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CONVENTION ON THE CONSERVATION OF EUROPEAN WILDLIFE
AND NATURAL HABITATS

Standing Committee

37th meeting
Strasbourg, 5-8 December 2017

Complaints on stand-by

**Presumed risk of national extinction of badgers
in Ireland**

- REPORT BY THE GOVERNMENT -

*Document prepared by
the Department of Culture, Heritage and the Gaeltacht, Ireland*



An Roinn Ealaíon, Oidhreacht,
Gnóthaí Réigiúnacha, Tuaithe agus Gaeltachta

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24th May 2017

Subject: Complaint No. 2014/1: Presumed decline of the national badger (*Meles meles*) population in Ireland

Dear Mr Fernandez-Galiano

I refer to the Secretariat's letters of 21 January 2015, 26 May 2015 and 14 March 2016 in relation to Complaint No. 2014/1 and enclose the response from the Irish Authorities. This document responds to the various points raised by the Irish Wildlife Trust in complaint 2014/1 and encloses in the appendices published documentation which provides comprehensive support for the response.

The response to the complaint has been compiled by the Department of Arts, Heritage, Regional, Rural & Gaeltacht Affairs, with significant input from the Department of Agriculture, Food and the Marine. Both departments have responsibility for the badger population in Ireland:

- The Department of Agriculture, Food and the Marine (DAFM) operate the capturing of badgers under the bovine TB eradication programme; and
- The Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs (DAHRRGA) issue licences to DAFM to undertake the capturing programme.

VIEWS ON THE COMPLAINT

a. Background to the bovine TB Eradication Programme in Ireland

The central element of the complaint is that the badger (*Meles meles*) population in Ireland is being threatened by the actions of the authorities named above in relation to their continuing efforts to eradicate bovine tuberculosis (TB) in cattle.

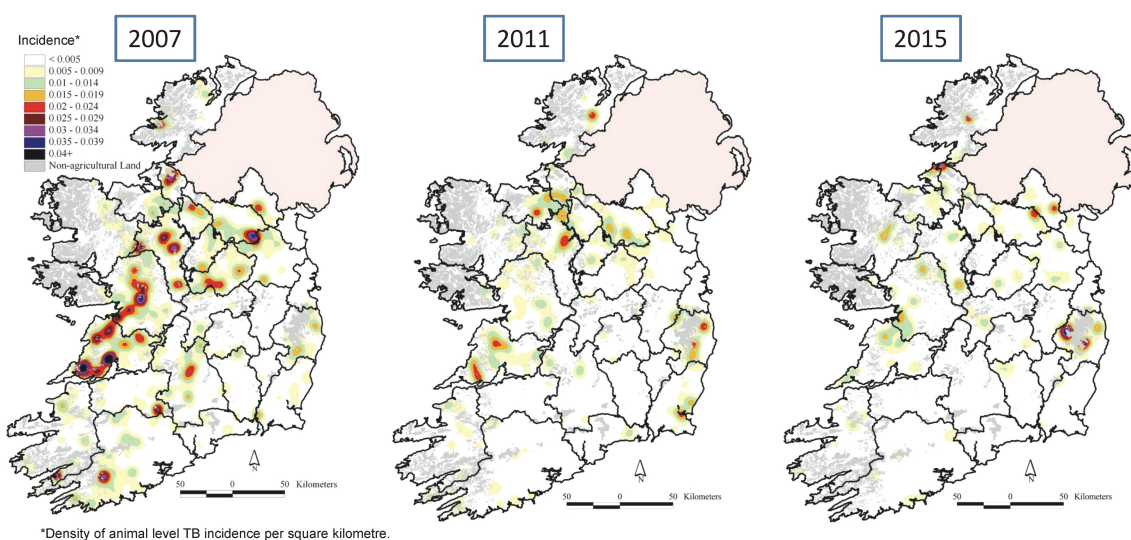
Ireland commenced a 'test and slaughter' programme to eradicate bovine TB in 1954. At that time bovine TB was the greatest cause of loss from an infectious source and the animal reactor incidence of bovine TB in cattle was 17% (22% in cows and 8% in other cattle). The early years of the programme resulted in rapid progress toward the ultimate goal of eradication, and in 1965 the country was provisionally declared as "attested" or bovine TB free on the assumption that the early trend lines would continue to full eradication.

