



Animal &
Plant Health
Agency

Regional six-monthly report of descriptive bovine TB epidemiology for the Low Risk (4 yearly testing) Areas of England

Midlands/Lincolnshire

2019 Mid-year (first six months)

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1. Geographical distribution of bovine TB breakdowns in the region

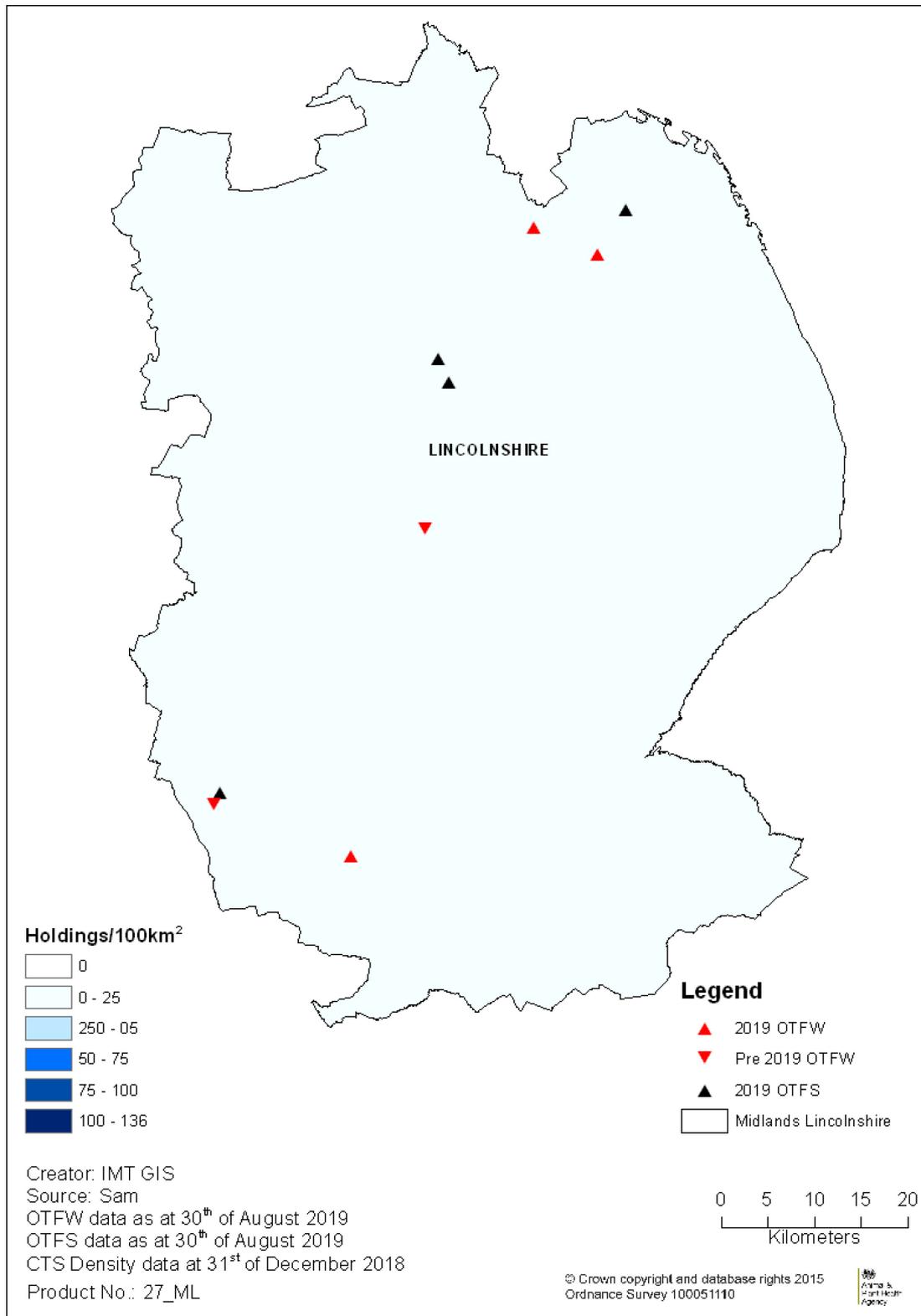
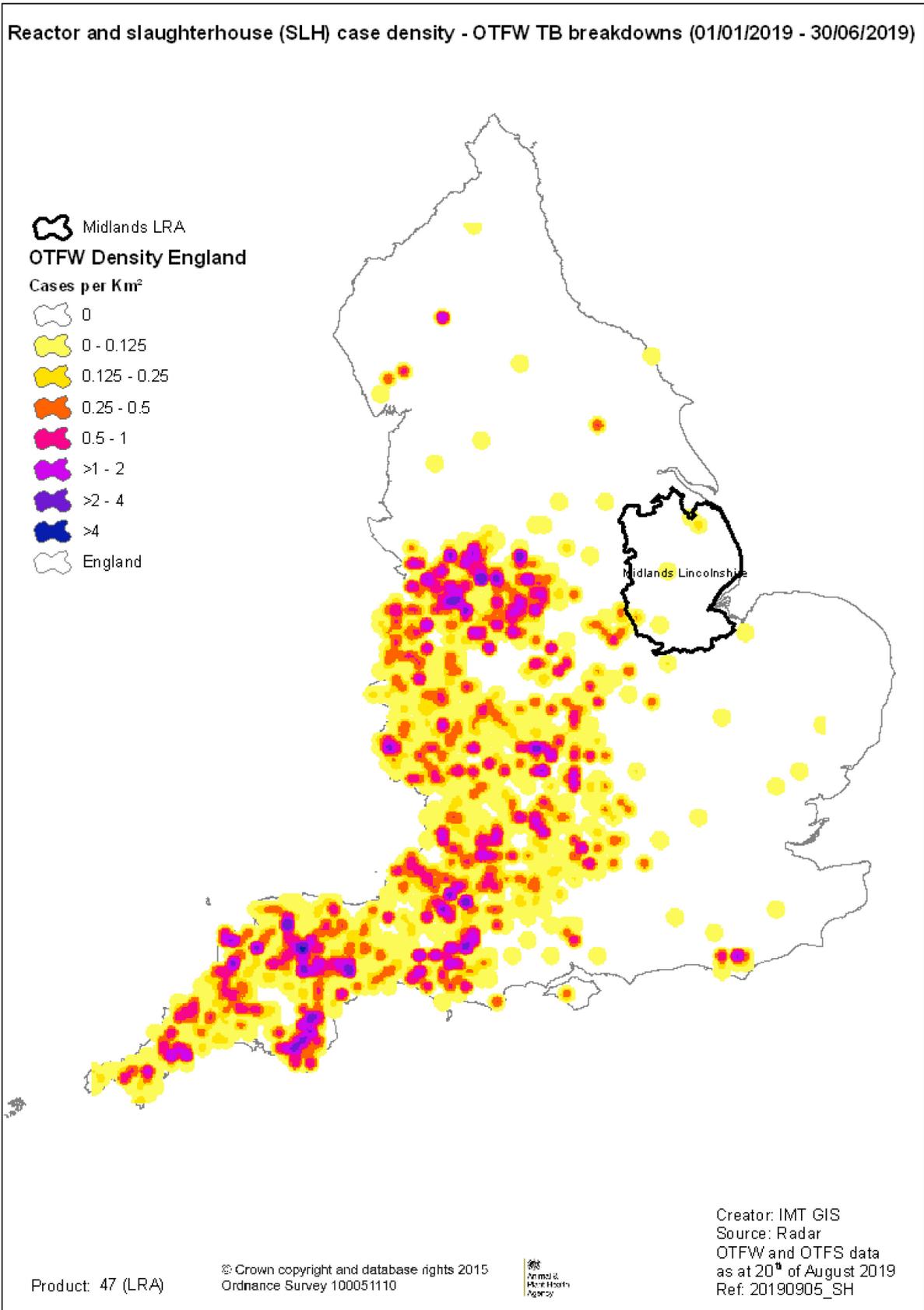
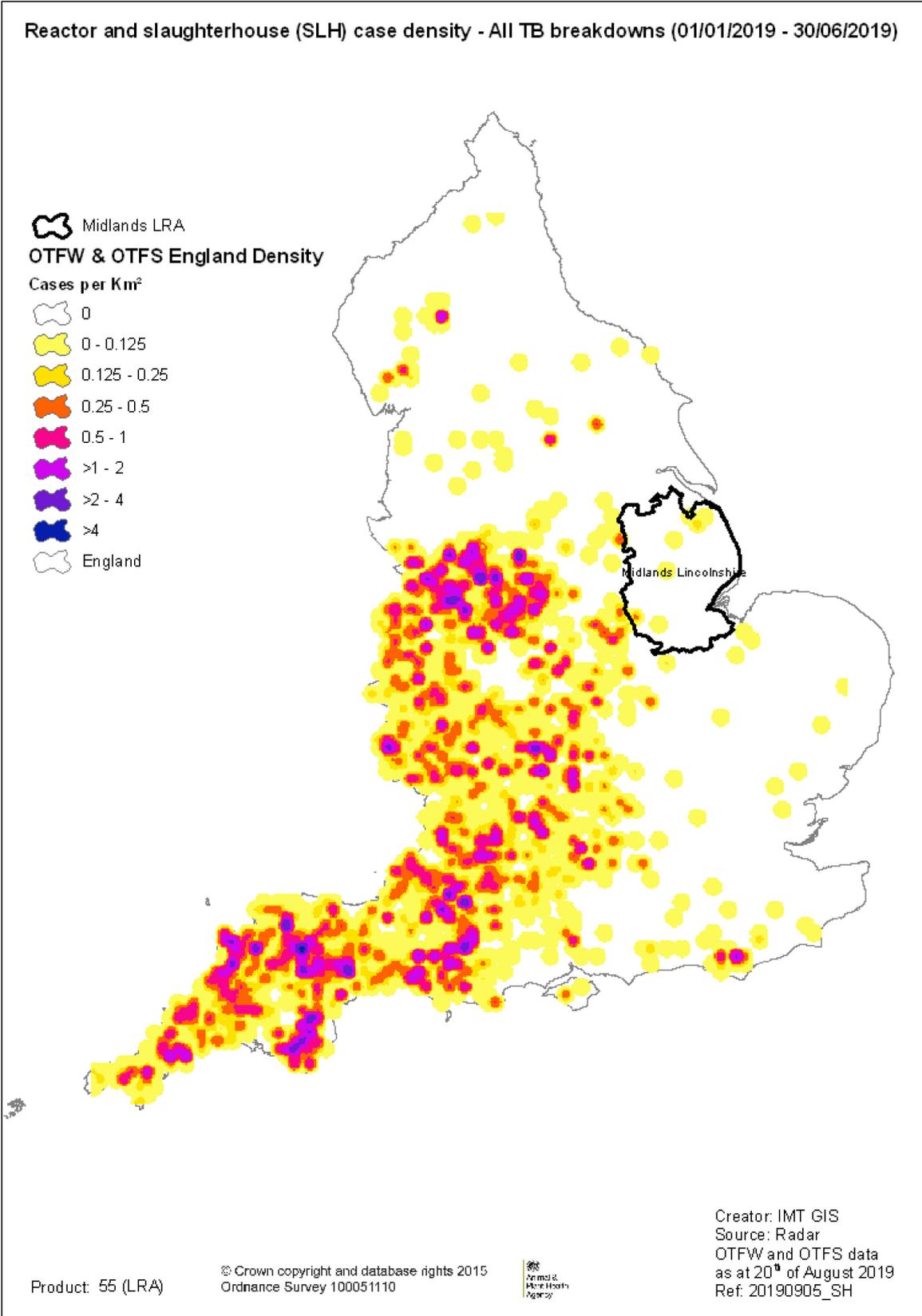


