Animal & Plant Health Agency

SRUC

Great Britain small ruminant quarterly report

Disease surveillance and emerging threats

Volume 26: Quarter 3 – July to September 2023

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Introduction and overview

This quarterly report reviews disease trends and disease threats in Great Britain (England, Scotland and Wales) for the third quarter of 2023, July to September. It contains analyses carried out on disease data gathered from the Animal and Plant Health Agency (APHA), the Veterinary Services division of Scotland's Rural College (SRUC) and partner postmortem providers and intelligence gathered through the Small Ruminant Species Expert networks. In addition, links to other sources of information, including reports from other parts of the APHA and the Department of Environment, Food and Rural Affairs (Defra) agencies, are included. A full explanation of how data is analysed is provided in the annexe available on GOV.UK.

APHA's Emerging & Endemic Disease Alert System

This is a component of the communications from our scanning surveillance network and a new system that the APHA will be using, to keep you up to date with significant disease alerts and information, projects, publication of reports and other items. This is independent of the notifiable disease alert system. To receive these notifications please respond to siu@apha.gov.uk, providing your preferred:

- email address you would like us to use
- mobile telephone number if you wish to receive text alerts

We hope that you find this EEDAS messaging system to be beneficial and any suggestions or feedback are welcome.

Issues and trends

Weather

Further details to the monthly summaries below can be found at the Met Office climate summaries and the Met Office UK temperature, rainfall and sunshine anomaly graphs.

July was often cool, dull, windy and with a lot of rainfall, in stark contrast to June. Temperatures were generally below average, particularly daily maximum temperatures, frequently failing to reach above 20°C. Rainfall was above average throughout the UK, with more than 200% of average across the west of Northern Ireland, Lancashire, Merseyside and the Manchester area and parts of Devon, Dorset and Wiltshire. The UK overall rainfall total was 170% of average overall. Sunshine was below normal, particularly across southern and western areas with the UK recording 81% of average.

August was mixed and unsettled, continuing the theme of July, although to a slightly lesser extent. There were some notably cool spells, and any periods of dry weather were also

brief. Two named storms, Antoni on the 5th and Betty on 18th to 19th, brought unseasonably wet and windy weather to many parts of the UK. Maximum temperatures for the month overall were near average, with minimum temperatures slightly above average across the north and west. The rainfall pattern was variable but generally near average with the UK recording 95%. Sunshine was slightly below average at 92% of the average, and it was dull across some western areas, with only 79% of average sunshine hours for Wales and south-west England.

The first half of September was fine, sunny, and dry and the most significant spell of warmth since June. The second half of the month saw an abrupt change to much more unsettled and autumnal weather and significant rain. Maximum and minimum temperatures for the month overall were well above average, particularly across the southern half of the UK. For England and Wales this was the warmest September on record. The rainfall pattern was variable but rather wet overall at 131% of the average for the UK. Some locations experiencing torrential downpours were particularly wet, for example parts of south and east Devon. Sunshine totals were slightly above average for the UK with 112% of average.

Industry

AHDB lamb market updates:

- **Prices:** For the week ending 30 Sep, the GB deadweight new season lamb standard quality quotation (SQQ) averaged 550 pence per kilogram, up 27p on the year, having held above 2022 levels through most of the third quarter. GB liveweight new season lamb prices have also stood above 2022 levels through most of the period but averaged 251 pence per kilogram for the week ending 30 Sep (+23p year on year (YOY)).
- **Production:** September's sheep meat production fell on the month and year, totalling 22,700 tonnes. This brought year to date (YTD) (Jan-Sep) production to 210,000 tonnes, down 0.8% YOY. UK clean sheep kill totalled 8.87 million head for the YTD (+1.2% YOY), while adult sheep kill was up 3.7% on the year at 1.29 million head (Defra).
- **Trade:** Imports of sheep meat rose in August to 4,300 tonnes (fresh and frozen), up 33% YOY, largely driven by more product from New Zealand and Australia. However, for the YTD (Jan-Aug) imports were down 24% YOY. By contrast, exports remained elevated in August at 6,400 tonnes (+8% YOY). For the YTD, exports were up 10% YOY, largely driven by increased shipments to France.
- **Demand:** In the 12 weeks to 01 October, spend on lamb in retail rose 2.4% YOY, while volumes fell by 3.6%. Prices paid rose by 6.2% on average across all lamb cuts and products as inflation causes price rises. Looking at products specifically, volume gains mostly came from mince, while steaks and diced were also in growth. Meanwhile, burgers + grills and total roasting, lost volume.

Acknowledgment for the lamb updates: Freya Shuttleworth, AHDB

Vaccine supply issues

On the 7th November, the Veterinary Medicines Directorate (VMD) held a stakeholder roundtable meeting, focussing on vaccine supply and availability with Phil Stocker (NSA) leading a discussion on the many vaccine shortages experienced in recent years. The roundtable included 35 people from a range of organisations covering the regulatory, farming, and pharmaceutical parts of industry. The purpose was to have an open discussion to consider the causes of the supply issues and to think about ways to improve vaccine supply. It was clear that vaccine shortages are being experienced across all livestock sectors, as well as the equine and pet sectors. A few things were identified that could help and actions from the meeting will be produced.

