Bovine TB in Cattle & Badgers *brief*

from **RSPCA Cymru**

Introduction

Bovine tuberculosis (bTB) is caused by *Mycobacterium bovis* bacteria and affects a number of animals including cattle and badgers. The disease and efforts to control it have serious economic implications for farmers and Government. The Welsh Assembly Government has stated that 'Bovine TB…is having an immense impact on our farming industry, rural communities and tax payer…..[and] is one of the biggest threats to cattle and dairy farming in Wales'[1]

In 2009 over 11,500 cattle were slaughtered in Wales and the cost of compensating farmers for such cattle since 2000 is nearly £120million which includes the £18.5 million paid just in 2009-10. The Welsh Assembly Government (WAG) predicts that should compensation payments increase at the same rate (17.7%) by 2015 the cost will exceed £40 million. However, it should be noted that the number of cattle slaughtered in the first 10 months of 2010 was 28% less than for the same period in 2009.[2] Therefore such costs might not increase as projected.

The RSPCA recognises that bovine TB in cattle causes massive hardship for farmers in endemic areas and that there needs to be a sustainable and humane solution. The Society bases its animal welfare stance on moral and ethical values of care and compassion, but relies on sound science to inform its decision-making, formulate its policies, define its strategies, and promote change for the improvement of animal welfare.

On the basis of current science, welfare concerns and a realistic assessment of what is practical, the RSPCA supported the conclusion of the Independent Scientific Group (ISG) that 'badger culling can make no meaningful contribution to cattle TB control in Britain.'[3]

The background: culling trials and Independent Scientific Group (ISG) conclusions

In June 2007 the ISG (a group of independent scientists who were overseeing the scientific trials and advising the government on cattle TB) published their final report. This brought together, and updated their analysis of results from the trial (and from the programme of work on research on the disease in cattle) and presented the conclusions that they drew from the results. They concluded that "while badgers are clearly a source of cattle TB, careful evaluation of our own and others' data indicates that badger culling can make no meaningful contribution to cattle TB control in Britain".[4]

The badger culling trial was undertaken from 1998 to 2006. It was undertaken in disease 'hotspot' regions in the west of England. In 'proactive' culling areas the aim was to remove as many as possible of the badgers resident in the area and to maintain this position by regular follow-up culls. In 'reactive' areas badger culling was only undertaken in the event of a confirmed cattle herd breakdown and aimed to remove all social groups of badgers having access to the farm.

Reactive culling was suspended at the end of 2003 when it became clear that it was associated with an increase of 27% in cattle TB incidence. Proactive culling continued until late 2005 when the ISG considered sufficient data had been gathered to form statistically robust conclusions. The initial results showed a decreased incidence in

[1] http://wales.gov.uk/docs/drah/publications/100916tbconannex2en.pdf
[2] http://new.wales.gov.uk/newsroom/environmentandcountryside/2011/110128tbstats/?lang=en
[3] ISG Final Report 'Bovine TB: The Scientific Evidence' June 2007.
[4] Ibid.

For further information please contact **Claire Lawson** (External Affairs Manager for Wales) or
Tina Reece (Public Affairs and Campaigns Officer) on 0300 123 8916 / 0300 123 8910, fax 0303 123 8905
RSPCA Cymru, 10 Ty Nant Court, Morganstown, Cardiff CF15 8LW
Email clawson@rspca.org.uk / treece@rspca.org.uk www.rspca.org.uk

the centre of the culled area of about 23% but an increase on neighbouring land outside the culled area of about 29%. The associated research illustrated the likely reasons for these effects.[5]

In Britain badgers live in territorial social groups and this social structure was profoundly disrupted by culling. As a consequence of culling, surviving badgers ranged more widely and substantial numbers immigrated from neighbouring areas.[6] Additionally, repeated badger culling in the same area was associated with increasing prevalence of bTB infection in badgers.[7] The ISG researchers concluded that only if intensive culling were undertaken for a prolonged period over very large areas e.g. 300 square kilometres might there be any overall reduction in cattle TB. WAG is proposing such a cull in West Wales where the disease is endemic. However the ISG detailed the many practical, logistical, financial and animal welfare implications (with respect to the methods used) that culling presents. Whilst it may be possible to address some of these concerns for the current proposed cull, features such as the specific geographical boundaries in Pembrokeshire that might minimise badger movement - and the associated disease risks - mean that such an approach can have little relevance to resolving bTB problems in other hotspot areas. As such the RSPCA considers culling to be ineffective as a means of controlling the disease for the whole of Wales.

The work of the ISG was commended by the independent statistical auditor as a very thorough and sure-footed demonstration of good science aiding public policy in a complex and controversial situation and an exemplar of how to bring high quality science into public decision-making.[8]

The King Report

In October 2007, the UK government released a report from Professor Sir David King, who was then their chief scientific Advisor, which suggested that a cull of badgers in England should be undertaken in order to control bovine TB in cattle. However, the report has been widely criticised by the scientific community[9] and the members of the former ISG produced a robust critique of Sir David's report. In giving evidence to Westminster's EFRA Select Committee, Sir David admitted that his team had not considered whether a badger cull on such a scale would be either practical or cost-effective. According to the ISG, these issues are critical to determining whether a cull would be successful in controlling bovine TB. Sir David subsequently agreed with the ISG about the ecological effects of culling and the very stringent conditions that would have to be met if any culling were to have a benefit.[10] Sir David agreed with the ISG that conducting badger culls simultaneously over an area would be an essential element of any competent culling programme and it is currently unclear how WAG will achieve this over an area of 288km^2. Depending how it is undertaken, culling might therefore increase the risk to farmers.

