The pilots were intended to test assumptions about the effectiveness, humaneness and safety of this method of badger control. In February 2018, [Defra announced](#) the first of a number of regular reviews of the strategy.

Following this, the decision to licence a pilot badger cull in two areas in South West England was announced in December 2011. [The Government's policy on bTB and badger control in England](#) document, explained the decision:

We are satisfied that culling badgers in line with the strict licence criteria outlined in [section 5](#) below will prevent the spread of TB in the culled area and we consider a reduction of the scale seen in the RBCT to be substantial in the context of dealing with bTB, which is a "slow-moving", chronic, latent and infectious disease.¹⁵

Following the announcement of the pilot culls, the Government published its long-term [Strategy for achieving Officially Bovine Tuberculosis Free status for England](#) in April 2014, which set a target of eradicating bTB by 2038.¹⁶ The strategy included measures to strengthen biosecurity, increase bTB testing for cattle, and the rollout the badger cull pilots.

The Strategy also set out the Government position that badger culling was necessary to achieve OTF status.

'The Government considers that licensed badger culling, delivered effectively, is an important bTB control measure in areas with high and persistent levels of bTB epidemiologically linked to endemic TB infection in badgers. On the basis of historical evidence an estimated one third of the badger population in endemic areas is infected with *M. bovis*.'¹⁷

¹² HC Deb 7 July 2008 [c1153](#)

¹³ Full details are available in Library Note SNSC 3751 on [Badger Culling: Policy to 2008](#)

¹⁴ Defra, [bTB Eradication Programme for England](#), July 2011

¹⁵ Defra, [The Government's policy on bTB and badger control in England](#), 14 December 2011

¹⁶ Defra, [Strategy for Achieving Official Bovine Tuberculosis Free Status for England](#), April 2014

¹⁷ Defra, [Strategy for Achieving Official Bovine Tuberculosis Free Status for England](#), April 2014

Box 2: Strategy for achieving Officially Bovine Tuberculosis Free status for England

The objective of the strategy is:

- to achieve Officially Bovine Tuberculosis Free (OTF) status for England by 2038.
- to achieve OTF status for large parts of the north and east of England as soon as possible but most likely by 2025.

The strategy lists three key actions to achieve these objectives:

1. establishing three bovine tuberculosis (bTB) management regions or zones (a High Risk Area, a Low Risk Area and a buffer zone (Edge Area) in between);
2. applying a range of measures to control the disease within these zones that is practical and proportionate to the disease risk while maintaining an economically sustainable livestock industry;
3. ensuring that there is shared governance of the delivery process between the main beneficiaries including the food and farming industry and the taxpayer.

The strategy sets out different control policies in three management regions (see the Annex for a map of where the different management regions are in England):

- The **Low Risk Area (LRA)** has a low incidence of bTB and no recognised significant reservoir of the disease in wildlife.
- The **Edge Area** has a lower incidence of bTB than the High Risk Area, but a higher incidence than that in the LRA; it is the buffer zone between the High and Low risk areas.
- The **High Risk Area (HRA)** has a high incidence of bTB. The objective in the HRA is to halt and then reverse the increasing prevalence of bTB.

In addition to culling the Government is also researching and licencing the use of TB vaccination in badgers. See Box 3 for further details. Vaccination is also central to the approach taken to date in Wales and Northern Ireland.

Wales

The Welsh Government established a bTB Eradication Programme in 2008 to work towards a long term goal of eradicating bTB in Wales. The programme has been aimed at tackling all sources of bTB infection, with various different elements being introduced progressively.¹⁸ Measures have included stricter cattle TB testing and controls, with additional measures implemented in an area of west Wales with one of the highest incidence rates of bTB (the Intensive Action Area or IAA).

In 2010 the Welsh Government made plans to carry out a pilot cull of badgers in selected areas of Wales, to attempt to control bTB. This was halted following a Court of Appeal ruling.¹⁹ After the Labour Party won a majority in the Welsh Assembly in May 2011, it made an announcement that proposals for badger culling would be suspended pending a review of the science.²⁰ The proposed cull was replaced with a badger vaccination programme which has been in place since 2012.

¹⁸ Welsh Government, [Wales TB Eradication Programme](#), 2017

¹⁹ Minister for Rural Affairs, [Written Statement: No quick fix for bTB](#), 20 September 2010

²⁰ Welsh Government, [Environment Minister announces programme of badger vaccination](#), 20 March 2012

Northern Ireland

Northern Ireland has been conducting a Road Traffic Accident (RTA) survey of badgers since 1998, where bTB tests are carried out on badgers reported dead by the public. The results from this suggest that at least 17% of badgers in NI are infected.²¹ In response to this, in 2014, a 5 year “[test and vaccinate or remove](#)” (TVR) research project began in the Banbridge area of County Down, trialling an approach to controlling bTB in badgers by vaccinating bTB negative badgers and culling test positive badgers. This is due to finish in 2018.

Box 3: Badger and Cattle Vaccination

Additional measures supported by the Government to reduce the spread of bTB include development of a badger vaccine to reduce incidence of TB in badger populations. An injectable BCG badger vaccine has been available for use on prescription since 2010, subject to a licence from Natural England.

Defra ran a Badger Vaccination Deployment Project in a 100km² study area in Gloucestershire from 2010 to 2015. The aim of the project was to develop an understanding of the practicalities, cost and effort of deploying BadgerBCG, as well as to train lay vaccinators. The final [report](#) provides guidance on the labour and time required to carry out badger vaccination at a large scale.

The Government has offered support to private organisations wanting to carry out badger vaccination in the bTB ‘Edge Areas’ which separate high and low risk bTB zones.²² Vaccinating healthy badgers in this way is intended to help create a buffer zone of healthy badger populations to help curb the spread of bTB.²³

The first Badger Edge Vaccination Scheme (BEVS) was launched in 2014 and ran for two years but was suspended in 2016 following a global vaccine shortage. The scheme was [relaunched](#) as BEVS2 on 11 September 2017, with projects set to start in spring 2018. The BEVS package of support includes a funding award of up to 50% of long term costs for vaccinating, vaccination advice from field experts, free loans of equipment such as traps, and free vaccine supply.

On progress on developing a TB vaccine for cattle, the Government made clear in 2017 that work was ongoing, but did not commit to a specific deadline:

BCG (the attenuated strain of *Mycobacterium bovis* used worldwide to vaccinate people against TB) remains the only viable option at present for vaccination of cattle against TB.

The Animal and Plant Health Agency (formerly Animal Health and Veterinary Laboratory Agency) has shown a protective effect of BCG in cattle and developed delivery regimes for cattle. However, a DIVA test to differentiate vaccinated from infected animals must also be developed, as vaccination with BCG can interfere with the diagnostic tests routinely used to identify TB-infected cattle. APHA has developed such a test and further studies are ongoing to determine whether this will be suitable for use in the field. Once this has been determined, cattle vaccine field trials could be taken forward.²⁴

More information on [TB vaccination of cattle and badgers](#) is set out in Library Note SNSC 6447.

2. Pilot culls 2013-2014

In December 2011, the Government announced its decision to licence a badger cull in two areas in South West England. Licences to cull badgers were to be granted to farmers and landowners by Natural England under the *Protection of Badgers Act 1992* and *Wildlife and Countryside*

²¹ Ibid.

