

BADGERS
AND BOVINE TUBERCULOSIS
IN IRELAND

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Executive Summary

Bovine tuberculosis has been eliminated or reduced to very low levels in a large number of European countries and in the USA. There is, however, still fairly high infection levels in Italy, Greece, Spain, Portugal, Ireland and in certain areas of New Zealand where it is believed to be endemic in the wild life - notably the possum.

Progress in the eradication of Bovine Tuberculosis has stalled at different levels in various areas of Britain and Ireland. Frequent testing can keep the disease in control in these areas but there has been little progress in recent years in eliminating it. To an increasing extent this is being attributed to the disease having become endemic in the local wildlife, particularly in the badger. The purpose of this report is to assess the role of the badger in the spread of bovine tuberculosis in Ireland.

Difficulties of Eradication

Various factors have contributed to the failure to eradicate bovine tuberculosis in Ireland. These include:-

- (1) A very high volume of cattle movement within this country.
- (2) Defective testing.
- (3) Tag switching and illegal movement of cattle.
- (4) Failure to depopulate seriously infected herds, and
- (5) Stop-go funding policies.

Of these factors, cattle movement is probably the most important. A very high proportion of disease outbreaks are attributed to bought-in stock and it seems that the pre-movement test is not doing what it was set up to do - prevent spread of TB through this route.

Badgers and Bovine Tuberculosis in Great Britain

There is ample evidence that wild badgers in Great Britain are infected by bovine TB. Of the 9,211 dead badgers reported by the general public in 1972-84, 451 (4.9 per cent) were positive for *M. bovis*, with 7.2 per cent being infected in the South West. It is considered that bovine TB is endemic in badger populations in parts of Great Britain.

That badgers can infect cattle has been shown by two experiments in which healthy calves confined in a yard with infected badgers became infected, after some six months of contact. In an experiment under conditions approximating more closely to those occurring in farming, it took six years of coexistence of an infected badger population and healthy cattle before cattle herd breakdowns occurred. From these results, the risk of cross-infection from badgers might appear to be low but, given the low incidence of cattle herd breakdowns in Britain, the risk of infection

from badgers could in fact be high enough to account for much of the problem there. There is a positive correlation between population density of badgers and the frequency of herd breakdowns whose source cannot be traced to other cattle.

Two important local case studies, in Thornbury and Dorset, further indicate that cattle are infected by badgers. In both areas, a chronic record of TB in cattle was ended following the removal of the local badger populations, which were infected with TB.

Tuberculosis infection has been identified in a small number of other wild animals including foxes, rats, moles, mink and deer. But none of these had actual lesions of TB, except for the deer, and it has been concluded that while deer might pose a minor threat of infection to cattle, badgers seem to be the most important reservoir of infection in British wildlife.

The Ministry of Agriculture, Fisheries and Food (MAFF) regards infection from badgers as a major source of cattle herd breakdowns, particularly in the South West of England. Different badger control policies have been implemented in Britain since the mid-1970s. At present these are limited to removal of badgers from individual infected farms in certain areas when no other source of infection can be found. It has been calculated that the benefits to be gained from a more comprehensive approach would not justify the costs involved, given the rather low prevalence of the disease in Great Britain.

The Relationship between Badgers and Bovine Tuberculosis in Ireland

The presence of tuberculosis in a badger in Ireland was first reported from Cork in 1975. Since then a large number of badgers killed in road accidents have been examined for TB and it has been found that over 10 per cent had lesions of the disease. On the basis of this evidence it is suspected that badgers are a reservoir of bovine tuberculosis and could be a factor in the spread of the disease in cattle in Ireland.

In the four years 1985 to 1988 a total of 2,633 badgers were trapped in 21 counties throughout Ireland. Of these, 434 or 16 per cent have shown gross tuberculosis lesions.

Though badger removal programmes have been carried out in most counties, the most detailed investigations have been undertaken in Offaly, Galway, South West Cork and Longford. These counties have areas with high levels of TB in cattle, and badgers which were suspected of being infected with TB. The impact of those badger removal exercises on bovine TB levels are summarised in Table S.1. For comparative purposes results are also given in this table for two areas from which badgers were not officially removed before 1988. These latter areas might be considered as controls though they were not specifically selected as such.

