

Defra “Consultation on guidance to Natural England on licences to control the risk of bovine tuberculosis from badgers”

https://consult.defra.gov.uk/bovine-tb/licences-to-control-tb-from-badgers/consult_view

Response from the Zoological Society of London

Introduction

The Zoological Society of London (ZSL) is a science-based organisation and hence its response to this consultation is based on scientific evidence. As an organisation actively involved in research on the control of bTB, ZSL recognises the impact that this disease has upon farmers’ lives and livelihoods, and seeks a sustainable, evidence-based solution to the problem.

Question 1 We would be grateful for your views on altering the duration of the culling period. This would involve amending the Guidance to Natural England, which would give greater prominence to Natural England’s discretion whether or not to take action to terminate culling on a case-by-case basis through ongoing assessment of the length of the relevant cull.

ZSL is extremely surprised by Defra’s statement that removing the requirement to complete culls within six weeks “*is not expected to materially affect the benefits of culling on levels of bTB in cattle*” (Annex A, paragraph 5.11). Defra introduced this six-week maximum cull duration in 2011 precisely to address concerns raised in a 2010 consultation, which suggested that licensing longer culls could result in smaller benefits for cattle bTB control, or even detrimental effects¹.

The basis for these concerns comes from the Randomised Badger Culling Trial (RBCT). In the RBCT, repeated annual culling was associated with increased prevalence of infection among badgers with *Mycobacterium bovis*, the causative agent of bTB². This phenomenon is thought to have undermined the benefits of culling for cattle bTB control. While most RBCT proactive (widespread) culls were commenced simultaneously across the entire area and completed within 8-12 nights³, a minority of culls were commenced on different dates in different sectors, and prolonged over periods of 1-7 months². These non-simultaneous culls were followed by even greater increases in the prevalence of infection among badgers than were the simultaneous culls². On this basis, culls not conducted simultaneously would be expected to deliver smaller reductions in cattle bTB than would simultaneous culls, all else being equal⁴.

This finding was considered important by the government’s Chief Scientific Advisor of the time, Sir David King. At a meeting in 2007, “*Sir David confirmed that conducting badger culls simultaneously over such an area would have to be an essential element of any culling programme that was deemed to have been undertaken competently*”⁵.

The current six week maximum cull duration was proposed jointly by Defra’s Science Advisory Council and its bTB Science Advisory Body. This joint body “*advised that if*

culling was carried out in a period of up to 6 weeks (although preferably less), that is likely to reduce the adverse effects of non-simultaneous culling; this advice is based on opinion and not on evidence. The longer the period that culling is carried out in, the less confident one can be that the deleterious effects seen with non-simultaneous culling as carried out in the RBCT will be minimized”⁶.

The slightly cautious tone adopted by the Science Advisory Council is likely to have reflected its suggestion that the higher infection prevalence observed after prolonged culls might result from culling in winter⁶. In response to this suggestion, Defra requested further analyses of the RBCT data, which showed that adjusting for the month when culling occurred did not diminish the harmful effect of prolonged culling⁷. After receiving this additional evidence, Defra adopted a six week maximum cull duration as recommended by its Science Advisory Council¹.

It is important to emphasise that the scientific evidence concerning this issue has not changed since Defra’s decision in 2011. While the pilot culls conducted in 2013-4 have provided experience of conducting industry-led culling, they have provided no information on *M. bovis* prevalence in badgers, because badgers carcasses were not tested. Post-culling changes in *M. bovis* prevalence from the pilot culls cannot therefore be compared with those observed in the RBCT.

Defra’s primary basis for removing the restriction on cull duration is to allow greater reductions in badger population size, which it assumes will yield greater benefits for bTB control. Although Defra cites experience of extending culls in the Somerset and Gloucestershire pilot areas, in fact these extensions did not lead to proportional improvements in culling success. In Somerset a 33% increase in cull duration (from six to eight weeks) allowed a 10% increase in the number of badgers killed (from 865 to 955), while in Gloucestershire a 100% increase in cull duration (from six to 12 weeks) led to a 31% increase in the number of badgers killed (from 708 to 924)^{8,9}.

In fact, extending the duration of a cull is likely to reduce its ability to achieve the desired population reduction by killing the specified number of badgers. To illustrate with an extreme example, a cull required to take a minimum of 50 badgers might kill one a week for a year with little impact on population size. This is because the slow removal of badgers allows time for the population to recover through immigration. A proportion of the badgers killed would be immigrants, and the impact on the resident population would be lessened. When such immigration is factored in, achieving the desired 70% reduction in population size would demand killing a larger minimum number of badgers than would be required for a less prolonged cull. Defra has not indicated any plan to address this issue in determining the minimum cull numbers attached to licences; paucity of data would make such calculations extremely challenging. However, failing to account for this possibility would be expected to result in lesser reductions in badger density, and hence smaller benefits (or even detrimental consequences) for bTB control.

Rather than specifying a new maximum cull duration, Defra proposes assessing each licence on a case-by-case basis. It proposes relying on the expert opinion of its Chief Veterinary Officer to balance the relative merits of killing a greater number badgers *versus* taking longer to achieve this number. Given the paucity of epidemiological data to

support such a decision it is hard to see how anyone – however great their expertise – could take an informed view on this point.

