



Animal &
Plant Health
Agency

RECURRENT BOVINE TUBERCULOSIS IN ENGLAND'S HIGH RISK AREA, 2010-2015

Recurrence in the High Risk Area (HRA) of England

Bovine tuberculosis (bTB) incidents that occur on farms where there is a recent history of bTB (within 36 months) are known as recurrent incidents. Some recurrent incidents may simply reflect disease incidence, however others may have an increased risk of repeated infection. This can occur for a number of reasons such as residual infection in a herd, persistence of *Mycobacterium bovis* on the farm environment/fomites, introductions of infected cattle in the herd, or re-infection from local wildlife reservoirs (Gallagher *et al.* 2013. PVM 111: 237– 244)

26.2% (1,798/6,872)

Of herds in the HRA (with a breakdown in the previous 36 months) had a breakdown in 2014

8.4% (1,280/15,241)

Of herds in the HRA (with no recurrent breakdowns) had a breakdown in 2014



Objective and Methods

Objective: Identify characteristics of the index bTB incident that affect the rate at which recurrent bTB infection occurs using centrally available data from 2010 to 2015 in the HRA of England, with an eventual view to predicting herds that may reoccur.

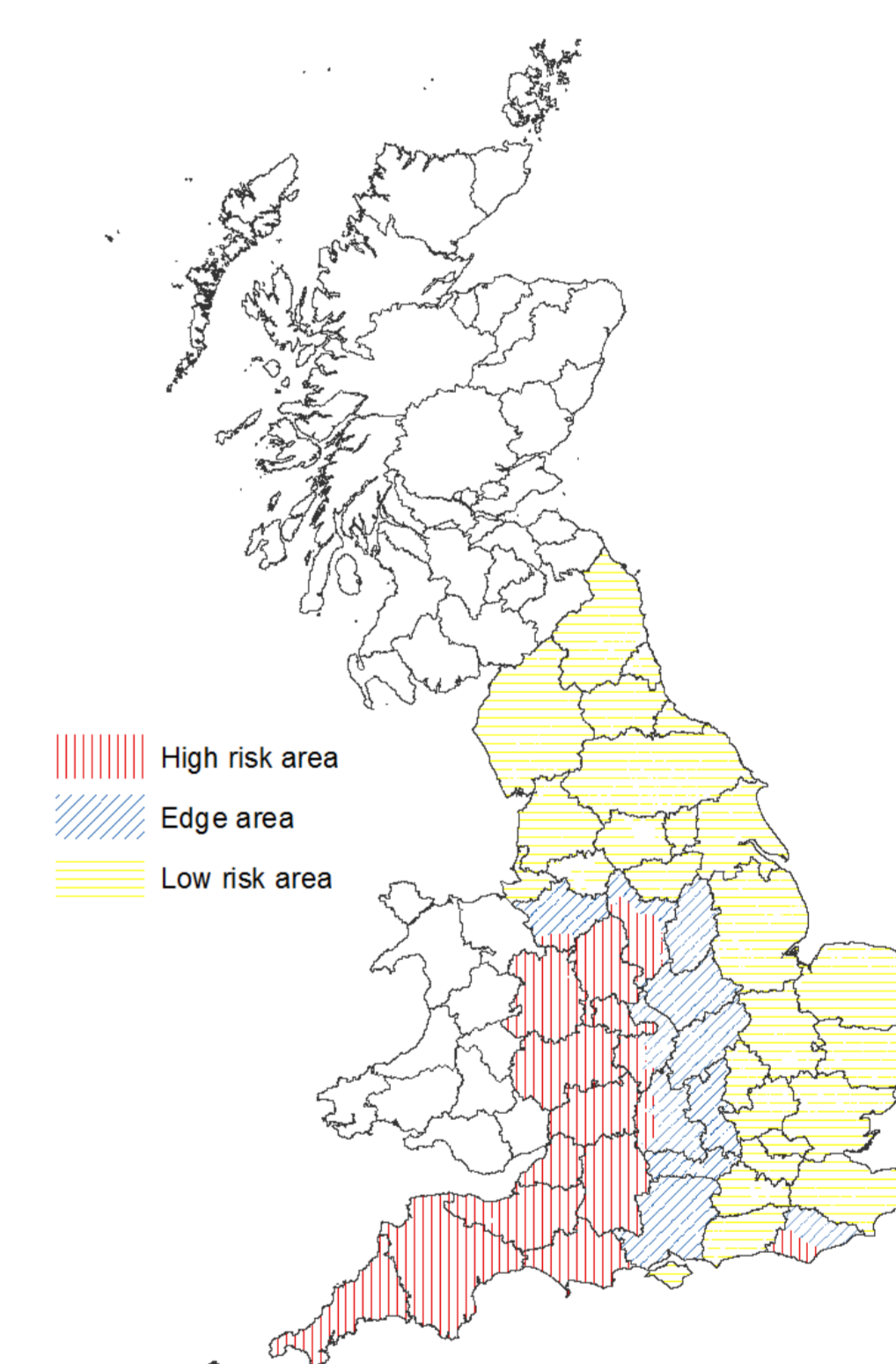
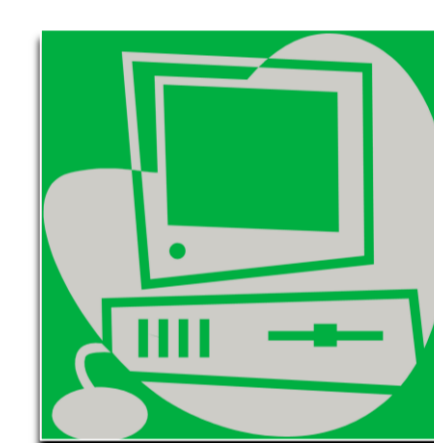
Dataset: Herds with a bTB incident that were released from restrictions between 1st January 2010 and 31st December 2012 were eligible for inclusion in the analysis, and these herds were followed up until their next bTB incident or 29th September 2015.