Figure 1: Geographical distribution of all new TB breakdowns (OTFW and OTFS) in 2019 and pre 2019 OTFW breakdowns still ongoing at the end of the report period overlaid on a cattle holding density map.



Figures 2 and 3: Display the density of skin test, IFN-gamma test reactors and slaughterhouse cases per km² in OTFW TB incidents in the first six-months of 2019.



Figures 3: Display the density of skin test, IFN-gamma test reactors and slaughterhouse cases per km² in all TB incidents in the first six-months of 2019

2. Summary of the regional headline cattle TB statistics

A total of seven new breakdowns (three with OTF status withdrawn [OTFW] and four with OTF status suspended [OTFS]) were disclosed in the reporting period. This represents a similar level to the first six months of 2018, in which six new breakdowns (four OTFW, two OTFS) were disclosed.

Following one OTFW case (genotype 25:a) of undetermined origin disclosed in December 2017, a potential TB hotspot area (HS23) was triggered in 2018 near Grantham (south west border of Lincolnshire with Leicestershire). Two new breakdowns (one confirmed OTFW, culture pending, and one unconfirmed OTFS) have been detected thus far in cattle herds within HS23 in Lincolnshire in the reporting period, both assessed as of undetermined origin and with epidemiological investigation ongoing. One additional breakdown (confirmed OTFW, genotype 25:b) had been detected in a cattle herd within HS23 in 2018, but it appears not to be epidemiologically linked to the index (triggering) breakdown.

Targeted surveillance (radial testing) around OTFW cattle herds disclosed five out of the total seven new breakdowns in the reporting period, although there is no evidence to suggest that the new breakdowns are epidemiologically related to the respective index cases.

Herd-level statistics	January-June 2019	January-June 2018
(a) Total number of cattle herds live on Sam at the end of the reporting period	913	940
(b) Total number of cattle herds subject to annual TB testing at the end of the reporting period (any reason)	120	64
(c) Total number of herd tests carried out in the period	336	309
(d) Total number of OTF cattle herds TB tested during the period for any reason	160	180
(e) Total number of OTF cattle herds at the end of the report period (i.e. herds not under any type of TB2 restrictions)	890	913
(f) Total number of cattle herds that were not under restrictions due to an ongoing TB breakdown at the end of the report period.	904	931
(g) Total number of new TB breakdowns detected in cattle herds during the report period:	7	6
• OTFS	4	2
• OTFW	3	4
(h) Of the new OTFW herd breakdowns, how many:		
• occurred in a holding affected by another OTFW breakdown in the previous three years?	0	2
• could be considered secondary to a primary breakdown based on current evidence?	0	0
• were triggered by skin test reactors or 2x Inconclusive Reactors (IRs) at routine herd tests?	0	2
• were triggered by skin test reactors or 2xIRs at other TB test types (forward and back-tracings, contiguous, check tests, post-movement, etc.)?	3	3

<ul style="list-style-type: none"> were first detected through routine slaughterhouse TB surveillance? 	0	2
(i) Number of new breakdowns revealed by enhanced TB surveillance (radial testing) conducted around those OTFW herds:	5	1
<ul style="list-style-type: none"> OTFS 	3	0
<ul style="list-style-type: none"> OTFW 	2	0
(j) Number of OTFW herds still open at the end of the period (including any ongoing OTFW breakdowns that began in a previous reporting period)	5	5
(k) New confirmed (positive <i>Mycobacterium. bovis</i> (M. bovis) culture) incidents in non-bovine species detected during the report period (indicate host species involved)	0	0