Unusual diagnoses

Tick-borne fever (*Anaplasma phagocytophilum* infection) causing acute onset recumbency in a ewe lamb

Tick-borne fever (TBF) was thought to be the cause of acute recumbency and an inability to stand in a lamb, an unusual presentation for this tick-borne infection. Clinical signs such as pyrexia and respiratory signs are considered more typical findings with acute TBF infection. Post mortem examination found no gross findings to indicate an alternative cause for the recumbency and in addition histopathology found no abnormalities in the brain and spinal cord. The lamb was confirmed as Tick Borne Fever (TBF) infected by PCR testing.

Animal Health and Welfare Pathway and the Worming Treatment Check

The Animal Health and Welfare Pathway supports continued improvements in farm animal health and welfare in England. The first step on the Pathway, the Annual Health and Welfare Review, has been rolled out and is a funded annual visit from a vet or a vet led team. It can be undertaken whenever it works for the famer. It will allow the farmer and their vet to concentrate on their animals' specific health and welfare priorities. During the visit, the vet will provide bespoke advice and arrange some diagnostic testing around endemic diseases – these were agreed by the farmers and vets who helped to design the Pathway. The Worming Treatment Check is the chosen test for sheep flocks. It is recommended that vets send samples to approved laboratories for testing. Follow this guidance when you test for the effectiveness of worming treatments in sheep as part of an annual health and welfare review.

Find out more about the Animal Health and Welfare Pathway and how to carry out an annual health and welfare review of livestock.

Please take note of the following important points discussed below.

If you choose APHA as your testing laboratory, then email a request for a Worming Treatment Check (WTC) sampling kit, to APHA VIC Carmarthen General Mailbox Carmarthen@apha.gov.uk. Upon receipt of the request, APHA Carmarthen will provide 15 sample pots for the collection of at least 10, preferably 15, faecal samples pre-treatment from a group of lambs.

The sampling of ewes rather than lambs is contrary to SCOPS advice.

A further 15 sample pots will be sent for the collection of the 10 or 15 faecal samples post-treatment, if a positive count resulted from the pre-treatment test samples. Each set of sample pots will be accompanied by a copy of the Worming Treatment Check Test Submission Form.

The samples will be tested using the Worming Treatment Check test (TC1668). When post treatment samples are submitted, these should be crossed referenced using the submission number provided on the preliminary report.

To get the best result, consider monitoring faecal egg counts in advance and only start the WTC test when there is an egg count high enough to indicate the need for treatment.

Also refer to the SCOPS guidance and please read the full information document.

Please contact your local Veterinary Investigation Centre if you have any questions or want to discuss this test.

Goat disease surveillance dashboard outputs

The most frequent diagnoses in goats from submissions made in the third quarter (Q3) of 2023, compared to Q3 in 2022, and Q3 for 2015 to 2023 inclusive, through the Great Britain (England, Wales, and Scotland) scanning surveillance network are illustrated in Table 1. Please note that Parasitic Gastroenteritis (PGE), exclude PGE Haemonchosis and PGE Nematodirus.

Table 1: Great Britain scanning surveillance 5 most frequent goat submission diagnoses in Q3 of 2023, Q3 of 2022, and Q3 for 2015-2023

	5 most frequent diagnoses Q3 2023	5 most frequent diagnoses Q3 2022	5 most frequent diagnoses Q3 2015-2023
1	**Parasitic Gastroenteritis (PGE)**	Parasitic Gastroenteritis (PGE)	Parasitic Gastroenteritis (PGE)
2	**Clostridium perfringens Type D infection**	Johne's Disease	Johne's Disease
3	**Johne's Disease**	PGE Haemonchosis	Clostridium perfringens Type D infection
4	**Coccidiosis**	Coccidiosis	Coccidiosis
5	**PGE Haemonchosis**	Clostridium perfringens Type D infection	PGE Haemonchosis

Sheep disease surveillance dashboard outputs

The most frequent diagnoses in sheep from submissions made in the third quarter (Q3) of 2023, compared to Q3 in 2022, and Q3 for 2015 to 2023 inclusive, through the Great Britain (England, Wales, and Scotland) scanning surveillance network are illustrated in Table 2. These can be interrogated further using the interactive sheep disease surveillance dashboard which was launched in October 2017. Please note that Parasitic Gastroenteritis (PGE), exclude PGE Haemonchosis and PGE Nematodirus.

