

Chief Veterinary Officer's advice on the outcome of the 2017 badger culls

Effectiveness of industry-led culling:

1. The outcome of this year's culls indicates that industry-led culling can deliver the level of effectiveness required to be confident of achieving disease control benefits:
 - a. Areas 1 and 2 have completed four years of intensive culling, and are currently undertaking licenced supplementary culls.
 - b. Good progress continued to be made in Area 3 (Year 3) and Areas 4 – 10 (Year 2), with the cull companies successfully applying an appropriate level of targeted effort across the respective cull areas to maintain the reduced population levels.
 - c. The eleven new areas effectively applied lessons learned from previous cull areas to make a successful start to their culls, applying an appropriate level of targeted effort across the cull area. Adjustments to the minimum and maximum numbers were made as the initial estimates were not supported by evidence on the ground once the culls were underway. A consistent methodology was used to update the minimum and maximum numbers, based on the cumulative effort applied and numbers of badgers culled over the first 28 days in each area (26 days in Area 12).
2. In the nineteen areas in their first three years of culling, effective intensive culling must be maintained for the four year period. There is a need to carry out comprehensive surveys of sett activity early in 2018 to estimate the minimum and maximum numbers for licensing purposes and to inform operational planning. All companies must plan to continue to deliver a high level of targeted effort across the accessible area to maintain effectiveness.
3. For all areas continued action is needed to provide confidence in the effectiveness of any future culls, for example through contractor training and assessment, robust operational planning and implementation and high levels of compliance with Best Practice Guidance.

Humaneness of controlled shooting:

4. The proportion of badgers retrieved after an accurate shot provides a measure of the likelihood of suffering due to a prolonged time to death. The retrieval rate recorded in 2017, based primarily on observations of shooters in the seven new areas, was consistent with that in the previous three years.
5. Based on the accumulated evidence from culling in twenty-one areas over the last five years, my view remains that the likelihood of suffering in badgers culled by controlled shooting

is comparable with the range of outcomes reported when other culling activities, currently accepted by society, have been assessed, such as deer shooting.

6. In order to maintain high levels of accuracy, rigorous training and compliance monitoring will continue to be required.

Conclusions on disease control benefits:

7. The badger population reductions achieved in the nineteen areas have been evaluated on the basis of the numbers and locations of badgers culled, the numbers culled against effort over time, and Natural England's independent assessments of the level and spatial distribution of culling effort deployed.

8. Given the level of badger population reduction estimated in Areas 3 to 10 over the past two years (three years in the case of Area-3), the benefits of reducing disease in cattle in these areas over the planned four-year cull can be expected to be realised. The level of reduction achieved should be at least maintained to maximise these benefits. Therefore culling should continue there for at least two further years (one year for Area 3) with possible extension to supplementary culling.

9. The eleven new areas have applied an appropriate level of targeted effort across the accessible land area and the numbers culled against effort deployed over time are consistent with an effective cull. Population levels need to be confirmed by sett surveys in early 2018 and further effective culls carried out in 2018 and subsequent years.

Future of culling

10. Action to prevent infection of cattle from the significant reservoirs of TB infection in local badger populations is an essential component of the Government's 25-year strategy to eradicate bTB in England. Proactive badger culling is currently the best evidenced available option and the licensing of further cull areas is necessary to realise disease control benefits at regional rather than at local levels. This requires a systematic, reliable and reproducible culling delivery model which draws on the experiences of the expansion to eighteen new areas over the last two years, and which is scalable to enable a more extensive level of deployment in further years.

11. It must be stressed that the maximum disease control benefits from badger culling will only be realised if comprehensive cattle controls are also applied rigorously within each cull area. This includes more sensitive testing regimes to clear disease from infected herds, effective measures to prevent re-introduction of disease via inward cattle movements into these areas and increased biosecurity measures throughout the cull areas to limit badger to cattle contact.

12. Over the past years I have assessed the effectiveness and humaneness of culling. As our experience of culling has grown we have identified the key aspects of what an effective cull involves. This includes;

- Robust training of operatives
- The need for a high level of effort using both culling methods

- The need for surveillance during a cull to identify areas that should be targeted or conversely areas that have no badger activity
- A real-time focus on the spatial deployment of culling effort or surveillance effort across the area
- The need for co-ordination of culling activity by the cull company, to actively monitor returns and to re-deploy their effort where it is most needed as the cull progresses

Taking into account the experience and precedents developed over the last five years, I believe that the parameters of a successful cull have been established such that this can be monitored effectively by Defra and NE. A winter/spring sett survey after each intensive cull is essential to provide field evidence of the residual badger population and enable maximum and minimum numbers to be set for subsequent years.

13. A recent paper¹ which has analysed the effect of culling on TB incidence in cattle found encouraging early data from the first two areas suggesting that the culls are achieving what we expected them to achieve. While this result is too early to be definitive it does give some reassurance that the culls are giving the disease benefits we anticipated.

14. Therefore 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 NE, 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 NE.

¹ Brunton *et al* (2017) 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 Evolution*. 7 (18). 7213-7230