To conclude, ZSL considers that relaxing the requirement to complete culls within a maximum of six weeks would reduce the probability of beneficial effects for bTB control, and could even lead to detrimental effects.

Question 2 We would be grateful for your views on reducing the minimum area size in which culling could be licenced to take place to 100km².

Of the three consultation questions, this is the only one which is based upon new evidence. Nevertheless, ZSL is surprised that Defra considers that reducing the minimum size of a cull area “*is not expected to materially affect the benefits of culling on levels of bTB in cattle*” (Annex A, paragraph 5.11).

Defra has calculated the minimum required cull area by extrapolating from RBCT findings. RBCT proactive culling reduced bTB incidence among cattle herds inside the cull areas, but increased it on adjoining land¹⁰. The Independent Scientific Group on Cattle TB (ISG) noted that the net outcome of culling would therefore be influenced by the geometric relationship between the area and perimeter of a cull zone⁴. ISG scientists went on to identify the minimum circular area within which a cull might be expected to yield benefits, i.e. the size of area for which the 95% confidence interval around projected effects exclude detrimental impacts^{4,11}. They emphasised, however, that “*the effects described here relate only to culling as conducted in the RBCT, i.e. deployment of cage traps by highly trained staff in coordinated, large-scale, simultaneous operations, repeated annually for five years and then halted. As described elsewhere, culling-induced changes in badger numbers and movement patterns mean that culling which is small-scale, patchy, short-term or asynchronous is very unlikely to provide comparable reductions in the incidence of cattle TB and could well prompt increases*”¹¹.

Defra adopted this logic to identify the minimum area within which to license culling¹². More recent evidence of persistent (albeit diminishing) reductions in cattle bTB inside the former proactive areas alters the balance of impacts inside and outside the cull zones and hence allows re-assessment of the minimum area¹³.

Although the justification for reducing the minimum licensable cull area is comprehensible, two important concerns undermine Defra’s conclusion that this change will not alter the benefits to be expected from culling.

First, although new data suggest that net detrimental effects might be avoided by culling areas smaller than previously thought, such smaller areas will nevertheless yield smaller benefits. In the report used by Defra to justify its proposed change, a culling area of 100 sq km is associated with a roughly 10% net benefit on average, compared with roughly 12% for a 150 sq km cull¹³. This change in the relative benefit of culling would also reduce the absolute benefit (i.e., fewer herd breakdowns would be prevented). Moreover, realising this net benefit is likely to take longer (e.g. it took 11.5 years for net benefits to emerge for 100 sq km, compared with nine years for 150 sq km).

Second, as noted above, projections of RBCT results to larger areas assumes the use of RBCT culling methods. Since industry-led culls have adopted different methods, the same outcomes cannot be assumed. In particular the low culling success experienced in the pilot zones⁸, and the more prolonged culls implemented and proposed, both suggest smaller benefits overall.

Given these differences, Defra's indication that its proposed change "*is not expected to materially affect the benefits of culling on levels of bTB in cattle*" appears inconsistent with the evidence.

Question 3 We would be grateful for your views on removing the 70% land access requirement from Defra's Guidance to Natural England, and retaining only a requirement that approximately 90% of land in the cull area should be accessible or within 200m of accessible land.

ZSL has two concerns about removing the requirement for 70% land access within culling areas.

First, reducing the extent of land accessible for culling will almost inevitably lead to culls which are more patchy and less effective at reducing badger density, reducing the likely benefits for bTB control. Although it is possible to target badgers resident on inaccessible land when they range onto accessible neighbouring land, in the RBCT this approach did not fully compensate for the lack of land access. In RBCT proactive areas, 28% fewer badgers were taken per sq km from inaccessible land (plus a surrounding 200m buffer) where otherwise-inaccessible badgers were targeted, than from fully accessible land¹⁴. Hence, lower levels of land access are likely to diminish the badger population reduction achieved, undermining the anticipated benefits for bTB control.

Second, increasing licensees' reliance on targeting badgers from inaccessible land is likely to have negative consequences for humaneness. Culling licences currently stipulate closed seasons intended partly to avoid killing mothers with dependent cubs. In the RBCT, lactating females were killed (without also killing associated cubs) more frequently when targeting inaccessible land than when targeting setts on accessible land⁴. This pattern was thought to reflect cubs' more restricted movements, relative to their mothers⁴. Similar patterns would be expected if licensed culls target badgers resident on inaccessible land, increasing the welfare cost of culling for dependent cubs.

On the basis of this evidence, ZSL considers that removing the requirement for at least 70% land access within culling areas would lead to culls which were less effective and less humane.

Conclusions

To conclude, all three proposed changes are likely to make it easier for farming groups to obtain and retain badger culling licences, but in so doing they undermine the likely benefits of such culls to bTB control. The third proposed change may also have detrimental consequences for badger welfare. Defra's desire to make licensed badger

culling more achievable highlights the difficulties experienced in meeting the existing licence criteria, and hence the challenges of effectively controlling bTB through this approach. ZSL is working to evaluate alternative approaches which may prove more effective, more sustainable, and more acceptable to the public.

Literature Cited

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