



A response to the Government's consultation on bovine TB and badger culling

December 2010

The Veterinary Association of Wildlife Management is pleased to have the opportunity to respond to the present consultation by DEFRA (September 2010) on their proposals for tackling the disease and a badger control policy. But we are disappointed not to be listed amongst the list of consultees. We submit that our expertise is probably greater and better informed than many of the politically motivated, single issue organisations listed in annex H. This in turn raises the question of the value of wide ranging public consultations of this kind.

In general we found the document eminently readable albeit somewhat repetitive and for the most part informative although there were a number of statements in the document referred to below that we would not agree with.

Principally we do not share DEFRA's understandable but misplaced confidence in the findings and conclusions drawn from the Randomised Badger Culling Trials. We also regret the failure to acknowledge and draw upon the conclusive results from the 5 badger culling trials (see table below) carried out in England and Ireland prior to the RBCTs (although one of these trials at Thornbury is recorded in the consultation document, Annex A, Table 1). In contrast with the RBCTs all 5 of these trials recorded culling rates in excess of 80% and a dramatic reduction (80-100%) in the incidence of bovine TB in associated cattle herds. The Thornbury trial in 1975 eradicated bovine TB in cattle for 10 years before the area was allowed to recolonise with badgers and the disease returned. In contrast the RBCTs recorded hopelessly inadequate culling rates (32-77%) in the proactive culling zones, (not 70% as stated in the consultation document, Section 4, page 47). Given these inadequate culling rates it is thus hardly surprising that badgers missed that is not culled, migrated into surrounding areas to infect more cattle and more badgers. But notwithstanding this even the seriously flawed RBCTs recorded a significant reduction (23%) of bovine TB in cattle in the proactive culling zones.

Comparison of culling trials

The criticism, first by Krebs (1997), of the 5 earlier trials that they carried no scientific control zones whilst strictly true is naïve and misplaced. Adjacent endemically infected areas in the rest of the country provided an entirely adequate and convincing control zone. The 5 trials collectively thus contribute a substantial body of evidence to show that culling of infected badgers is an effective method of controlling the disease. As stated above even the seriously flawed RBCTs recorded a 23% reduction of disease in the proactive culling areas.

	Area (sq km)	culling	herd outbreaks
Thornbury	104	100%	Clear for 10 years
Steeple Leaze	12	100%	Clear for 7 years
Hartland Point	64	>80%	80-90% reduction – 10y
East Offaly	738	>80%	88% reduction – 7y
Four Counties	100 x 4	>80%	60-80% reduction
RBCTs	100 x 10	30 – 70%	19 -23% reduction inside 22- 29% increase outside

Transmission of the disease

The so called Independent Scientific Group* concluded that 40-50% of cattle herd breakdowns were due to badgers and by implication the remaining 50% are due to cattle to cattle transmission. This conclusion was presumably the basis for the recommendation by the ISG in their final report that the disease could be controlled by bearing down exclusively on the disease in cattle. This statement is however in marked contradiction to the view of the Chief Veterinary Officer who, in 1995, on the basis of recorded field outbreaks, ascribed 90% of herd breakdowns to badgers. Furthermore this view is supported by the fact that herd breakdowns rarely involve more than one or two reactors, demonstrating that the disease does not readily transmit between cattle in the same herd. A knowledge of the contrasting pathology of the disease in cattle and badgers, as described by Gallagher and Clifton Hadley (2000) explains why this is so. Cattle tend to wall off the organism within fibrous tubercles, particularly in lymph nodes, whereas in badgers the disease is more diffuse or florid leading to massive excretion of bacteria in urine, faeces and from the respiratory tract.

* The ISG appeared to have compromised their scientific independence by posting the following mission statement at the outset of the RBCTs:

“Implicit in our approach is that the widespread elimination of badgers is not **politically or socially acceptable**”

Bovine TB in badgers

It is incorrect to state that badgers rarely suffer from bovine TB (Annex G, para. 10) Gallagher in his review with Clifton Hadley (Res.Vet.Sci. 2000, **69**, 203-217) vividly describes the pathology of the disease in badgers and has since estimated that some 2000 animals die from the disease annually in the south west of England. The florid nature of the disease in badgers compared with cattle explains why they are such efficient transmitters of the disease.

Vaccination with BCG

We are seriously concerned that the Government is presenting vaccination using the BCG vaccine in badgers as a realistic option in its own right as an alternative to culling. This is wholly misleading particularly to the general public and organisations that are not familiar with the science involved.

