

**Department for Environment, Food and Rural Affairs**

## Summary of badger control monitoring during 2016

### Updating of minimum and maximum numbers during the cull

In 2016 it became apparent from daily returns and field observations by Natural England and the Animal and Plant Health Agency (APHA), that there was a much wider range of badger abundance across the seven new culling areas than suggested by the national sett survey: some badger control companies were removing more badgers than expected and some were removing fewer despite equivalent amounts of effort by similarly trained contractors.

This necessitated updating of the minimum and maximum numbers as outlined in Defra's advice to Natural England (paras 35-38).<sup>1</sup>

The minimum and maximum numbers were recalculated by comparing the amount of culling effort and numbers of badgers culled in each area, with the number of badgers culled for the same amount of culling effort in the first year of the North Dorset operation in 2015 which was used as a baseline.

The formulas to update the numbers are as follows:

$$\text{Updated minimum} = 0.7 \times B / (1 - k^{(100C/A)})$$

$$\text{Updated maximum} = 0.95 \times B / (1 - k^{(100C/A)})$$

Where

A = the area of a cull zone in km<sup>2</sup>

B = the total number of badgers culled at a given time

C = the total number of culling effort units expended at a given time. One cage trap-night equals one culling unit, one shooter night equals 12 culling units. The 12:1 ratio is based on the average of the shooter/trap-night effectiveness ratio in the three areas that culled in 2015 which were quite similar despite differing badger densities and proportions of shooting and trapping used in the three areas.

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<sup>1</sup> <https://www.gov.uk/government/publications/advice-to-natural-england-on-setting-minimum-and-maximum-numbers-of-badgers-to-be-controlled-in-2016>

## Annex A2

$k = 0.999664970850505$ . A constant derived from the cull returns in Area 3-Dorset in 2015 and the percentage of that population estimated to have been removed.

Area specific adjustments: The minimum and maximum numbers in two areas were then further increased by 25% as an additional precautionary measure. In Area-8 Dorset – The high badger density slowed spatial coverage of culling across the area at the time the numbers were updated. In Area-5 Cornwall, field evidence indicated little decrease in the daily rate of culling returns when the numbers were updated.

The data used to calculate the minimum and maximum numbers and the resulting updated numbers are presented in table 1.

Table 1 Data for updating of minimum and maximum numbers in Areas 4 to 10

Area	Date of updating	Day	Area size	Trap nights	Shooter nights	Badgers culled to date	Updated Minimum number	Updated maximum number
Area 4-Cornwall	Oct 2nd	35	393	12650	349	640	588	798
Area 5-Cornwall	Oct 2nd	35	272	10522	268	681	730	991
Area 6-Devon	Oct 2nd	35	567	23660	687	1820	1502	2038
Area 7-Devon	Oct 2nd	33	431	10731	369	709	717	973
Area 8-Dorset	Oct 2nd	35	416	10245	570	2196	2571	3489
Area 9-Gloucestershire	Oct 11th	35	649	10691	709	1657	1844	2503
Area 10-Herefordshire	Oct 11th	35	285	3264	565	562	568	770