However, this improvement did not materialise and between 1965 and 1985, no effective improvement occurred with reactor numbers remaining at 35,000 reactors (plus or minus 5,000) per year. A wildlife component (badgers) was identified in the early 1980s as a significant source of

seeding new infections to cattle and a number of scientific trials were carried out which quantified the magnitude of this source of infection and methods to counter it.

In 2003, a national programme of controlling badger populations in areas where serious outbreaks of bovine TB were identified and deemed part of a cattle-badger interaction locally was put in place by the DAFM. As a result of this programme, the annual animal level incidence of bovine TB in cattle declined to 0.24% by 2010. The number of SICTT (Single Intradermal Cervical Tuberculin Test) reactors fell from 39,847 in 2000 and to 20,211 in 2010, (herd incidences of 7.53% and 4.65% respectively). There has been a continued decrease, as indicated in the following maps (the most recent available data is for 2015):

Incidence of bTB in Ireland (TB reactors per sq km) in the period 2007 to 2015. Maps are also enclosed at **Appendix A**.



Current research is focusing on replacing the long-term culling of badgers with vaccination with BCG. A reasonable expectation would be to replace perhaps up to 85% of the current culling program by a maintenance program of vaccination of badgers with BCG. Trials where vaccination is being substituted for continued culling are ongoing and results are expected at the end of 2017. The future feasibility of incorporating injectable BCG into the bTB eradication program will then be evaluated.

b. Badgers and the Wildlife Acts

The badger is protected under the Wildlife Acts in Ireland. However, it has been identified as an important reservoir of *Mycobacterium bovis*, the bacterium that causes TB in cattle. For this reason, DAHRRGA has facilitated the bovine TB eradication programme of DAFM for several years through a strict licensing regime which allows DAFM to remove badgers where local outbreaks have occurred in cattle herds. There has been an agreement in place for a number of years between the two Departments that the cumulative percentage of agricultural land under capture for badgers should not exceed 30%.

Since 2004, DAHRRGA issued licences annually to DAFM, one for each Divisional Veterinary Office (DVO), allowing the removal of badgers from infected areas. However, there have been periods where licences have been issued for a shorter time period.

Under the licences issued by DAHRRGA, badgers are captured where they are implicated in an outbreak of TB. Capturing is undertaken only in areas where serious outbreaks of TB have been identified in cattle herds and where an epidemiological investigation carried out by DAFM's Veterinary Inspectorate has found that badgers are the likely source of infection. Successive capturing operations focus predominately on the same areas, which results in local reductions in badger numbers. This lower local density of badgers has led to less animal to animal (badgers or cattle) transmission of TB.

c. Issues raised in the Complaint

While the Department of Agriculture, Food and the Marine (DAFM) has culled badgers for an extended period, the current capturing protocols were only introduced from 2003 onward. Capturing is carried out under license from the National Parks and Wildlife Service of DAHRRGA and is targeted in areas where TB has become endemic in cattle and badgers.

This program is operated within the spirit of Article 8 of the Bern Convention, and the undertakings entered into back in 2003 where it was guaranteed that the area being culled would not exceed 30% over the period 2003-2007 have been honored. In fact the area under capture, cumulatively, has remained under 30% in the years following: 2008-2015.

The complaint points to a figure of 31%, reported in 2012. However, this figure represented the area under capture, but not all badgers captured in the 31% area were culled. Of the 31%, vaccination/release was delivered on 2.46% of the land, so the net area where capturing was undertaken was in fact 28.59% (see Table 1 below for years 2012-2015):

Year	Total Area Captured	Vaccinated/Released	Net Removal Area
2012	31.05	2.46	28.59
2013	32.35	4.37	27.98
2014	33.28	4.40	28.89
2015	34.25	4.40	29.85

Table 1: Capture Area & Net Removal Area 2012-2015

The complaint contends that Ireland is circumventing a breach of the Convention, altering the manner in which the amount of land under capture is reported. This is not correct: as stated above, no breach of any undertakings under the Convention occurred in 2012.