²² Defra, [Badger Vaccination Scheme relaunched in fight against bTB](#), 11 September 2017

²³ Defra, [Badger vaccination scheme launched to curb bTB spread](#), 2 September 2014

²⁴ Bovine Tuberculosis: Vaccination: Written question – [65349](#), 28 February 2017

Act 1981. The operational costs of culling would be met by farmers, while the monitoring and policing costs would be covered by Government.²⁵ Requirements for licensees, including financial provisions to ensure four years of culling, were set out by the Government in [guidance](#) to Natural England.²⁶

The exact siting of the pilot areas was not released to prevent action by protesters, but Natural England published further details of their general location.²⁷

The Government made clear the pilots were *not* designed to monitor the effectiveness of badger culling to control bTB. The first culling licences for pilot areas were issued in the autumn of 2012. Each licence had a four year term and specified that:

- Culls would take place over six week periods;
- The badger population in each 150km² area must be reduced by at least 70%;²⁸

In addition, to minimise perturbation – badgers disturbed by culling spreading disease by moving out of their territory – farmers would have to identify natural barriers to badger movements:

Farmers will have to take reasonable measures to identify barriers and buffers, such as rivers, coastlines and motorways, or areas where there are no cattle or where vaccination of badgers occurs, at the edge of culling areas to minimise the ‘perturbation effect’, where disturbing the badger population is thought to cause an increase in bTB in the surrounding area.²⁹

However, on 23 October 2012, the Secretary of State for Environment, Owen Paterson, [announced](#) that, following delays, the cull would be postponed until 2013. The NFU, who would be carrying out the cull on behalf of farmers in both areas, had [written to ministers](#) asking for a postponement. This was because of problems caused by a late start to the cull due to bad weather in the summer and policing constraints, and the fact that the number of badgers found in the cull areas was higher than had been expected. The Minister explained the decision in a [statement](#), concluding that ‘it would be wrong to go ahead if those on the ground cannot be confident of removing at least 70% of the populations’.³⁰ The pilot culls began in autumn 2013 in West Gloucestershire and West Somerset.³¹

²⁵ Natural England, [bTB and badger control in England](#), 5 June 2014

²⁶ Defra, [Guidance to Natural England Licences to kill or take badgers for the purpose of preventing the spread of bovine TB under section 10\(2\)\(a\) of the Protection of Badgers Act 1992](#), 2011

²⁷ Natural England, [bTB and badger control in England](#), 5 June 2014

²⁸ ‘[Badger Control Licence issued in West Gloucestershire](#)’, *Natural England*, 17 September 2012; ‘[Badger Control Licence issued in West Somerset](#)’, *Natural England*, 4 October 2012

²⁹ Defra, ‘[Update on measures to tackle bTB](#)’, 14 December 2011

³⁰ Defra, ‘[Badger cull to proceed next year](#)’, 23 October 2012

³¹ [HC Deb 19 January 2012 c45WS](#)

2.1 Pilot cull: 2013

The Government [announced](#) in February 2013 that Natural England had issued authorisation letters for two pilot areas.³² At the same time a new estimate of badger numbers in the two areas was published. This concluded that:

Current, best-available estimates of populations, with 80% confidence in both limits, in the pilot areas during summer/autumn 2012 are 2657 to 4079 in West Gloucestershire and 1972 to 2973 in West Somerset.

Defra [announced](#) on 27 August 2013 that the badger cull had commenced. In the first six weeks of the badger cull, 850 badgers were killed in Somerset and 708 in Gloucestershire.³³ After the initial six week period, the culls in both pilot areas were extended for two weeks as a result of the failure to cull 70% of badgers, which was the requirement set out in the Government badger control policy.

The culls ended by 30 November with an estimated 65% of badgers culled in the Somerset pilot and just less than 40% in the Gloucestershire pilot. In total, 940 badgers were removed in Somerset and 921 in Gloucestershire.³⁴

Number of badgers culled in 2013 pilot

Cull area	First six weeks of the cull			Two-week extension	Grand total
	Caged		Total	Culled*	
	Shot	and shot			
1 West Gloucestershire	543	165	708	213	921
2 West Somerset	360	490	850	90	940
Total	903	655	1558	303	1861

* Figures were only reported as totals for two-week extension

Source: Defra

[Pilot Badger Culls in Somerset and Gloucestershire](#) - Report by the Independent Expert Panel

2.2 Pilot cull: 2014

The Secretary of State for Environment, Food and Rural Affairs, Owen Paterson announced in April 2014 the pilots would be continued but they would not be extended to additional areas affected by TB for the time being. He also announced increased investment for the development of an effective badger and cattle vaccine.³⁵

Minimum and maximum numbers of badgers to be removed were set in both pilots, with a target of 615 to 1091 badgers set in Gloucestershire

³² Defra, '[Badger culls to go ahead this summer](#)', 27 February 2013

³³ '[Badger cull killed only 24% of animals by controlled shooting, figures show](#)', *The Guardian*, 23 January 2014

³⁴ Defra, '[Somerset badger cull ends](#)', 5 November 2013; Defra, '[Gloucestershire badger cull ends](#)', 2 December 2013

³⁵ [HC Deb 3 April 2013 c1034](#)

and 316 to 785 in Somerset.³⁶ [Culling](#) began in the two pilot areas in September 2014.

Details of the number of badgers culled in each of the pilot areas are provided below.³⁷ The minimum target for culled badgers was missed in West Gloucestershire and met in West Somerset.

Number of badgers culled in 2014

	Cull area	Target	Badgers culled		Total
			Shot	Caged and shot	
1	West Gloucestershire	615-1091	166	108	274
2	West Somerset	316-785	147	194	341
		Total	313	302	615

Source: Defra

[Summary of badger control monitoring during 2014](#)

2.3 Reaction and debate

The announcement of the badger cull pilots led to a large amount of press coverage due to protest from a number of wildlife charities and animal welfare advocacy groups, such as the Wildlife Trusts, the [RSPCA](#), the [League Against Cruel Sports](#), and the [Badger Trust](#).³⁸

Opposition to the badger culls resulted in protestors seeking to disrupt culling operations in both 2013 and 2014 by walking public footpaths at night, while also looking out for injured badgers.³⁹ Anti-cull saboteurs used more direct tactics with the aim of interrupt shooting, and finding and releasing trapped badgers.⁴⁰

A court injunction to prevent certain activities by protestors against the cull was granted to the National Farmers Union on 23 August 2013, following claims of intimidation and harassment of farmers involved in the cull.⁴¹ The injunction prevented people from carrying out activities such as protesting within 100m of people's homes and using lights or whistles during the night to disturb wildlife.⁴²

In 2014 the President of the NFU, Meurig Raymond, [defended](#) the decision to cull badgers as necessary to control bTB:

In the South West - where bTB is endemic and herds are continually being reinfected despite farmers' best efforts to protect them - controlling the disease in badgers has to be an essential part of any strategy to wipe this disease out.

³⁶ Natural England, [2014 West Gloucestershire authorisation letter](#), 26 August 2014; Natural England, [2014 West Somerset authorisation letter](#), 26 August 2014

³⁷ Defra, [Summary of badger control monitoring during 2014](#), December 2014

³⁸ ['Wildlife protesters call on Government to abandon badger cull as Queen guitarist Brian May leads London march'](#), *The Daily Mail*, 1 June 2013

³⁹ ['Protestors vow to use health and safety to stop badger cull'](#), *The Telegraph*, 25 August 2013

⁴⁰ ['Badger cull protestors save trapped animal as second phase starts'](#), *The Guardian*, 9 September 2014

⁴¹ ['Badger cull zone injunction is granted in High Court'](#), *BBC News*, 22 August 2013

⁴² ['NFU granted badger cull protest injunction in High Court'](#), *Farmers Guardian*, 23 August 2013

No one would choose to kill badgers if there was an effective alternative in areas where TB is rife. But if we're ever going to get on top of bTB in areas where the disease is endemic there is no other choice. The Chief Vet has said culling over a four-year period in both pilot areas will have an impact on disease control. I am confident that these pilot culls will help deliver a reduction in bTB and it is vital that they are allowed to be successfully completed so they can deliver the maximum benefits.