Method: Data was explored through univariate analysis using a threshold p-value of 0.2. Preliminary Cox Proportional Hazards Regression Model (backwards deletion approach). Models were compared using a likelihood ratio test and by observing changes in the AIC. 9121 herds with a bTB incident were considered in the analysis; 5580 with a subsequent incident in the follow-up period. Variables were analysed from four main categories: 1) Herd characteristics, 2) Breakdown characteristics, 3) Test characteristics, 4) Wildlife characteristics.

Characteristics of the index incident considered in model:

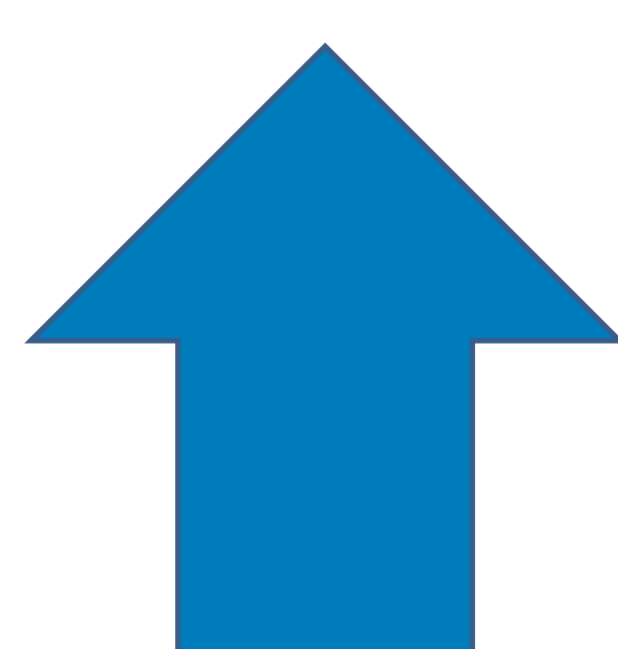
The number and type of reactors detected, slaughterhouse cases identified, post-mortem and culture results, incident duration, bTB history of the herd, herd type and the proportion of cows in the herd, herd size, test history, badger density, measures of local incidence rate and median age of the animals in the herd.

Map adapted from: <https://www.gov.uk/government/publications/bovine-tb-surveillance-in-great-britain-2014>



Preliminary Results

Characteristics of the index bTB incidents associated with a higher risk of recurrence



Duration of the index incident

Increasing local incidence rate

Increasing herd size

More than 3 skin test reactors

More than 2 fully confirmed reactors

TB history: 2 or more incidents in the previous 3 years

Next steps

Incorporating data on the volume and characteristics of cattle purchasing into the model

Explore the factors that affect the risk of a recurrent incident on a GB level

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