The Irish authorities stress that neither Department would knowingly breach any convention that Ireland was a signatory to or attempt to cover-up an alleged breach.

DAFM has had discussions with DAHRRGA in relation to methods of best calculating the area that is reported as being under capture, as the definitions in use since 2001 were known to (and in fact were designed to over-estimate) the actual area under capture. Such an over-estimate served no useful purpose as more was learned about badger densities nationally and in localized areas from studies undertaken by DAFM supported researchers.

The “formula” originally chosen, which over-estimated the scope of the capturing program, was designed to ensure badgers were protected by always erring on the side of caution in calculating the extent of the capturing program and its effect. Crucially, while a revised method of calculating the area under capture was considered and discussed it was not implemented. Indeed the method that has been finally chosen differs from what was suggested in 2012, in that a more simple computation will be implemented to 2016 data.

In 2016, only lands within 500 metres of setts where capturing was ever attempted will be included as “land under capture”. The DAFM database contains details of sett locations, some of which were approved for capture because they were within 1.5km of main setts, or 2km of other setts, from farms that experienced a TB breakdown where it was likely badgers were involved and were possibly causal.

If setts exist on the DAFM databases that are approved for capture, yet have never had any capturing ever carried out around them to date, it would be misleading to include those lands in a computation of “area under capture”.

The 2016 figures are still in preparation, but the areas under capture using the revised definition will result in a lower estimate of area under capture. The preliminary figures, for lands under capture at the end of 2016 (excluding lands where badgers are vaccinated / released) are:

Old Definition: 16017Km²
 New Definition: 12619Km²
 % Difference: Minus 21%

Changes in population size of badgers in Ireland since 2012.

The central element of the complaint is that the Irish badger population is under threat of becoming extinct due to the bovine TB eradication programme. It is the Irish authorities' contention that the complaint is flawed and our reasoning is presented in the accompanying commentary. DAFM prepared a specific document in response to this aspect of a previous complaint: Badger numbers and what constitutes a sustainable population? (Appendix B).

The document explains the background to the estimates of population that have been published previously by Smal and by Sleeman. One could extrapolate from these studies that the national badger population in 2000 was somewhere between 70,000 and 120,000 with a mean value of circa 95,000. The best estimate of the national population in 2012 was between 50,000 and 85,000, mean circa 70,000 badgers. While a population reduction over this period is still evident, it is clear that this level of decline will not continue. Already the amount of new land being brought under treatment annually is decreasing. There has been no new estimate of the badger population since 2012 but as the badger vaccination programme is increasingly rolled out, the level of culling will be further reduced in the future.

By definition, local populations have been and are being impacted by the culling program because, where local breakdowns due to tuberculosis in cattle herds are associated epidemiologically with badgers, local populations are culled and densities are maintained at lowered levels as a matter of policy. Nonetheless, current population estimates are based on badger densities that are at the higher end of density estimates from other European countries and are not close to levels at which the badger population at district or regional level in Ireland could be considered to be under threat.

A further document is enclosed (**Appendix C**) in relation to the impact of culling: Byrne et al. (2013) *Impact of culling on relative abundance of the European Badger (Meles meles) in Ireland*.

Measures to Monitor Badger Population

The Medium Term National Strategy prepared by DAFM was based on a targeted intervention around serious herd breakdowns (>3 standard reactors) where badgers have been implicated in a breakdown by epidemiology carried out by local DAFM Veterinary Inspectors. This programme has been successful, in that episodes of bovine TB in herds are reducing in frequency since the policy began and, in turn, this results in a reducing rate of new land being added to the national cumulative pool of land under capture. Output data suggests that the programme is successfully delivering its targeted objectives (**Appendix D**).

The issue of the cumulative growth in areas under capture since 2003, in individual counties, of land within 500m of setts approved for capture as per national policy is addressed in paragraph 7.

The issue of bovine TB levels in local badger populations are addressed in two published papers at **Appendices E** (Abdou et al. 2015) and **F** (Byrne et al. 2012).