The British Veterinary Association Council reviewed its position on the pilot culls after examining data for the first two years. The position, published in April 2015, did not support controlled shooting of badgers going forward, raising concerns about its efficiency and humaneness. The BVA called instead for all badgers in the cull areas to be trapped and shot:

In light of the results following the second year of culling, BVA believes that it has not been demonstrated conclusively that controlled shooting can be carried out effectively and humanely based on the criteria that were set for the pilots. Nor are we confident that the effectiveness and humaneness can be significantly further improved, despite Defra's assurances after the first year of culling. We therefore do not support the continued use of controlled shooting as part of the badger control policy.

BVA believes that culling in West Somerset and West Gloucestershire should be completed using cage trapping and shooting only, on the basis that this is a tried and tested methodology based on the evidence from the RBCT.⁴³

3. Badger cull rollout since 2015

Summary

In 2015, three further areas where [licenced](#) Natural England published for three areas, the two existing areas in Gloucestershire and Somerset, and a third one in Dorset. Following this the Government announced that it intended to enable badger controls to take place over a wider number of areas in 2016, as the 2015 badger culls had successfully met their targets.⁴⁴ This has been disputed by a number of organisations, who have criticised the roll out of the culls.⁴⁵

In 2016, culling licences were issued for 7 new areas in Cornwall, Devon, Dorset, Gloucestershire and Herefordshire, in addition to the existing areas in Gloucestershire, Somerset and Dorset. Culling in these new areas will be carried out over 4 years. The actual start date for the cull in each area was decided by the licensed companies.⁴⁶

In 2017, 11 new areas were licenced for culling in, resulting in a total of 21 areas in which badger culling took place. A total of 19,274 badgers were culled, of which 11,638 were shot and 7,636 were trapped and shot.

⁴³ BVA, [BVA Council position on the pilot badger culls and badger culling policy in England](#), 15 April 2015

⁴⁴ Defra, [bTB eradication strategy delivering results](#), 17 December 2015

⁴⁵ ['The Wildlife Trusts urge Government to drop the cull and focus on vaccination and securing badger BCG supplies'](#), *The Wildlife Trusts*, 17 December 2015

⁴⁶ [bTB: authorisation for badger control in 2016](#), HM Government, 30 August 2016

3.1 Cull areas and results for 2015

The culls in Gloucestershire and Somerset entered their third year of culling in 2015, with a new areas licensed in Dorset. Natural England published [licences](#) for the three areas in August 2015, which included a maximum and minimum number of badgers that would need to be culled in each area in six weeks to meet the conditions of the licence:

- West Gloucestershire – a minimum of 265 and a maximum of 679
- West Somerset – a minimum of 55 and a maximum of 524
- Dorset – a minimum of 615 and a maximum of 835.⁴⁷

All three licences allowed free shooting of badgers, and badgers to be trapped and shot. In addition, the Farmers Weekly reported that two other areas in Devon and Herefordshire had their cull applications turned down by Natural England.⁴⁸

The target minimum number of badgers was achieved in all three areas, with the actual number of badgers culled falling into the middle of the range for each area. Details of the number of badgers culled in each area in 2015 are provided below.⁴⁹

Number of badgers culled in 2015

Cull area	Target	Badgers culled		
		Shot	Caged and shot	Total
West Gloucestershire	265-679	279	153	432
West Somerset	55-524	148	131	279
Dorset	615-835	316	440	756
	Total	743	724	1,467

Source: Defra, [Summary of badger control monitoring during 2015](#) (December 2015)

3.2 Cull areas and results for 2016

The Government confirmed on 30 August 2016 that badger culling licences would be issued in 7 new areas in Cornwall, Devon, Dorset, Gloucestershire and Herefordshire, in addition to the existing areas in Gloucestershire, Somerset and Dorset.

All ten of the cull areas licensed in 2016 achieved their minimum number and did not exceed their maximum number. In total 10,866 badgers were killed, of which just under half (5,219 badgers) were caged and shot while the remaining 5,672 were shot.⁵⁰

For all seven of the new cull areas, however, the minimum and maximum numbers of badgers to be culled were amended during the culling period “to better reflect the evidence on the ground on badger

⁴⁷ Natural England, [bTB: authorisation for badger culling in 2015](#), 28 August 2015

⁴⁸ ‘Farmer fury as Defra blocks badger cull in two TB hotspots’, *Farmers Weekly*, 3 September 2015

⁴⁹ Defra, [Summary of badger control monitoring during 2015](#), December 2015

⁵⁰ Defra, [“Summary of badger control monitoring during 2016”](#), December 2016

abundance.”⁵¹ For the three existing cull areas, the minimum and maximum numbers of badgers to be culled did not need to be changed.

On day 35 in six of the new cull areas and day 33 in one of the areas, Defra advised Natural England amend the targets to:

- Increase the minimum and maximum numbers in: Area 8 – Dorset; and Area 10 – Herefordshire.
- Decrease the numbers in the other five areas: Area 4 – Cornwall; Area 5 – Cornwall; Area 6 – Devon; Area 7 – Devon; and Area 9 – Gloucestershire.

Details of the number of badgers culled in each area in 2016 are provided below:

Number of badgers culled in 2016			Badgers culled		
	Cull area	Target	Shot	Caged and shot	Total
1	West Gloucestershire	228-642	186	66	252
2	West Somerset	75-544	146	71	217
3	Dorset	390-610	386	116	502
4	Cornwall	588-798	205	506	711
5	Cornwall	730-991	311	545	851
6	Devon	1502-2038	602	1436	2038
7	Devon	717-973	324	509	833
8	Dorset	2571-3489	1851	1149	3000
9	Gloucestershire	1844-2503	1175	683	1858
10	Herefordshire	568-770	486	138	624
	Total		5672	5219	10886

Source: Defra

[Summary of badger control monitoring during 2016](#)

3.3 Cull areas and results for 2017

The Government published details of the cull in September 2017. This included information on a further 11 areas where badger culling would take place. The two original pilot sites, by then entering the 5th year of culling, were licensed to carry out supplementary culling with the aim of maintaining existing badger population levels.⁵²

The new cull areas were:

- Area 11 in Cheshire,
- Areas 12-15 in Devon,
- Area 16 in Dorset,
- Area 17 and 18 in Somerset, and
- Areas 19-21 in Wiltshire.

⁵¹ Defra, [“Summary of badger control monitoring during 2016”](#), December 2016

⁵² Defra, [Setting the minimum and maximum numbers in badger cull areas in 2017](#). Advice to Natural England, 11 September 2017

As with existing culling areas, details of their exact locations were not made public. The new areas ranged in size between 206km², in Devon, and 1030km² in Dorset. In total 4,752 km² of land was added to the existing 3,236km² where culls were ongoing. There is also 572km² of land where the two pilot culls took place and where supplementary culling will continue. The total area of land in England where badger culling took place in 2017 was 8,560km².⁵³

As in the previous year, the minimum and maximum numbers of badgers to be culled were amended during the culling period for each of the 11 new cull areas added in 2017 (Areas 11-21).⁵⁴ For the ten existing cull areas, the minimum and maximum numbers of badgers to be culled did not need to be changed. The estimates, methodologies and rationale used to set the minimum and maximum numbers of badgers to be culled were published in September 2017.⁵⁵

Details of the number of badgers culled in each area in 2017 are provided below:

Number of Badgers Culled 2017		Target		Culled		
Cull area	Region	Min	Max	Total	Shot	Caged and Shot
1	Gloucestershire	160	580			
2	Somerset	140	610			
3	Dorset	184	404	257	189	68
4	Cornwall	43	292	213	118	95
5	Cornwall	93	403	358	254	104
6	Devon	719	1598	727	379	348
7	Devon	115	425	246	182	64
8	Dorset	754	1964	1166	937	229
9	Gloucestershire	1007	1906	1012	833	179
10	Herefordshire	218	487	394	332	62
11	Cheshire *	647	878	736	411	325
12	Devon *	1702	2309	1874	738	1136
13	Devon *	1060	1439	1237	406	831
14	Devon *	604	820	708	335	373
15	Devon *	689	935	763	226	537
16	Dorset *	2950	4004	3450	2352	1098
17	Somerset *	872	1184	1123	607	516
18	Somerset *	391	531	489	232	257
19	Wiltshire *	1888	2561	2252	1715	537
20	Wiltshire *	863	1172	1040	574	466
21	Wiltshire *	1013	1375	1229	818	411
Total		16112	25877	19274	11638	7636

*cull target reduced during culling season.