Animal-level statistics (cattle)		
(a) Total number of cattle tested in the period (animal tests)	19,495	9722
(b) Reactors detected:	38	25
<ul style="list-style-type: none"> tuberculin skin test 	14	20
<ul style="list-style-type: none"> additional gamma interferon (IFNg) blood test reactors (skin-test negative or IR animals) 	24	5
(c) Reactors per breakdown	5	4
(d) Reactors per 1000 animal tests	1.95	2.57
(e) Additional animals identified for slaughter for TB control reasons (Direct Contacts (DCs), including any first-time IRs)	0	0
(f) Slaughterhouse (SLH) cases (tuberculous carcasses) reported by Food Standards Agency (FSA)	1	3
(g) SLH cases confirmed by culture of M. bovis	0	1

3. Suspected sources of *Mycobacterium bovis* infection for all the new officially tuberculosis free status withdrawn breakdowns identified in the report period

Most likely origin	Provisional	Final
Introduction (e.g. purchase) of infected animal(s)	1	
Local - lateral spread from neighbouring holdings:		
<ul style="list-style-type: none"> exposure to infected wildlife e.g. badgers 		
<ul style="list-style-type: none"> other farmed species 		
<ul style="list-style-type: none"> recrudescence of residual infection from a previous TB breakdown 		
<ul style="list-style-type: none"> infected human source 		
Undetermined/obscure	2	
Other (explain)		

Categorisation of all new OTFW TB breakdowns identified in your region, according to:

- (a) the probability of them being the result of introduced infection (inward cattle movements) and
- (b) the strength of evidence that we are dealing with an isolated incident without further propagation from the index farm to neighbouring herds (or vice versa)

		Probability of isolated, sporadic ('one-off') breakdown, without secondary local spread from the index case		
		Likely (no secondary breakdowns detected)	Possible (no secondary breakdowns detected, but dataset incomplete)	Not likely (secondary spread from the index case, or exposure to a common wildlife source has occurred)
Probability of <i>M. bovis</i> infection introduced through cattle movements	Definite			
	Likely		1	
	Possible		2	
	Not likely (indigenous infection in the locality)			

4. Overview of the Bovine TB Eradication Programme in the region

One OTFW case (genotype 25:a of *M. bovis*) of undetermined origin that was disclosed in December 2017 is being investigated as an indication of potential endemic *M. bovis* infection in the area near the south west border with Leicestershire. Leicestershire is in the Edge Area, but several recent breakdowns of obscure origin caused by genotype 25:a of *M. bovis* in north east Leicestershire have been attributed to wildlife. In June 2018 a potential bTB hotspot area (HS23) was identified and enhanced TB surveillance measures in cattle herds and wildlife are currently implemented in this part of Lincolnshire.

Two of the new breakdowns in Lincolnshire (one OTFW and one OTFS) in the reporting period were disclosed within HS23, and both are currently categorised as of obscure origin.

A total of three new OTFW breakdowns have been disclosed in the reporting period (compared to the total of four OTFW breakdowns during the first six months of 2017). One of these was identified as being of likely purchased origin.

The other two OTFW breakdowns were identified as being of undetermined origin. Further investigation of two of those three breakdowns indicate that they are not likely to be related to the HS23 index case.

One of the two OTFW breakdowns of undetermined origin disclosed in the first six months of 2019 was disclosed as a result of RAD testing in the HS23 area, but with results for culture of *M. bovis* still pending, no further conclusions can be made.

Four OTFS breakdowns were disclosed in the reporting period. The four breakdowns have been identified as being of undetermined origin due to insufficient data.

Other features of bovine TB in Lincolnshire in 2019:

- No *ad hoc* routine surveillance testing interval changes for specific herds or parishes
- Compulsory post-movement testing for cattle entering the Low Risk Area from annual (or more frequent) testing areas of GB and voluntary 'pre-sale' bTB check test in place
- No exemptions from mandatory interferon-gamma testing of OTFW breakdown herds were granted during the first six months of 2019
- Overall results of radial (RAD) surveillance: three OTFW breakdowns triggered additional testing during the reporting period and this RAD testing programme is ongoing. Five breakdowns (two OTFW and three OTFS) were disclosed by RAD testing.
- No unusual breakdowns
- No confirmed or suspected cases of zoonotic (human) *M. bovis* infection
- No suspected cases of non-specific and fraudulent skin test reactors
- No breakdowns involving producer-retailers and unpasteurised cheese-makers, open farms, etc.
- Regular meetings are held with the NFU in the Midlands Region. APHA have given specific support and encouragement to the Lincolnshire branch of the NFU in their drive to keep bTB out of the LRA. Contact with Official Veterinarians (OVs) through OV newsletter, or direct one-to-one contact in areas such as changes to bTB policy and bTB testing protocol. Ongoing audit programme of OVs for compliance with TB testing protocol.
- Collaboration with local Trading Standards Departments on enforcement of bTB legislation. Contact on an as-needs basis regarding individual casework. Routine liaison with CCDC and PHE (public health authorities).
- No significant risks or issues concerning the delivery of bTB eradication policies in the region.

5. Wildlife

One OTFW case (genotype 25:a) of undetermined origin disclosed in December 2017 in a cattle herd near Grantham (south west border of Lincolnshire with Leicestershire) is being investigated as an indication of potential spread of endemic TB from the adjoining Edge Area. As a result, in June 2018, APHA set up a potential bTB hotspot area of approximately 245 km² (HS23) between Grantham (Lincs.) and Melton Mowbray (Leics.) Additional TB surveillance measures are being implemented in both cattle herds and wildlife (badgers and wild deer) found dead within this area, as per map below. Notification letters have been sent to cattle keepers and stakeholders.

Two new breakdowns (one confirmed OTFW, culture pending, and one unconfirmed OTFS) have been detected thus far in cattle herds within HS23 in Lincolnshire in the reporting period, both assessed as of undetermined origin and with epidemiological investigation ongoing.

One additional breakdown (confirmed OTFW, genotype 25:b) had been detected in a cattle herd within HS23 in 2018, but it appears not to be epidemiologically linked to the initial triggering breakdown.

There has been a total of five submissions of dead badgers, but unfortunately no samples were sent for culture due to the poor quality of the samples.