1. BCG is not a particularly reliable or efficacious vaccine in man and other mammals (only 70% efficacy in man) As stated in the consultation document BCG vaccine has been in existence for nearly a century and attempts to improve it over the years, particularly recently, have not met with success.
2. Whilst the experimental studies in naïve badgers, receiving 2 doses of vaccine have shown an encouraging measure of protection there is no substantial data to show that a single dose can be expected to be protective in the field. Note that this assessment takes in the latest evidence that the BCG vaccine appears to reduce the incidence of positive blood tests in vaccinated animals. This is not evidence of protection.
3. Even a highly potent and effective vaccine cannot be expected to be effective in the face of the massive burden of infection that exists in parts the badger population.
4. It is hardly credible that a sufficient proportion of the population to achieve meaningful protection would be caught up and vaccinated (>70%).
5. We are not confident that cage trapping and vaccination will not cause a degree of perturbation, particularly if this statement is based solely on observations from the Woodchester Park colony of badgers that are used to human interference. But in any event we have serious misgivings about the humaneness of cage trapping and the handling of a wild animal that would be involved in parenteral vaccination.

However it is possible that an effective oral vaccine for badgers delivered in bait could have a role in suppressing the disease after the huge burden of infection currently present in the badger population has been removed by culling. Furthermore a substantial reduction in the national badger population (see below) would hugely mitigate the risk of transmission of residual infection from badger to cattle.

We do not believe that a vaccine for cattle is either a desirable or realistic option for controlling the disease in cattle. The objective should be to eradicate the disease from both cattle and badgers not to suppress it by vaccination.

Perturbation

Perturbation was a particular outcome of the RBCTs because of the hopelessly inadequate culling rates. It wasn't first described by the ISG. The phenomenon was well known before the RBCTs and one of our members, Dr. John Gallagher, warned Professor Bourne before the start of the RBCTs of the danger from inadequate culling rates. However the good news from the 5 earlier trials referred to above is that if culling rates greater than 80% can be achieved, perturbation will not be a problem. And it follows therefore that to be effective the size of the selected culling zone can be below the 150 sq km as specified in the consultation document, which would be much less expensive in both time and resources. It might even be possible using PCR testing to target infected setts which would far more acceptable to the public.

Culling methods

Cage trapping followed by shooting, as stated above we have reservations about the humaneness of cage trapping and the subsequent shooting of a wild animal. Caged wild animals can be very distressed simply by the approach of a human. Cage traps are also intrinsically vulnerable to neglect and oversight. They are also vulnerable to vandalism and sabotage. Shooting of a caged animal with a free bullet from rifle or pistol is not without risk.

Shooting with a silenced rifle, this can be an effective and humane method of culling when carried out by experienced operators at dusk. Badgers adjacent to the culled animal are not usually disturbed by the procedure if expertly carried out and several badgers can be killed in an evening. But it is a labour intensive and protracted procedure compared to intra sett gassing (see below).

Flushing, catching and shooting

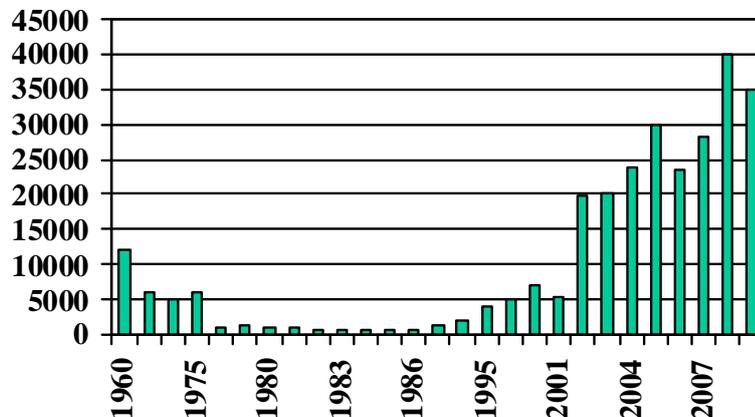
Terriers can be used to flush badgers out from setts and the badgers caught and destroyed as they emerge. The procedure is probably on a par with cage trapping for humaneness.

Intra sett gassing. The Thornbury trial in 1975 demonstrated the effectiveness of this method of culling. The method takes advantage of the fact that badgers live in setts underground by day. Not to exploit this ecological fact is to seriously handicap the success of the whole culling operation. The gas used in the Thornbury trial was hydrocyanic acid, HCN. Doubts were subsequently cast on the humaneness of this method. Onset of death was not considered to be sufficiently rapid although it is likely that animals were rendered unconscious almost immediately. However there are other less noxious gasses that could be used such as carbon monoxide. We believe that this method of culling is potentially the most humane and the most efficient. Its development should be given a high priority. Apart from being far more efficient and effective than cage trapping, shooting and flushing the method also obviates the need for carcass disposal – a huge advantage over the three other methods.