Source: Defra, [Summary of badger control monitoring during 2017](#)

Cull targets for all the new areas were amended during the culling period. Small changes were made to area 21 and area 11. Significant

⁵³ ibid

⁵⁴ Defra, "[Summary of badger control monitoring during 2017](#)", 21 December 2017

⁵⁵ Defra, "[Setting the minimum and maximum numbers in badger cull areas in 2017](#)", September 2017

reductions were made in areas 12 to 20. The overall original minimum and maximum targets were 21,981 to 33,841.⁵⁶

3.4 Reaction and debate

Although badger culling has been part of the Government's badger control policy since 2011 and is supported by farming organisations, it remains controversial. Protesters and cull saboteurs have continued to disrupt culls and campaign against them.^{57,58,59}

Following the announcement of the rollout of the cull in 2015 there was no major reaction from cull supporters, although the NFU President, Maurig Raymond, was [reported](#) to be frustrated that no further areas had been included:

There are many areas where the disease is rife that would benefit from badger culling and where farmers are prepared to play their part in the fight against bTB. We are very disappointed that more areas will not benefit from it this year. This is much slower progress than we wanted to see."⁶⁰

As he [explained](#) in another article:

The culls are being funded by local farmers who are prepared to use their own money because they believe the culls will have a positive impact on levels of bTB in their areas and other areas across the country where the disease is endemic.⁶¹

In response to the continuation of the cull beyond the initial pilots, the Guardian published [a letter](#) on 2 September 2015, from scientists with expertise in environmental issues, veterinary medicine, wildlife and livestock health and welfare critical of the decision to continue the cull. Signatories included Professor John Bourne, Former Chairman of the [Independent Scientific Group on Cattle TB](#) and Professor John Krebs, author of the 1997 Review on bTB and Badgers. The letter stated:

The government's badger culling policy continues to be opposed by the majority of scientific experts, and remains deeply unpopular with a large section of the public.

There is considerable research evidence and experience demonstrating the central importance of cattle-to-cattle transmission, both within and between herds, in maintaining and disseminating the disease. Control strategies require wider recognition of other factors, including the limitations of the tuberculin test, more rigid cattle movement controls and heightened on-farm biosecurity. These measures are far more effective at reducing tuberculosis in cattle. Vaccination of both cattle and badgers may also have a role to play.

We agree with the president of the British Veterinary Association who questions the ethics of continuing to use controlled shooting

⁵⁶ Defra, [Summary of badger control monitoring during 2017](#), 21 December 2017

⁵⁷ BBC News [The people risking arrest to stop the badger cull](#), 2 October 2016

⁵⁸ The Telegraph [Countryside braced for renewed badger cull protests](#), 15 August 2015

⁵⁹ The Express, [A tragedy and disaster' Brian May condemns controversial badger cull](#), 15 September 2017

⁶⁰ NFU, [bTB eradication strategy announcement – NFU Response](#), 28 September 2015

⁶¹ NFU [Badger culling is a key part of tackling bTB](#), 8 September 2015

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as a method of culling when it has shown to be both ineffective and inhumane.

We urge the government to reconsider immediately its decision to continue and extend the culling of badgers.⁶²

In 2016, the Wildlife Trusts condemned the Government's intention to roll out badger culls to other areas. Paul Wilkinson, head of Living Landscape for The Wildlife Trusts, said:

"The badger culls may have met the minimum targets set by the government but this cannot be considered a true measure of success. There is no evidence that culling badgers is having an impact on bTB. There are no statistics available for bTB incidence within the cull zones and no baseline data to compare them to, even if stats were forthcoming. The first two years of the pilot culls have already cost the taxpayer more than £16.8 million and there is no clear evidence to prove they have been an effective use of taxpayer's money."⁶³

Lord Krebs, who led the landmark Randomised Badger Culling Trial (RBCT) in 2008, criticised the announced expansion of the badger cull:

"Badger culling is a sideshow. The only effective way to stop TB is stopping the spread from cattle to cattle by more testing and a much better test."

"The government has not produced any figures to show the pilot culls in Gloucestershire and Somerset have worked, so how can they justify rolling out the cull to more areas?"⁶⁴

In December 2016, the Chief Veterinary Officer (CVO) concluded that the cull was effective and humane.⁶⁵ This was questioned by Professor Rosie Woodroffe, of the Zoological Society who was concerned that there was no way of telling what percentage of badgers had been culled, and by association whether the cull had been successful.⁶⁶

The [British Veterinary Association](#) continued to criticise the humaneness of controlled shooting. It supports the rollout of the culls only if restricted to using cage trapping and shooting:

"For these reasons, BVA supports the wider roll-out of culling to carefully selected areas where badgers are regarded as a significant contributor to the high incidence of bTB, through the use of cage trapping and shooting only; we do not support the continued use of controlled shooting as part of the badger control policy."⁶⁷

⁶² The Guardian Letters [Badger cull is flawed and must now stop](#) 2 September 2015

⁶³ The Wildlife Trusts [The Wildlife Trusts urge Government to drop the cull and focus on vaccination and securing badger BCG supplies](#), 17 December 2015

⁶⁴ The Guardian, [Badger cull expansion 'flies in face of scientific evidence](#), 13 July 2016

⁶⁵ Defra, [Chief Veterinary Officer's advice on the outcome of the 2016 badger culls](#), December 2016

⁶⁶ The Guardian, [Badger cull kills more than 10,000 animals in three months](#), 16 December 2016

⁶⁷ British Veterinary Association, [British Veterinary Association comment on Defra badger cull announcement](#), 26 August 2016

The Badger Trust has condemned the culls each year.⁶⁸ Dominic Dyer, the CEO of the Badger Trust stated in 2017:

“Over £40 million of taxpayers money has already been wasted on this policy, whilst recent research has proved conclusively that badgers actively avoid contact with cattle. There is a collective failure in both government and the farming sector to recognise the true causes of the spread of this disease. It is down to excessive movement of animals through trading, poor bio-security and the continued dependency on the SICCT skin test which can miss up to 50% of infected cattle.⁶⁹”

Labour shadow Defra Minister, David Drew, [wrote](#) to the Minister of State for Agriculture, Fisheries and Food State, George Eustace, in response to the announcement of the continuation of the cull in September 2017. He expressed the concerns about several issues including: that there had been no consultation on the new sites; a lack of evidence supporting the effectiveness of the cull and the fact that culled badgers are not being tested for TB.⁷⁰

4. Cull licencing and best practice requirements

Badgers and their setts are protected under the [Protection of Badgers Act 1992](#), which makes it an offence to kill or take a badger, except under licence.