Post trial monitoring

The incidence of TB in cattle has continued to be monitored after completion of the trial. Initially this showed that once culling was halted the beneficial effects inside culling areas increased while the detrimental effects in neighbouring areas disappeared. However, the *overall* benefits of culling were still considered 'modest' with on average only 12 confirmed herd breakdowns prevented over six years by five annual culls targeting a 125km^2 area compared with 130 breakdowns expected in the absence of culling. A reduction of about 9%[11]. Continued monitoring and analysis has indicated the benefits are ongoing but diminishing with time[12] and how long they last remains to be seen. From the start of the cull to 2 July 2010 the incidence of confirmed breakdowns **within** culling areas was 28% lower than in survey only areas but in areas up to 2km **outside** the trial area incidence was 9% higher than in survey only areas. Defra used this data to indicate that the **net benefit** of culling might be a

[5] Donnelly *et al.* (2006) Nature, 439, 843-846.
[6] Woodroffe et al. (2006) Journal of Applied Ecology, 43, 1-10.
[7] Woodroffe *et al.* (2006) Proceedings of the National Academy of Sciences of the United States of America.103, 14713-14717.
[8] Prof Denis Mollison. June 2007. Statistical aspects of the Randomised Badger Culling Trial. Final Report, June 2007.
[9] 'In for the cull', *Nature* **450**, 1-2; 2007
[10] http://www.defra.gov.uk/foodfarm/farmanimal/diseases/atoz/tb/isg/mtg131207.htm
[11] Jenkins *et al* (2008) International Journal of Infectious Disease 12: 457-465.
[12] Donnelly, C. (2010) PLosOne journal 22 July 2010.

For further information please contact **Claire Lawson** (External Affairs Manager for Wales) or
Tina Reece (Public Affairs and Campaigns Officer) on 0300 123 8916 / 0300 123 8910, fax 0303 123 8905
RSPCA Cymru, 10 Ty Nant Court, Morganstown, Cardiff CF15 8LW
Email clawson@rspca.org.uk / treece@rspca.org.uk www.rspca.org.uk

16% reduction in TB cattle herd incidence over an area of 249 km² (150 km² cull area and 99 km² adjacent ring).[13] The WAG applied this data to the proposed Intensive Action Area to indicate that over the entire culling and post culling period, and including both the cull area and 2 km ring, to indicate that culling might achieve a 22% reduction in the number of herd breakdowns.[14]

Cost benefit calculations indicate that some 12 years of post-culling benefits may be required to equal the costs of five years culling.

Vaccination of badgers

Vaccination reduces the severity and progression of TB[15] in badgers and may have a protective effect in preventing the animals becoming infected. It can therefore be expected to reduce the risk of transmission from badgers to badgers and from badgers to cattle. Badger vaccination would avoid the perturbation problems associated with badger culling. It would not cure already infected animals but since the typical lifespan of a badger is 3-5 years such animals would die off naturally reducing the disease risk to cattle. Although desirable, there is no need to vaccinate all badgers to have an impact on disease transmission.

The RSPCA is pleased to note WAG's continued commitment to the development of a vaccine for both cattle and badgers but is concerned at how an unduly negative view of the results of badger vaccination has thus far been presented. In their press release of November 2010, Defra indicate that laboratory studies demonstrated that the vaccination of badgers with BCG significantly reduces the progression, severity and excretion of Mycobacterium bovis infection and that field studies demonstrated a 74% reduction in the proportion of wild badgers testing positive to the antibody blood test for TB in badgers[16]. The 'dogma' that BCG does not prevent disease but can only restrict the extent of it has now been challenged by observations in various pieces of recent research.[17]

Whilst vaccination does take some time to build up herd immunity and for already infected animals to die (estimated at 3-5 years) in the RBCT culling did not give a statistically significant benefit until the fourth annual cull had taken place so both strategies take time. "*Furthermore, badger culling as an approach to disease control can be costly, practically difficult and indiscriminate, and remains controversial.*"[18]. Indeed WAG has estimated the proposed 5 year cull in West Wales is likely to cost £4,590,000.

Vaccination avoids the key risk of culling-induced perturbation increasing the risk of cattle herd breakdowns and therefore we believe vaccination has a wider potential role to play than badger culling. As the Countryside Council for Wales have pointed out modelling work has demonstrated that vaccination is a viable alternative to badger culling for the control of TB in cattle. We note that the Welsh Assembly Government has now established a working group to develop a vaccination policy for Wales and we await the outcome with interest.

An oral badger vaccine would clearly have greater potential for more widespread use but its development is still some years away. However, the RSPCA believes that the development of the injectable vaccine was a significant research achievement and that using it would be an important step in the right direction.

Testing, biosecurity and husbandry

A healthy farming industry is also better equipped to provide good animal welfare. The scientific evidence suggests that increasing the level of cattle testing, improving biosecurity and imposing stricter controls on the

[13] http://www.defra.gov.uk/corporate/consult/tb-control-measures/100915-tb-control-measures-annexb.pdf
[14] http://wales.gov.uk/docs/drah/publications/100920tbconsubmissionen.pdf
[15] http://rspb.royalsocietypublishing.org/content/early/2010/11/24/rspb.2010.1953.abstract
[16] These results have been published in a scientific journal (Chambers at al 2010)
[17] [Chambers *et al* 2010].
[18] Ibid.

movement of cattle are the methods most likely to be effective in combating the spread, and increased incidence, of bTB. We welcome the various cattle measures WAG have and intend to implement.

For further information please contact **Claire Lawson** (External Affairs Manager for Wales) or
Tina Reece (Public Affairs and Campaigns Officer) on 0300 123 8916 / 0300 123 8910, fax 0303 123 8905
RSPCA Cymru, 10 Ty Nant Court, Morganstown, Cardiff CF15 8LW
Email clawson@rspca.org.uk / treece@rspca.org.uk www.rspca.org.uk