Considering the options (page 41 of the consultation document):

Option 1 (no additional control measures). The escalating course of the disease shown in the figure below clearly demonstrates this option to be unacceptable.

no. cattle slaughtered (TB reactors)



Badger culling operations were compromised or reduced from 1980 and effectively disbanded in 1997. The figure above thus clearly demonstrates the effectiveness of badger culling in controlling the disease up to the mid 1980s.

Options 3 and 5 (Vaccination only) do not offer any realistic possibility of controlling the disease given the largely unproven nature of the BCG vaccine in the field. Notwithstanding the unknown efficacy of BCG in the field, even a highly effective and potent vaccine cannot be expected to be effective in the face of the massive burden of infection that presently exists in parts of the badger population.

Option 2 (A Government-led policy of badger culling) would appear to offer the best chance of making a substantial impact on the present level of disease in affected areas. We do not accept the adverse cost benefit analysis of this option based as it is on the seriously flawed RBCTs. The highly effective 5 earlier culling trials referred to above give encouragement that the cost benefit could be substantially greater than that computed for the RBCTs. But in any event simple cost benefit takes no account of the huge financial and social burden that disease presents to farmers.

Option 4 (An industry led policy of badger culling) this option might be cheaper for the Government but it risks falling down because of dependence on a large number of disparate organisers and operators and the huge bureaucratic burden associated with the option. The whole operation risks being jeopardised by patchy and haphazard application of procedures. Perturbation must also be a major risk with this option. Disposal of carcasses will present another huge area of variability and risk.

Option 6 (An industry led policy of badger culling and vaccination) this option would suffer the same complexity of organisation and operation as option 4 with the added complexity and doubtful benefit of vaccination. It is not clear from the consultation document how the decision to cull or vaccinate would be made – a further area of variation and confusion.

Choice of option

Based on the comments above and bearing in mind that EU legislation requires all member states to have a credible plan in place to eradicate notifiable diseases, our considered choice would

therefore be Option 2 with Option 4 or 6 as a poor second, (Option 6 minus the vaccination component being the same as Option 4).

A seventh complimentary option

There can be little doubt that the problem of bovine TB is hugely exacerbated by the burgeoning badger population across the country. Annex G, para. 9 states that it is not possible to estimate present day badger populations. However between the two national surveys published in 1988 and 1997 a 77% increase in numbers was identified. This would give a population of 450,000 adult animals in 1997 from the earlier figure of 250,000 in 1988 and assuming a similar rise in the last decade it seems reasonable therefore to estimate current numbers to be not less than 800,000.

Apart from being the major wildlife reservoir of bovine tuberculosis the badger is now, due to overpopulation, having an increasingly deleterious effect on the countryside both by digging and as a relentless predator of vulnerable wildlife. Many farms and estates, gardens, golf courses, buildings, waterways, graveyards and archaeological sites across the country are now suffering substantial damage simply because of the massive damage caused by excavating badgers. The Llangollen canal in North Wales, for example, suffered major damage to its banks and loss of water in 2005, the cost of repair was estimated at £500,000. A national survey in 1997 of agricultural properties in England and Wales put the annual damage at £25.7m.

The major diet of badgers is earthworms but the animal is an opportunist feeder and if availability of their preferred diet is removed, as in times of drought, they will eat almost anything - hedgehogs, frogs, toads, grass snakes, free range lambs and piglets, bumble bees, ground nesting birds and their eggs - are all vulnerable. Numbers of skylarks and lapwings have for example plummeted in the last two decades. And as the number of badgers rises inexorably so will this impact on the countryside be increasingly felt.

The badger, a large mammal with no natural predators, is a classic example of a population out of control through lack of management. It is not an endangered species and no longer merits its protected status. This should be removed and similar legislation, as for deer, including a close season, put in place whereby local landowners and farmers are allowed to control their badger populations. Such measures would have a substantial impact not only in controlling bovine tuberculosis in both badgers and cattle, but would reduce damage to the countryside, reduce predation on vulnerable wildlife and relieve the badger population itself from the adverse effects of overpopulation.

Ernest Neal, who pioneered badger studies in the 1940s, described a density of one badger per square kilometre as “abundant” and in 1989 he described 10 adults per sq km as “excellent badger country”. More recently a study in Westbury sub Mendip in 1997 revealed 37 adult badgers per square km, associated with substantial damage to property and wildlife. A return to earlier population levels prior to the Badger Acts of 1973 and 1992 is urgently needed.

Conclusion

Apart from benefiting the badger population *per se* and the countryside in general, a substantial reduction in the national badger population would in itself radically mitigate the risk of transmission of bovine TB from badgers to cattle.

L.H.Thomas, Secretary
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