Natural England is responsible for issuing licences and authorisations to local farmers and landowners for the removal of badgers to prevent the spread of TB. There are now two types of culling licence and each is applicable to a different phase of culling operations:

- A **Badger Disease Control licence** is required where culling is to take place for the first time, or where Natural England considers that a Supplementary Badger Disease Control licence is not the appropriate form of licence.
- A **Supplementary Badger Disease Control licence** is required where culling is to take place to prevent the recovery of the badger population following the completion of annual culling that has lasted at least four years under a Badger Disease Control licence.⁷¹

4.1 Badger Disease Control Licence

Badger Disease Control Licences are issued for four years, and allow culling to take place every year between 1 June and 31 January and are required to reduce badger population numbers by 70 %. The licenced

⁶⁸ Badger Trust [Badger Trust Condemns Continued Culling as Completely Irrational](#), 28 August 2015

⁶⁹ [Badger cull an 'insult to the nation's intelligence'](#), Badger Trust, 24 August 2017

⁷⁰ [Letter](#) from David Drew MP to the Minister of State for Agriculture, Fisheries and Food State, George Eustace, 18 September 2017

⁷¹ Defra, [Guidance to Natural England: Licences to kill or take badgers for the purpose of preventing the spread of bTB under section 10\(2\)\(a\) of the Protection of Badgers Act 1992](#), July 2017

cull companies decide the start dates for culling activity, which is only permitted to take place out of the closed seasons.

The closed seasons are as follows:

- controlled shooting – 1 February to 31 May
- cage-trapping and shooting – 1 December to 31 May
- cage-trapping and vaccination – 1 December to 30 April

Natural England sets the permitted maximum and minimum numbers of badgers that will be subject to control operations in each area. The criteria which Natural England must take account of in developing and issuing licences is set out in Defra's [guidance to Natural England](#). The guidance was first published in 2012, and has since been updated in 2015 and 2017.

The Guidance represents the Secretary of State's considered views, based on current scientific evidence, about what is required for any cull of badgers for bTB control purposes to be effective, safe and humane.

The current 2017 guidance specifies with regard to the number of badgers culled, that:

'[the] minimum number should be set at a level that in Natural England's judgement should reduce the estimated badger population of the application area by at least 70%;

a minimum number of badgers must also be removed in subsequent years of culling... [which] should maintain the badger population at the reduced level required to be achieved through culling in the first year.'⁷²

Amendments to Licence criteria in 2015

In August 2015, the Government consulted on three proposed changes to the badger cull licensing criteria. These were intended to introduce more flexibility to enable culling where it would be effective in reducing badger populations.⁷³

The Government published the [responses to the consultation](#) in December 2015, alongside new [guidance to Natural England on badger licences](#) which incorporated the three proposals that were consulted on, as set out by the then Secretary of State for Environment, Food and Rural Affairs, George Eustice.

'Following a public consultation, the following changes to licensing conditions were published on 17 December 2015:

- Enabling Natural England to keep the duration of annual badger control operations under review rather than limiting them to six weeks.
- Reducing the minimum size of an area from 150km² to 100km².

⁷² Defra, [Guidance to Natural England: Licences to kill or take badgers for the purpose of preventing the spread of bTB under section 10\(2\)\(a\) of the Protection of Badgers Act 1992](#), July 2017

⁷³ Defra, [Summary of responses to the consultation on Guidance to Natural England on licences to control the risk of bovine tuberculosis from badgers](#), December 2015

- Removing the requirement for at least 70% of the land in candidate areas to be accessible but retaining a requirement that approximately 90% of the land in the control area be either accessible, or within 200m of accessible land.⁷⁴

Some consultation respondents disagreed with the proposals. The Badger Trust, for example, accused the Government of weakening the cull licence criteria, stating that:

"Their new proposals are designed purely to make life easier for the culling companies and have reduced the culls to a crude numbers-based exercise in killing badgers."⁷⁵

4.2 Supplementary badger disease control licences

Supplementary Badger Disease Control Licences were introduced for the 2017 culling season, following a consultation by Defra.⁷⁶ These licences are for five years and are aimed at maintaining existing badger population levels. Minimum and maximum numbers of badgers to be culled will continue to be set by Natural England.

Rationale of the cull extension

Intensive badger culling operations in West Gloucestershire and West Somerset completed their fourth and final year in 2016. Drawing on evidence from [the Randomised badger culling trial \(RBCT\)](#),⁷⁷ Defra expects the licensed intensive culls to reduce cattle TB breakdowns (EXPLAIN) in each area for around seven and a half years.⁷⁸ To prolong the disease control benefits, Defra has stated that "it is necessary to maintain a steady badger population at the level achieved at the end of the licensed culls."⁷⁹

The Government view, following the consultation on the proposal, was that introducing supplementary badger control would prolong the expected disease control benefits and that "the consultation responses have not provided new or compelling evidence to change that view."⁸⁰

Licence conditions

Supplementary licences are [granted by Natural England](#) to areas which have achieved an effective cull for a period of at least four years.⁸¹ The

⁷⁴ WQ 12 July 2016 42129

⁷⁵ '[Badger Trust Accuses Government of Moving the Goalposts on Cull Licences](#)', *Badger Trust*, 19 October 2015

⁷⁶ Defra, "[bTB: supplementary badger disease control](#)", *gov.uk*, 16 December 2016

⁷⁷ ISG, [bTB: The Scientific Evidence](#), June 2007

⁷⁸ Defra, "[Guidance to Natural England on licensed badger control to prevent the spread of bovine tuberculosis: A consultation exercise contributing to the delivery of the Government's Strategy for achieving Officially Bovine Tuberculosis Free \(OTF\) status for England](#)", December 2016

⁷⁹ Defra, "[Guidance to Natural England on licensed badger control to prevent the spread of bovine tuberculosis: A consultation exercise contributing to the delivery of the Government's Strategy for achieving Officially Bovine Tuberculosis Free \(OTF\) status for England](#)", December 2016

⁸⁰ Defra, [Summary of responses to the consultation on Guidance to Natural England on licensed badger control to prevent the spread of bovine tuberculosis](#), July 2017

⁸¹ Defra, "[Guidance to Natural England on licensed badger control to prevent the spread of bovine tuberculosis: A consultation exercise contributing to the delivery of](#)

terms of the license mirror most of the terms and conditions set out in the existing licences, including for instance closed seasons for welfare considerations.⁸²

Supplementary badger culling will be reviewed if the incidence of TB in an area “drops significantly during the five year period of the licence”.⁸³ However, if the supplementary control is considered a success, Natural England could consider subsequent five-year licences.⁸⁴

4.3 Best practice guidance for licence operators

Defra published best practice [guidance](#) for the controlled shooting of free-ranging badgers in the field in October 2015, replacing the original [best practice guidance](#) published in October 2012. This makes clear that licenced operators must meet required levels of competence, follow best practice guidelines and strictly comply with all licence conditions.⁸⁵

This guidance provides information on site selection, baiting, shot placement, and following up initial shots. It includes among other points the following on ensuring the humane killing of badgers:

- No shooting of badgers in the field will be permitted from 1st February to 31 May, inclusive.
- A badger must only be selected to be shot if it is at least 25 metres away from the nearest sett and far enough from dense cover.
- Badgers in the field must be shot in such a manner that there is sufficient trauma to the heart/lung area to ensure a rapid and humane death and should only be taken when the animal is stationary. Head and neck shots must not be taken due to the risk of non-fatal injury.
- If an injured badger is believed to have taken refuge in a sett, the sett must not be dug into or interfered with in any way, nor must dogs be entered into the sett.

Separate guidance on [best practice when cage trapping and shooting badgers](#) was also originally [published in May 2012](#), and updated in October 2015, covering cage trapping procedure and shooting of captive badgers.