Looking first at the areas from which badgers were not officially removed prior to 1988 it will be seen that in the Granard district the annual animal prevalence (reactor animals as per cent of total animals in the area) rose from 0.3 per cent in 1982 to 4.04 per cent in 1987 and declined to 0.87 per cent in 1988.

Table S.1: *Impact of Badger Removal on Bovine TB levels*

	1980	1981	1982	1983	1984	1985	1986	1987	1988
<i>Animal Period Prevalence %</i>									
<i>Areas from which badgers were officially removed</i>									
Rahan (Offaly)	0.36	0.71	0.31	0.50	2.23	2.21	2.30	0.44	0.38
Killeigh (Offaly)	0.04	0.33	0.41	1.30	2.34	1.59	1.67	0.08	0.41
Croghan (Offaly)	1.40	0.82	0.93	0.64	3.32	2.16	4.14	0.47	0.64
Castlehaven (Cork)	0.79	2.81	2.52	2.44	2.29	1.38	1.05	0.79	0.62
Ballycrissane (Galway)	0.05	1.35	4.35	1.10	6.50	3.60	0.25	0.10	0.0
Glann Oughterard (Galway)	n.a.	n.a.	n.a.	6.25	3.68	7.72	0.75	0.75	0.0
Kenagh (Longford)	0.32	0.42	1.80	5.80	4.58	3.52	1.91	1.38	0.75
<i>Areas from which badgers were not officially removed before 1988</i>									
Granard* (Longford)	n.a.	n.a.	0.30	0.66	0.75	1.71	2.50	4.04	0.87
Doonbally/Addergoole (Galway)	0.22	0.31	0.98	0.36	0.74	2.59	1.88	0.97	1.10

n.a. = not available.

* Badger removal took place in Granard in the second half of 1988.

Note: Line over figures indicates badger removal programme.

In the Doonbally/Addergoole DEDs the annual animal prevalence rose from 0.22 per cent in 1980 to 2.59 per cent in 1985 and declined to 1.10 per cent in 1988. In both these areas the prevalence of the disease was reduced through intensive testing but it is still unacceptably high.

The most striking impact from badger removals have occurred in the two Galway areas of Ballycrissane and Glann. In these areas badger removal combined with intensive testing reduced the annual animal prevalence from around 7 per cent in 1984/85 to zero in 1988. The level of the disease in the other areas shown has also declined following badger removal allied to intensive testing. However a good deal of residual infection still exists in these areas some of which may be due to incomplete badger removal.

While it is realised that there is a cyclical pattern in bovine TB outbreaks, which could have caused a decline in the disease levels in recent years, nevertheless it is felt that the sharp drops which have occurred in the areas from which badgers were officially removed, are not entirely due to this effect. It seems too much of a coincidence that the decline in each case could have followed badger removal if infection from these animals was not responsible to some extent for the outbreaks. Badger removal combined with intensive testing seem to have played important roles in the disease reductions noted. Of course further time

to see how results progress and a more thorough removal of badgers in some of the areas would lead to firmer conclusions. For that reason every effort should be made to keep these areas clear of badgers over the coming years and at the same time monitor the TB levels in the cattle.

Conclusions

1. In addition to very high cattle movement in the State, the various weaknesses in the operation of the bovine TB scheme during the past decades have contributed to the failure to eradicate bovine TB in Ireland.
2. It is also true that the dramatic flare-ups of bovine TB to unprecedented levels in some areas of the country cannot be explained on this basis.
3. These episodes, which seem to have become more common since the late 1970s, cannot be permanently controlled by the normal testing procedure, and even intensive testing is not always effective.
4. Many of the areas concerned have a badger population with some 10 to 20 per cent of the animals having gross TB lesions.
5. Removal of the badgers combined with intensive testing has, in most of such cases, been attended by a marked decrease in bovine TB.
6. It should be stressed, however, that the badger is not the sole or, indeed, primary source of bovine TB in many areas of the country.
7. With the high residual level of TB in the cattle population, the most serious risk of cattle infection in most areas is from direct or indirect contact with infected cattle.
8. Thus eradication of the badger population would not eradicate bovine TB in the country.
9. It is also true that in many areas of the country it may not be possible to control bovine TB without controlling the badger population.