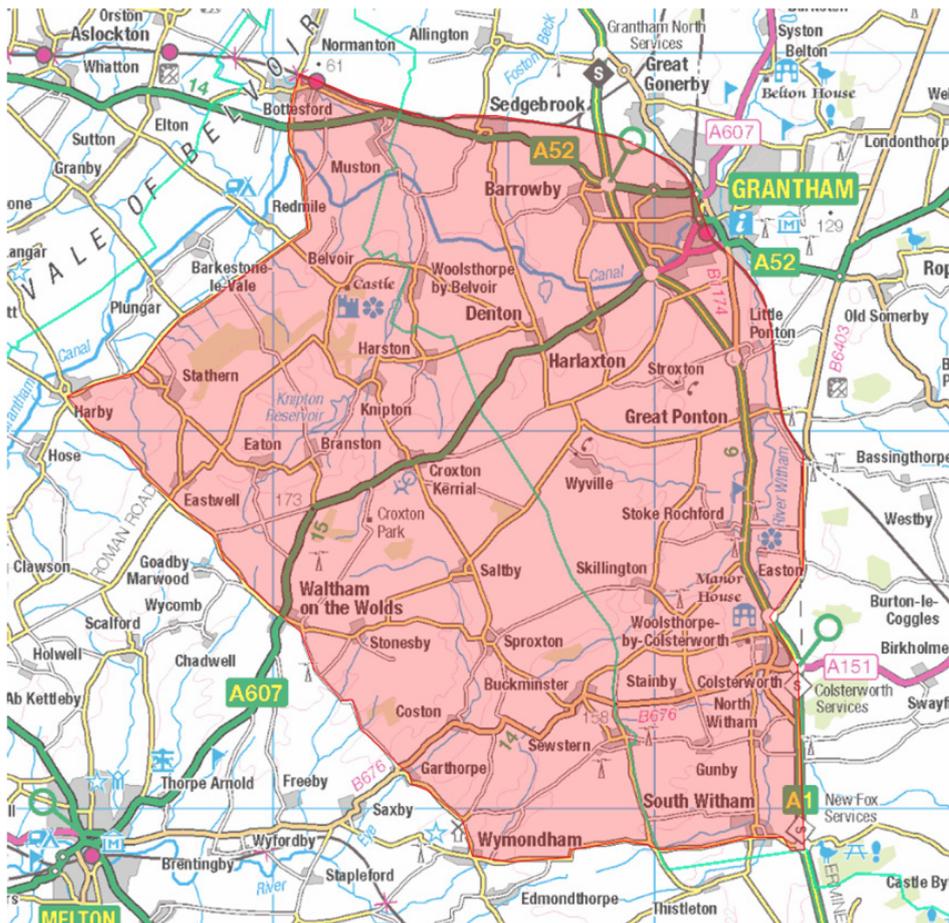


Figure 4: Potential New TB Hotspot HS-23 in Southwest Lincolnshire

Post-mortem surveillance of hunted wild deer has continued in this area throughout the period, with no suspected cases of TB in wild deer notified to APHA.

No voluntary badger BCG vaccination is known to have taken place in Lincolnshire.

6. Other susceptible species

No cases of laboratory-confirmed *M. bovis* infection recorded in any other animal species, including domestic non-bovine farm animals (camelids, goats, sheep, pigs), pets, zoo animal collections, captive (farmed/park) deer holdings and captive wild boar farms.

Glossary

- bTB – (bovine) Tuberculosis (infection of cattle with *M. bovis*)
- Edge Area (EA) – the annual TB testing area of England situated between the High and Low Risk Areas
- Epidemiology – the science that studies the patterns, causes, and effects of health and disease conditions in defined populations
- Genotype – the genetic makeup of a cell, an organism, or an individual usually with reference to a specific characteristic under consideration
- High Risk Area (HRA) – the annual testing area of England comprising the South West, West Midlands and part of East Sussex, in which *M. bovis* infection is endemic in cattle herds and in badgers
- IFN- γ – interferon-gamma test. A supplementary in vitro blood test for TB used by APHA in conjunction with the tuberculin skin test in some situations, usually to improve the overall diagnostic sensitivity in infected herds with OTF status withdrawn
- Low Risk Area (LRA) – the four-yearly TB testing area of the North and East of England in which *M. bovis* infection occurs only sporadically in cattle and is not considered endemic in wildlife. Although the default testing interval for routine TB surveillance is four years, some higher risk herds in the LRA are subjected to annual testing. There is also more intensive surveillance testing (radial testing) around any herds in the LRA (and parts of the Edge Area) that have their officially TB free status withdrawn due to a TB breakdown
- OTF – Officially Tuberculosis Free status. Herds that are not subjected to TB movement restrictions of any type are classified as OTF
- OTF-S – Officially Tuberculosis Free Suspended status. In England, an OTFS breakdown is a herd in which all the reactors removed had no visible lesions (NVL) on post-mortem examination and had negative culture results for *M. bovis*
- OTF-W – Officially Tuberculosis Free Withdrawn status. In England, an OTFW breakdown is a herd in which at least one test reactor with visible lesions (VL) and/or an animal with *M. bovis*-positive culture result have been disclosed
- Persistent herd breakdown – a herd that has been under TB movement restrictions for 18 months or longer due to infection with *M. bovis*
- Potential ‘Hotspots’ – a temporary area of enhanced TB cattle and wildlife surveillance that may be declared around some OTFW TB breakdowns of uncertain origin detected in a Region of historically low TB incidence
- SIT – short-interval test. A tuberculin skin test of all bovines in a TB breakdown herd, carried out 60 days after the removal of the last test reactor (or laboratory confirmation of a TB slaughterhouse case) in order to restore the OTF herd status. In the majority of cases, two successive SITs with negative results are necessary. The results can be read using standard or severe interpretation of the skin test. Calves under 42 days old are usually exempted.
- VRA – Veterinary Risk Assessment.



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