[the Government’s Strategy for achieving Officially Bovine Tuberculosis Free \(OTF\) status for England”,](#) December 2016

⁸² Defra, [Guidance to Natural England: Licences to kill or take badgers for the purpose of preventing the spread of bTB under section 10\(2\)\(a\) of the Protection of Badgers Act 1992](#), July 2017

⁸³ Defra, [Guidance to Natural England: Licences to kill or take badgers for the purpose of preventing the spread of bTB under section 10\(2\)\(a\) of the Protection of Badgers Act 1992](#), July 2017

⁸⁴ Defra, [Guidance to Natural England: Licences to kill or take badgers for the purpose of preventing the spread of bTB under section 10\(2\)\(a\) of the Protection of Badgers Act 1992](#), July 2017

⁸⁵ Defra, [Controlled shooting of badgers in the field under licence to prevent the spread of bTB](#), 26 August 2014

5. Monitoring of the culls

Summary

The first year of the pilot cull was monitored by Natural England and the Animal Health and Veterinary Laboratories Agency (AHVLA), now the Animal and Plant Health Agency (APHA), for effectiveness and humaneness. This was overseen by an Independent Expert Panel (IEP), who reported their findings in April 2014 but was not asked to continue in the second year. Monitoring by Natural England and APHA continues, but the number of post-mortems carried out has decreased as the cull rollout has progressed.

5.1 Independent Expert Panel (IEP)

In March 2012, the Government appointed an independent panel of experts to oversee the monitoring and evaluation of the pilot areas in the first year of the pilot cull. The remit of the Panel included advising on data collection and analysis, ensuring monitoring protocols were scientifically robust, and considering public safety issues.⁸⁶ Information about the members of the Panel can be found on the [IEP page](#), along with notes of all their meetings. Part of the IEP's role was to oversee the development of protocols to monitor the '*effectiveness*' and '*humaneness*' of controlled shooting.

- Effectiveness

To determine the effectiveness of the cull and its ability to remove 70% of badgers present, the original population needed to be estimated as precisely as possible.⁸⁷

- Humaneness

Humaneness would be monitored through both field observations and post-mortems of culled badgers. In addition, a random sample of culled badger carcasses would be subject to an x-ray, to assess bone damage and ammunition fragmentation, and a post-mortem to look at wound location and internal organ damage.⁸⁸

In the first year of the cull, monitoring was carried out by the Animal Health and Veterinary Laboratories Agency (AHVLA), to test the assumption that controlled shooting is a humane culling technique. In addition Natural England monitored the culls to ensure compliance with licence conditions and best practice guidance.⁸⁹ Research was

⁸⁶ Defra, Policy Advisory Group, [Badger Culling Pilots: Independent Expert Panel](#)

⁸⁷ Defra, [Estimation of badger population sizes in the West Gloucestershire and West Somerset pilot areas](#), 22 February 2013

⁸⁸ Defra, Independent Expert Panel, [Monitoring the humaneness of controlled shooting](#), October 2012

⁸⁹ Defra, FOI request, [Pilot Badger Cull](#), 1 October 2013

completed during the first 6 weeks of the trial period.⁹⁰ The Panel did not monitor the cull extension periods:⁹¹

Careful consideration was given to whether there was a need to continue this monitoring during the extension periods, and the chair of the independent panel was consulted. It was concluded that continuing observations beyond the required 60 and associated 120 post-mortems would add little to the statistical robustness of the data gathered during the planned six weeks of the humaneness study.

IEP Report

The Independent Expert Panel's [report](#), was published in April 2014.⁹² The Panel's report raised concerns about the humaneness of shooting as a culling method. The Panel concluded that efficiency and humaneness should be improved and that continued monitoring was necessary:

If culling is continued in the pilot areas, or in the event of roll-out to additional areas, standards of effectiveness and humaneness must be improved. Continuation of monitoring, of both effectiveness and humaneness, is necessary to demonstrate that improvements have been achieved. In addition, such monitoring should be independently audited.

The Government [response](#) stated that it would work to put measures in place to address the recommendations made by the Panel.⁹³

5.2 No IEP monitoring after 2014

The Government first indicated that the Independent Expert Panel would not monitor the 2014 pilot culls in a PQ response in April 2014:

George Eustice: I have no plans to ask the Independent Expert Panel to report on the second year of the pilot badger culls in Somerset and Gloucestershire.⁹⁴

In July 2014, the Badger Trust was given permission to seek a Judicial Review of whether the continuation of the pilots for a second year would be legal, following the Government's decision not to use the Independent Expert Panel to monitor the culls.⁹⁵ The legal challenge was dismissed by the Court of Appeal in October 2014.⁹⁶

In the absence of an Independent Expert Panel, senior editors at the *Journal of Animal Ecology* wrote an open letter to Defra in November 2014, offering to carry out an independent review of the data.⁹⁷ The Minister for Farming, Food and the Marine Environment, George

⁹⁰ [HC Deb 5 February 2014 c297W](#)

⁹¹ [HC Deb 14 Jan 2014 c471W](#)

⁹² IEP, [Pilot Badger Culls in Somerset and Gloucestershire](#), 3 April 2014; Defra, [Government Response to Report by the Independent Expert Panel](#), April 2014; Defra, [Strategy for Achieving Official Bovine Tuberculosis Free Status for England](#), April 2014

⁹³ Defra, [Defra response – Pilot badger culls in Somerset and Gloucestershire: report by the Independent Panel](#), April 2014

⁹⁴ [HC Deb 28 April 2014 c478W](#)

⁹⁵ 'Badger Trust given permission to challenge badger cull', *BBC News*, 1 July 2014

⁹⁶ 'Badger Trust loses legal appeal over cull', *Farmers Guardian*, 29 October 2014

⁹⁷ 'Transparency and Evidence-Based Policy: An Open Letter to Defra from *Journal of Animal Ecology*', *Journal of Animal Ecology*, 4 November 2014

Eustice, said that the IEP had a one-off role in 2013, meaning that their work was complete and would not be repeated.⁹⁸

Defra published details of the monitoring that would take place during the 2014 cull.⁹⁹ Monitoring for humaneness included field observations to assess the number of shots taken and number of carcasses retrieved, as well as post-mortem examinations carried out by AHVLA vets. Post-mortems were to be carried out on a random sample of 60 carcasses from each area.¹⁰⁰

Defra also stated that the pilot culls from the previous year had shown the methods for estimating badger populations were imprecise, and monitoring would therefore focus on:

‘ensuring sufficient and recorded contractor effort and the outcomes in terms of the number of badgers culled, their location, and ongoing assessment of evidence of remaining badger activity through field signs and sightings.

This information will enable a spatial and real-time assessment of the effort deployed and progress made across the culling areas, allowing Natural England to make an ongoing assessment of the intensiveness and consistency of the effort deployed across the culling area.’¹⁰¹

Effectiveness and Humanness

Defra concluded in the [Summary of Badger Control Monitoring during 2014](#), that the cull in Somerset was evidence that the cull could be humane and effective, but acknowledged that “there is a need for continued training of contractors, to ensure high standards of effectiveness, humaneness and safety”.¹⁰² These views reflected [advice given by the Chief Veterinary Officer](#) following his review of the first two years of culling. He concluded that an industry-led cull could be effective in the right circumstances, highlighting that some improvements needed to be made in West Gloucestershire.¹⁰³ The CVO also recommended that improvements to increase standards of accuracy should be pursued further.¹⁰⁴

5.3 Cull rollout monitoring

Natural England continued to monitor progress of the cull in existing areas, and in the new areas added each year in 2015, 2016 and 2017. Natural England received regular information on the quantity and spatial distribution of culling activity as the cull progressed, allowing

⁹⁸ [HC Deb 4 November 2014 c201WH](#)

⁹⁹ Defra, [Monitoring the humaneness and effectiveness of badger culling in 2014](#), August 2014

¹⁰⁰ Defra, [Monitoring the humaneness and effectiveness of badger culling in 2014](#), August 2014

