

Summary of badger control monitoring during 2016

December 2016

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Background

On 30 August 2016, Defra announced ¹that as part of the Government's 25-year strategy to eradicate bovine tuberculosis and protect the livelihoods of dairy and beef farmers, Natural England had licensed and authorised local farmers and landowners to carry out badger control operations across ten areas in Cornwall , Devon, Dorset, Gloucestershire, Herefordshire and, Somerset in 2016.

Badger control operations, lasting at least six weeks, took place in each area, between 29 August and 18 October 2016. This document sets out the outcomes from the monitoring conducted.

Effectiveness

Estimates of the numbers of badgers to be removed from each control area were made for the purpose of giving advice to Natural England (NE) for the setting of minimum and maximum numbers in the licences. The estimates, methodologies and rationale used were published in August 2016.²

As in previous years Natural England followed the progress in each cull area closely. The levels of contractor shooting effort, number of traps set and badgers removed were recorded on a daily basis in all accessible land parcels. This provided NE with regular information on the quantity and spatial distribution of culling activity, which enabled a detailed assessment of progress that each cull company was making towards achieving the minimum and maximum numbers, and assess whether resources were being effectively deployed across all accessible land.

As set out in Defra's advice to NE (paragraphs 35-38), the daily data collected about the level of effort being applied across each area, and the locations of badgers removed was reviewed as the cull progressed to assess whether the badger populations were higher or lower than the estimates suggested.

Based on an assessment of the data on day 35 in six of the new cull areas and day 33 in one of the areas, Defra advised NE to increase the minimum and maximum numbers in two of the areas and decrease the numbers in the other five areas to better reflect the

¹ <https://www.gov.uk/government/news/further-measures-to-eradicate-bovine-tb>

² <https://www.gov.uk/government/publications/advice-to-natural-england-on-setting-minimum-and-maximum-numbers-of-badgers-to-be-controlled-in-2016>

evidence on the ground on badger abundance. Details of the calculations can be found in Annex A2

This suggests that while the 2011-13 national sett survey approach may provide a reliable estimate of the mean density of badgers at a regional scale, it fails to reflect heterogeneity at smaller scales.

There was no updating of the minimum and maximum numbers in the three areas which began culling in 2013 or 2015, as these were estimated using sett surveys carried out in 2016.

All ten cull areas in 2016 achieved their minimum number and did not exceed their maximum number, see table 1.

Table 1

Area	Minimum number	Maximum number	Badgers removed	Of which:	
				Removed by controlled shooting	Removed by cage trapping
Area 1-Gloucestershire	228	642	252	186	66
Area 2-Somerset	75	544	217	146	71
Area 3-Dorset	390	610	502	386	116
Area 4-Cornwall	588*	798*	711	204	506
Area 5-Cornwall	730*	991*	851	306	545
Area 6-Devon	1502*	2038*	2038	602	1436
Area 7-Devon	717*	973*	833	324	509
Area 8-Dorset	2571*	3489*	3000	1851	1149
Area 9-Gloucestershire	1844*	2503*	1858	1175	683
Area 10-Herefordshire	568*	770*	624	486	138

*Updated minimum and maximum numbers presented

More data on the ten areas can be found in annex A1, NE will use the data on effort levels and numbers of badgers culled to inform its requirements for future badger control operations

Accuracy of controlled shooting

Shooting accuracy was used as a proxy measure for 'humaneness' and was monitored using observations by NE staff of badgers being shot at by controlled shooting.

Summary of controlled shooting observations

NE has summarised its observations of controlled shooting in Annex B. NE staff observed 112 badgers being shot at using controlled shooting, of which 9 appeared to be missed and 3 appeared to be hit but were not retrieved. In such cases there is some element of uncertainty as to whether these badgers were hit or missed. The Independent Expert Panel (IEP) was concerned that any non-retrieved badger might have been hit, and thus was at risk of experiencing marked pain. The non-retrieval rate observed in 2016 (10.7%, 95% confidence interval 6.0%-17.4%³) is similar to that observed during the culls in 2013, 2014 and 2015. Details of the NE observations of these 12 badgers can be found in Annex B.

This level of accuracy compares favourably with a published study of controlled shooting of rabbits in Australia⁴ which is the only other study which uses this method of assessing the accuracy of controlled shooting. In that study, 21% of rabbits shot at were not retrieved of which 10% were considered misses and 11% were considered to have been hit.

Of the 112 observed badgers, 1 was in Area-3 Dorset and 111 were in new cull areas.

Fourteen badgers were reported by the badger control companies to have been hit and escaped wounded: see the NE report in Annex C.

Unlike previous years, in 2016 post-mortem examination (PME) would only be carried out by exception. Only one such PME was requested by NE when it was not immediately obvious the badger had been shot. The PME concluded that the animal had indeed been shot -see Annex B.

³ Estimates of confidence intervals for proportions were produced using a "Modified Jeffries interval" (Brown and others, 2001).

⁴ Hampton et al., "A simple quantitative method for assessing animal welfare outcomes in terrestrial wildlife shooting: the European rabbit as a case study" *Animal Welfare* 2015, 24: 307-317

Safety of the operations

Operations in all ten areas were carried out to a high standard of public safety. All the badger control companies' contractors continued to receive training prior to the cull commencing in 2016, on the requirements of the Best Practice Guidance, lessons learned and safety training.

In relation to the use of firearms in all ten cull areas, no significant incidents affecting public safety were reported. Contractors continued to show high levels of discipline and adherence to the Best Practice Guidance.

Conclusions

The results from 2016 indicate that all ten badger control companies have 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.

The levels of controlled shooting accuracy achieved in this year's operations were similar to those in the previous three years. 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.

Annexes

Annex	Title
A1	Data from for the ten cull areas
A2	Updating of minimum and maximum numbers
B	NE compliance monitoring summary
C	NE report on Self-reported "shot at but not retrieved" events



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