

Literature Review on bTB tests in badgers

A review of the published work or work nearing completion on what tests could be conducted on blood or other samples collected from badgers in order to provide a better understanding of bovine TB infection in the local badger population.

<http://www.dardni.gov.uk/afbi-literature-review-tb-review-diagnostic-tests-badgers.pdf>

Literature Review on the BCG vaccination against tuberculosis in European badgers

A review of the published work or work nearing completion on the potential efficacy of injectable and oral badger vaccine; on the current understanding of how best to administer vaccine (means, frequency, dosage, etc) to achieve the most beneficial cattle TB outcomes and with reference to cost effectiveness.

<http://www.sciencedirect.com/science/article/pii/S0147957112000100>

These Literature Reviews provide an excellent source of reference material and are well worth a read.

Badger Population Survey

To date, two country-wide surveys have been completed to allow a fuller understanding of the number and distribution of the undisturbed badger population in NI.

The first survey was in 1994¹. The badger population in Northern Ireland was estimated in 1994 at 38,000 with a mean sett density of 3.51/km². It was found that a high preponderance of setts occurs in hedgerows and it was postulated that this increases the proximity of badgers to cattle, and therefore, the potential for inter-species transmission.

The second survey was in 2007/2008. The badger population in NI during 2007/2008 is estimated at 33,500 animals in 7,500 social groups giving a mean estimated density of such groups as 0.56 per square kilometre. It was observed that there was a positive association between areas of improved grassland and arable agriculture, and cover. Density was correlated with land class, the highest densities found in drumlin farmland areas and marginal uplands. Due to the prevalence of favourable landscape features, Counties Down and Armagh had the highest density of badger social groups.

<http://www.dardni.gov.uk/badger-survey-of-ni-2007-08.pdf>

Deer Surveys

There are 3 species of wild or feral deer in Northern Ireland: Dama dama (fallow deer), Cervus nippon (sika deer) and Cervus elaphus (red deer). A survey carried out in 1995, in which deer of the three species were sampled, demonstrated a prevalence of 5.8% (397 deer sampled).

A small surveillance exercise carried out in 2009, in which fallow and sika deer were sampled, revealed a prevalence of 2% (146 deer sampled). The low number of deer (less than 3,500 estimated), their restricted range, limited contact with cattle, and the enteric nature of the infection, suggests that their role in the epidemiology of bovine TB is likely to be limited if not entirely insignificant.

http://www.dardni.gov.uk/wild_deer_tb_surveillance_2008_2009

¹ Feore S.M. (1994) The distribution and abundance of the Badger *Meles meles* in Northern Ireland. PhD thesis. Queen's University of Belfast.



TB Research in Northern Ireland

- an update on current and recently completed research



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Current research - Projects underway

- **TB Biosecurity Study**

- To compare farm characteristics in herds that have recently had a TB breakdown and those that have had no recent history of a breakdown in a TB high incidence area.
- It is expected that the findings will be available later in 2012.

- **Gamma Interferon (IFN-g) Project**

- To undertake an evaluation of the IFN-g test as currently implemented in Northern Ireland in order to quantify the usefulness of the test to detect additional bTB infected animals.
- The project started in 2011 and will run for 3 years,

- **Badger-Cattle Proximity Study**

- To examine and describe the extent of badger-cattle and cattle-cattle interactions, through the use of proximity loggers and GPS devices, at pasture and within cattle houses
- The project started in 2011 and will run for 3 years

- **Badger Road Traffic Accident (RTA) Survey**

- A province-wide survey has been ongoing since the mid 1990's.
- Two RTA papers have been published so far: (1) Survey for Mycobacterium bovis in Road-Traffic-Accident Badgers in Northern Ireland and (2) Mycobacterium bovis surveillance in European badgers (Meles meles) killed by vehicles in Northern Ireland: an epidemiological evaluation.
- This work continues and there are plans for enhancement to increase the number of badgers collected.

Wildlife Intervention Research in Northern Ireland

Badger Test Vaccinate Remove (TVR)

- TVR is a new wildlife intervention research approach - testing live badgers; vaccinating and releasing the test negative badgers; and removing the test positive ones.
- The focus is on removing diseased badgers and protecting uninfected ones. It is a balanced approach which avoids killing uninfected badgers and which could lead, in time, to a reduction in transmission of TB to cattle.
- It is a scientific study.
- Work has started to design and cost this wildlife intervention research. This is a new approach and it is expected that the design for such a study will be complex and there are a number of key steps to be completed.
- The first step is to commission the necessary mathematical modelling using relevant data. This initial modelling will help to ensure that the subsequent wildlife intervention research design is scientifically robust.
- When the results of the initial modelling are available, the next step will be to design and cost the study proposal.
- As the badger is a protected species, any direct interventions in the badger population here will be subject to the agreement of the Environment Minister and the issue of the necessary licences.

Recently Completed Projects

Literature Review on cattle-cattle transmission, risk factors and susceptibility:

A review of transmission, within and between herds, of bovine TB with particular reference to cattle to cattle spread. It identifies, summarises and ranks those factors that influence susceptibility to bovine TB. It also identifies, summarises and ranks those practical management actions that could best mitigate the risk of transmission in housing and at pasture and identifies other factors likely to commend further beneficial study.

<http://www.dardni.gov.uk/afbi-literature-review-tb-review-cattle-to-cattle-transmission.pdf>

Literature Review on badger-cattle transmission

A review of transmission of bovine TB with particular reference to badger to cattle spread. It identifies, summarises and ranks those badger/cattle interfaces most likely to lead to bovine TB transmission. It also identifies, summarises and ranks those practical management actions that could best mitigate the risk of transmission in housing and at pasture and identifies any other factors likely to commend further beneficial study.

<http://www.dardni.gov.uk/afbi-literature-review-tb-review-badger-to-cattle-transmission.pdf>

Literature Review on cattle bTB tests and effective deployment:

A review of the published work or work nearing completion to inform an understanding of which tests for use in cattle provide the greatest sensitivity and specificity, and in which circumstances, and how this can be applied in order to improve TB control in Northern Ireland per se and, also, to best inform the most practical and cost-effective deployment of test resources in what may become a more constrained economic environment.

<http://www.dardni.gov.uk/afbi-literature-review-tb-review-diagnostic-tests-cattle.pdf>