¹⁰¹ Defra, [Monitoring the humaneness and effectiveness of badger culling in 2014](#), August 2014

¹⁰² Defra, [Summary of badger control monitoring during 2014](#), December 2014

¹⁰³ Defra, [Chief Veterinary Officer’s advice on outcome of year 2 of the badger culls](#), December 2014

¹⁰⁴ Defra, [Chief Veterinary Officer’s advice on outcome of year 2 of the badger culls](#), 18 December 2014

assessment of the progress of each cull company carrying out the culls on behalf of farmers.¹⁰⁵

Effectiveness

Natural England concluded at the end of each of the 2015, 2016 and 2017 culls that all badger control companies in each area “had delivered the level of badger removal required to be confident of disease control benefits and that the operations were carried out to a high standard of public safety.”^{106,107,108}

The Chief Veterinary Officer’s (CVO’s) [advice on the outcome of the 2015 badger culls](#) stated that licensing of further cull areas would be necessary to realise disease control benefits at regional rather than at local levels, and that this would require a “systematic, reliable and consistently reproducible culling delivery model”.¹⁰⁹ Furthermore, the CVO advised that consideration be given to monitoring the disease status of badgers as well as badger populations within cull areas, and he stressed the importance of rigorous cattle controls and high levels of biosecurity in cull areas in order to realise full disease control benefits over time.¹¹⁰

Humaneness

In 2015, 2016, and 2017 the primary method for measuring ‘humaneness’ was by using shooting accuracy as a proxy measure, monitored using observations by Natural England staff of badgers being shot at by controlled shooting.¹¹¹

In 2015, a small number of random post-mortem examinations (PMEs) were carried on badgers shot in the Dorset area, by the Animal and Plant Health Agency (APHA), to supplement the field monitoring.¹¹² Defra concluded after each cull that the levels of controlled shooting accuracy achieved were similar to those achieved in previous years, and in 2016 stated that:

‘The likelihood of suffering in badgers is comparable with the range of outcomes reported when other control activities, currently accepted by society, have been assessed. Licensed farmers and landowners will need to continue to ensure that their contractors receive rigorous training to maintain high standards of effectiveness, humaneness and safety.’¹¹³

At the end of the 2017 cull, the Chief Veterinary Officer concluded that given the accumulation of evidence from previous years it would not be necessary for the CVO to monitor future badger culls:

¹⁰⁵ Defra, [Summary of badger control monitoring during 2016](#), December 2016

¹⁰⁶ Defra, [Summary of badger control monitoring during 2015](#), December 2015

¹⁰⁷ Defra, [Summary of badger control monitoring during 2016](#), December 2016

¹⁰⁸ Defra, [Summary of badger control monitoring during 2017](#), December 2017

¹⁰⁹ Defra, [“Chief Veterinary Officer’s advice on the outcome of the 2015 badger culls”](#), 2015

¹¹⁰ Defra, [“Chief Veterinary Officer’s advice on the outcome of the 2015 badger culls”](#), 2015

¹¹¹ Defra, [Summary of badger control monitoring during 2016](#), December 2016

¹¹² Defra, [Summary of badger control monitoring during 2015](#), December 2015

¹¹³ Defra, [Summary of badger control monitoring during 2016](#), December 2016

'From 2018 onwards I believe that the CVO no longer needs to scrutinise the culls in real time as the issues to be monitored have been defined. Instead I would anticipate that NATURAL ENGLAND, as the licencing authority, will report on the outcome of the cull. The CVO can and should be called on to advise in any situations where culling is not delivering effectively and where the delivery of expected disease control benefits is threatened or where CVO advice is referred to in Defra's guidance to Natural England.'¹¹⁴

5.4 Testing for bTB in culled badgers

In 2013-2014, badgers removed under licence during the pilot culls in Gloucestershire and Somerset were not routinely tested for TB. There were 158 post mortems carried out to test the humanness of the culling, but the purpose of the post-mortems did not include testing for TB infection.¹¹⁵ The government has stated that the results of the [Randomised Badger Culling Trial \(RBCT\)](#), which ran from 1998 to 2006, had indicated that around one third of badgers to be infected with TB in areas with a high incidence of the disease.

On a few occasions TB testing has been carried out at the specific request of landowners. In response to requests for this information the Government has stated that this information is not available under [article 12\(5\)\(c\) of the Environmental Information Regulation](#) relating to intellectual property.

On 13 April 2017, the Minister for Agriculture, Fisheries, and Food, [indicated](#) that new methodologies of gathering information on disease levels in badgers are being piloted:

George Eustice:

Culled carcasses from between 2013 – 2016 were not routinely tested for TB as the RBCT established that approximately one-third of badgers in areas of high incidence of bTB were infected. This year a pilot study was started to explore ways in which badger carcasses obtained from the cull potentially could be used to gather long term information on levels of disease in badgers. A number of carcasses from nine of the areas were sampled and testing methodologies are being piloted. It will be some time before any interim findings on this exploratory undertaking are available.

6. Culling costs

Farmers are responsible for the operational costs associated with badger culling. Farmer-led companies cover the costs of surveying, preparation and coordination and the delivery of badger control, often carried out by contracted companies, through controlled shooting and cage trapping, including equipment and manpower.¹¹⁶

¹¹⁴ Defra, [Chief Veterinary Officer's advice on the outcome of the 2017 badger culls](#), 21 December 2017

¹¹⁵ [HC Deb 5 Feb 2014 c297W](#)

¹¹⁶ Defra, [Badger Control Value for Money Analysis 2017](#), September 2017

The cost of monitoring and licensing the cull, including policing costs, are covered by the Government, specifically the Department for Food and Rural Affairs (Defra).

6.1 Defra's estimates

The Government produced a range of estimates for the cost of farmer led culls in advance of their implementation.^{117;118}

The Government estimate in 2016 was that there would be a cost £2.03 million per new cull area over four years (£1.16 million – Government, and £0.87 million –industry).¹¹⁹ The total quantified benefits were estimated at £2.59 million, meaning that the benefits of the cull in terms of disease reduction could be around £0.56m per area. Defra noted that there was “considerable uncertainty” in these figures and could range from £0.69m to £4.16m per area.¹²⁰

6.2 Actual costs, 2013-16

Defra published updated details of the [total costs](#) to Government it had incurred for badger culling between 2013 and 2016 in September 2017.¹²¹ Between 2013 and 2015 the total cost of badger culling operations decreased in each year from £9.8 million in 2013 to £3.6 million in 2015, despite adding in a new cull area. In 2016, while the total cost rose to £5.4 million, the cost per badger removed decreased significantly.