Conservation Status of Badgers in Ireland

The badger (*Meles meles*) is protected in Ireland under the Wildlife Act. Its conservation status is a species of least concern. While badger numbers in Ireland have been reduced through culling in response to bovine tuberculosis in cattle herds, the species has retained a widespread distribution at the national scale¹.

Population estimates for badgers have been generated on a number of occasions using different methods. The most up to date figures, which are based on a peer reviewed paper published in 2014 by scientists in University College Dublin, Teagasc, the Department of Agriculture, Food and Marine and foreign contributors, puts the number of social groups nationally at 19,200 (95% Confidence Interval: 12,200–27,900) [Byrne et al, 2014 Appendix G]. With social group size estimated at approximately 4.1, this extrapolates very closely to the previous population figure of 84,000 calculated in 2009 by researchers in University College Cork.

¹ pp95-96, *Atlas of Mammals in Ireland 2010 – 2015* (eds. Liam Lysaght and Ferdia Marnell).

Vaccination of badgers as alternative to culling

DAFM has been conducting a research program since 2001 exploring elements of benefits of vaccinating badgers with BCG. There are currently two elements of research underway.

The results of a project in Kilkenny in which badgers were given an oral preparation of BCG vaccine and the protective effects measured against a cohort of badgers in the same areas that received a placebo have recently been published (Appendix H). The background to this work is detailed in the document prepared by DAFM on progress in TB eradication in Ireland (Appendix D). The conclusion is that BCG is protective in wild badgers.

A separate but related project is also running and will be based on results from the badgers orally vaccinated in Kilkenny. The document at Appendix I – Aznar et al. (2011) Trial Design to Measure the Effect of Oral Vaccination explains the background and methodologies that will be used in these analyses.

Separately to the trials in Kilkenny, intramuscular BCG trials are in their fourth and final year (2014/2015/2016/2017). Discussions are on-going as to whether or not the trials will be extended into 2018, and / or expanded to a wider geographic area, and a decision on this matter will be made soon.

There is evidence from these trials to support an expansion of the vaccination programme in wild badgers and this brings the prospect of a concomitant reduction in badger culling from next year.

CONCLUSION

The complaint contends that the Irish authorities are masking the true intensity of its operations. However, it is important to make very clear that neither DAHRRGA nor DAFM are operating with the intention of causing long-term harm to the badger population in Ireland.

Included as appendices are peer reviewed, published papers that emphasise the commitment of the Irish authorities to supporting research that better informs its choice of optimal strategies and provides assurances to the wider community that programs are contributing to the longer-term ambition of finally eliminating tuberculosis first in cattle and eventually in badgers.

Appendix H - The recently published paper in PlosOne where the results of the Kilkenny Vaccine project are presented confirms that vaccination of wild badgers with BCG results in protection against infection with M.Bovis

Appendix J - A poster which outlines a large scale project where i/m vaccination of badgers with BCG is being evaluated as a substitute for continued culling of badgers. This four year project will be completed in 2017, with results expected by April, 2018.

I trust the above is in order. Should you require any further assistance in relation to this matter, please do not hesitate to contact the undersigned.

Yours sincerely

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Appendices

Appendix A – Incidence of bTB in Ireland 2007-2015

Appendix B – O’Keefe & Byrne, Badger numbers and what constitutes a sustainable population

Appendix C – Byrne et al. (2013), Impact of culling on relative abundance of the European badger (*Meles meles*) in Ireland

Appendix D – Sheridan (2011), Progress in tuberculosis eradication in Ireland

Appendix E – Abdou et al. (2015) Effect of culling and vaccination on bovine tuberculosis infection in European badger (*Meles meles*) population by spatial simulation modelling

Appendix F – Byrne et al. (2012) Population Estimation and Trappability of the European Badger (*Meles meles*): Implications for Tuberculosis Management

Appendix G – Byrne et al. (2014) Ecological Indicators

Appendix H – Gormley et al. (2017) Oral Vaccination of Free-Living Badgers (*Meles meles*) with BCG Vaccine Confers Protection against Tuberculosis

Appendix I – Aznar et al. (2011) Trial design to estimate the effect of vaccination on tuberculosis incidence in badgers

Appendix J – Intramuscular vaccination project poster.