Badger cull costs to Defra

Badger control costs				
	2013	2014	2015	2016
Licensing and compliance monitoring	£859,000	£1,036,000	£1,003,000	£1,284,000
Humaneness monitoring, including postmortems	£2,628,000	£1,515,000	£154,000	£392,000
Efficacy monitoring	£2,311,000	£17,000	£0	£0
Advice and assessments	£389,000	£294,000	£460,000	£646,000
Other costs, including equipment	£107,000	£205,000	£162,000	£53,000
Total control costs	£6,294,000	£3,067,000	£1,779,000	£2,375,000
Policing costs funded by Defra	£3,524,000	£1,392,000	£1,803,247	£3,029,998
Total cost to Defra	£9,818,000	£4,459,000	£3,582,247	£5,404,998
Total costs per badger removed	£5,275.66	£7,250.41	£2,441.89	£496.51
- of which control costs	£3,382.05	£4,986.99	£1,212.68	£218.17
- of which policing costs	£1,893.61	£2,263.41	£1,229.21	£278.34
<i>Badgers culled</i>	<i>1,861</i>	<i>615</i>	<i>1,467</i>	<i>10,886</i>

Sources:

Defra, [Government badger control costs 2016](#)

Defra, bTB, [Government badger control costs 2015](#)

Defra, [Summary of badger control monitoring during 2016](#)

Defra, [Summary of badger control monitoring during 2014](#)

¹¹⁷ Defra, [Annex B: The Randomised Badger Culling Trial \(Proactive & Reactive culling\)](#), September 2010

¹¹⁸ Defra, [Impact Assessment: Measures to address bTB in badgers](#), 30 November 2011

¹¹⁹ Defra, [Badger control policy: value for money analysis 2016](#), 30 August 2016

¹²⁰ Defra, [Badger control policy: value for money analysis 2016](#), 30 August 2016

¹²¹ Defra, [Government badger control costs 2016](#), 11 September 2017

6.3 Estimated costs for 2017

For 2017 Defra's [Badger control value for money analysis](#) set out the following estimated costs and benefits

- Each new cull area is expected to deliver net benefits of £1.09m per area. This includes costs accrued over four years of culling and benefits accrued over eleven years in line with results from the Randomised Badger Control Trial.
- The future costs to government have been estimated at £0.49m per area over four years.
- Industry costs have been estimated at £0.34m per area over four years.
- The total quantified benefits are estimated at £1.89m per area over eleven years, based on the central results of the Randomised Badger Control Trial.¹²²

The estimated industry costs of extending the cull to further 11 areas in 2017 is £0.34 million per area over four years.¹²³ The analysis explained the declining costs as follows:

It is likely that extending to eleven new areas will require a similar level of policing, at least in their initial year. However, police forces have consolidated their command and control structure for operations this year to reduce costs. It is a shared goal of Defra and the Home Office that policing should become business as usual for local police forces and attract no additional costs. Over time, following further successful badger control operations without security incident, we expect policing costs to disappear.

The costs per area to government and industry presented here are lower than those observed in the ten badger control areas to date. Costs to government have fallen due to more cost-effective monitoring and policing. Costs to industry are expected to fall as lessons learnt over the last four years lead to efficiencies and improvements in operational delivery.¹²⁴

7. Consultations on extending the culls

The Government launched two consultations in February 2018: the first on [extending the number of new badger culls](#) being licenced by Natural England every year; the second on allowing some [culling in in the Low Risk Area](#) for bTB. Both consultations close on 15 April 2018.

The first consultation, [Bovine TB: Consultation on revised guidance for licensing badger control areas](#), proposes removing the current limit which restricts Natural England from licencing more than 10 new cull areas a year. The Government sets out the reason for this as follows:

Overall, the evidence and experience gained over the last five years strongly indicates that there is no necessity to set a limit on the number of new licences issued each year for the purposes of

¹²² Defra, [Badger control value for money analysis 2017](#), 11 September 2017

¹²³ Defra, [Badger Control Value for Money Analysis 2017](#), September 2017

¹²⁴ *ibid*

limiting the risk of extinction. Retaining the limit will slow down progress in disease control.¹²⁵

The second consultation, [Bovine TB: consultation on proposals to introduce licensed badger control to prevent the spread of bovine tuberculosis in the Low Risk Area \(England\)](#), proposes allowing culls outside areas that are subject to annual TB testing in cattle (High Risk Area and Edge Area) under certain circumstances. The aim of this proposal is set out as follows:

The aim of badger control in the LRA would be to remove and/or vaccinate badgers from an estimated minimum infected area, based on epidemiological and ecological advice, and from a buffer zone surrounding this as a precaution, to ensure that all infected badgers are removed and/or vaccinated.¹²⁶

The Zoological Society of London has published an article setting out its [concerns](#) about the proposals.¹²⁷

8. Evidence of impact on bTB incidence

There has been some limited assessment aimed at determining whether the badger culling policy in England has had any discernible impact on bTB up to 2016. The Randomised Badger Culling Trial found there was a time lag of four years between badger culling and any reduction in bTB.¹²⁸

Analysis of the data for the first three years of culling was [published](#) in the journal *Ecology and Evolution* in August 2017. This looked at the data and made adjustments to take into account confounding factors, such as previous bTB incidence and herd TB status, and the number and size of herds in each area. Their analysis showed that:

Reductions in TB incidence were associated with culling in the first 2 years in both the Somerset and Gloucestershire intervention areas when compared to areas with no culling.¹²⁹

However, the authors did not recommend using these findings to develop “generalizable inferences about the effectiveness of the policy at present”. This was because:

Only 2 intervention areas with 2 years of data are available for analysis, and the biological cause–effect relationship behind the statistical associations is difficult to determine.¹³⁰

¹²⁵ Defra, [Bovine TB: Consultation on revised guidance for licensing badger control areas](#), 16 February 2018

¹²⁶ Defra, [Bovine TB: consultation on proposals to introduce licensed badger control to prevent the spread of bovine tuberculosis in the Low Risk Area \(England\)](#) 16 February 2018

¹²⁷ ZSL, [Badger Culling – coming soon to countryside near you](#), 11 April 2018

¹²⁸ Donnelly et al, (2007) [Impacts of widespread badger culling on cattle tuberculosis: concluding analyses from a large-scale field trial](#). *Int. J Infect Dis.* 11(4):300-8.

¹²⁹ Brunton LA et al., [Assessing the effects of the first 2 years of industry-led badger culling in England on the incidence of bovine tuberculosis in cattle in 2013–2015](#), *Ecology and Evolution*, 4 August 2017

¹³⁰ *ibid*

The Animal and Plant Health Agency (APHA) published a [Report on the incidence of bovine tuberculosis in cattle in 2013 – 2016](#) in September 2017. This was a three years' follow-up in areas of Somerset and Gloucestershire and one year of follow-up in Dorset of industry-led badger control. In this the authors recognised the data was limited.¹³¹

The aim of the report was to provide an “updated descriptive analysis of TB incidence in cattle for licensed [cull] areas and comparison areas” where no culling took place. It concluded that:

The unadjusted incidence rate ratios revealed no statistically significant differences between the combined central areas of the intervention areas compared to comparison areas, or combined buffers of intervention areas compared to comparison areas buffers for years in isolation.

A difficulty in analysing the data due to the lack of randomised selection of sites was highlighted. The report also stated that it was too early to draw “generalizable inferences” on the effectiveness of the culls:

The authors urge caution in developing generalizable inferences about the effectiveness of the policy at this stage and note that a time lag of around 4 years was observed between culling in the RBCT and measurable significant effect on cattle TB incidence.¹³²

And that:

The long-term value of information from monitoring this industry-led culling will depend on the conduct of the cull, the number of areas eventually licensed and the extent to which other parts of the TB control policy remain stable.¹³³

The Government policy refers to the Randomised Badger Culling Trial, which took place over 9 years, as evidence of the effectiveness of badger culling. However, the Minister of State for Agriculture, Fisheries and Food, George Eustice, did refer to the APHA report in a [response](#) to a parliamentary question in October 2017 on the scientific basis for the wider roll-out of the badger cull:

George Eustice

The basis for the roll-out of the cull was the randomised badger culling trials carried out under the previous Labour Government. Those trials showed that there would be a reduction in the disease through a badger cull. Indeed, research carried out earlier this summer by Christl Donnelly has confirmed that there is a 58% reduction in the disease in cattle in Gloucester and a 21% reduction in Somerset. That is within the range we would expect, based on the RBCTs.¹³⁴

¹³¹ APHA, [Report on the incidence of bovine tuberculosis in cattle in 2013 – 2016, September 2017](#)

¹³² APHA, [Report on the incidence of bovine tuberculosis in cattle in 2013 – 2016, September 2017](#)

¹³³ *ibid*

¹³⁴ [HC Deb 26 October 2017](#) c.421

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