Table 2: Great Britain scanning surveillance 10 most frequent sheep submission diagnoses in Q3 of 2023, Q3 of 2022, and Q3 for 2015-2023

	10 most frequent diagnoses Q3 2023	10 most frequent diagnoses Q3 2022	10 most frequent diagnoses Q3 2015-2023
1	**Parasitic gastroenteritis (PGE)**	Parasitic gastroenteritis (PGE)	Parasitic gastroenteritis (PGE)
2	**PGE Haemonchus**	PGE Haemonchus	Pine or cobalt deficiency
3	**Pine or cobalt deficiency**	Pneumonia due to M. haemolytica	PGE Haemonchus
4	**Pneumonia due to M. haemolytica**	Hyposelenaemia	Pneumonia due to M. haemolytica
5	**Hyposelenaemia**	Pine or cobalt deficiency	Pneumonia due to other causes
6	**Pneumonia due to other causes**	Pneumonia due to mycoplasma	PGE Nematodirus
7	**PGE Nematodirus**	PGE Nematodirus	Hyposelenaemia
8	**Pulpy Kidney**	Pneumonia due to other causes	Coccidiosis
9	**Tickborne fever**	Johne's Disease	Pulpy Kidney
10	**Coccidiosis**	Tickborne fever	Chronic fascioliasis

The diagnoses of 'Pneumonia due to Other Causes' included lung abscessation, *T. pyogenes* infections, *Staphylococcus aureus* infections, and *Bibersteinia trehalosi* pneumonia (not septicaemia).

Changes in disease patterns and risk factors

Syndromic analysis

Syndromic alerts were raised this quarter, in comparison to the quarter average of the previous 5 years for Great Britain, for the following diseases.

Increases:

- Drenching gun or bolus injuries - (APHA only)
- PGE NOS (Parasitic gastro-enteritis not otherwise specified) – (SRUC only)
- PGE Haemonchosis
- Louping Ill
- Meningitis or encephalitis NOS

Decreases:

- Hyposelenaemia or hyposelenosis –(SRUC only)
- Chronic fasciolosis

Parasitology

Haemonchosis

Cases of Haemonchosis were slightly reduced compared to the equivalent quarter last year but still significantly higher than previous years as shown in figure 1. The disease made up 13% of diagnosed enteric GB cases this quarter, compared to the five-year average of 9%. Cases have been seen in lambs and ewes.

Submissions for *Haemonchus* testing increased last year due to free testing offered by APHA. This year APHA subsidised the differential fluorescent staining of *Haemonchus* eggs test to half price. Despite this offer, the number of submissions tested reduced to previous levels. The ratio of positive samples, however, remain significantly higher than before 2022. Out of the 222 samples tested this quarter, 49 were positive for *Haemonchus* (22%). In 2020, 23 (7.8%) cases out of 293 samples tested positive, therefore the high incidence this year may reflect a genuine increase in haemonchosis incidence. As discussed previously this is likely to be due to climate change increasing favourable conditions for the parasite.

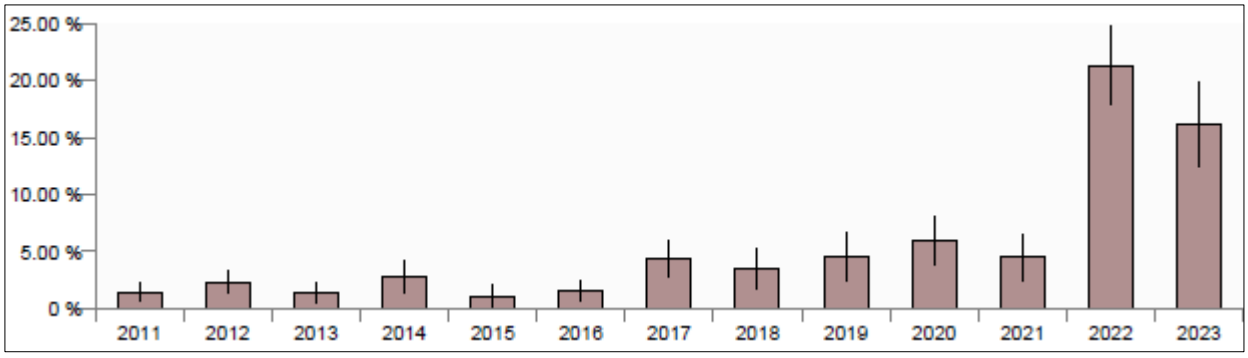

Figure 1: Showing a significant increase in Haemonchosis cases in Q3, 2022 and 2023 in GB as a percentage of diagnosable submissions, compared to the equivalent quarter in previous years.

Parasitic Gastroenteritis (PGE)

Scotland saw a significant increase in PGE, making up 40% of enteric cases compared to the five-year average of 31%. Northern and Eastern England also saw an increase in cases as shown in figure 2. Lowland, post-weaned lambs were most affected. This age group are at high risk for the disease, due to the build-up of larvae on pasture through the summer and the stresses of weaning. The wet and warm weather during the mid to late summer in Northern England and Scotland provided good conditions for larval survival on pasture.

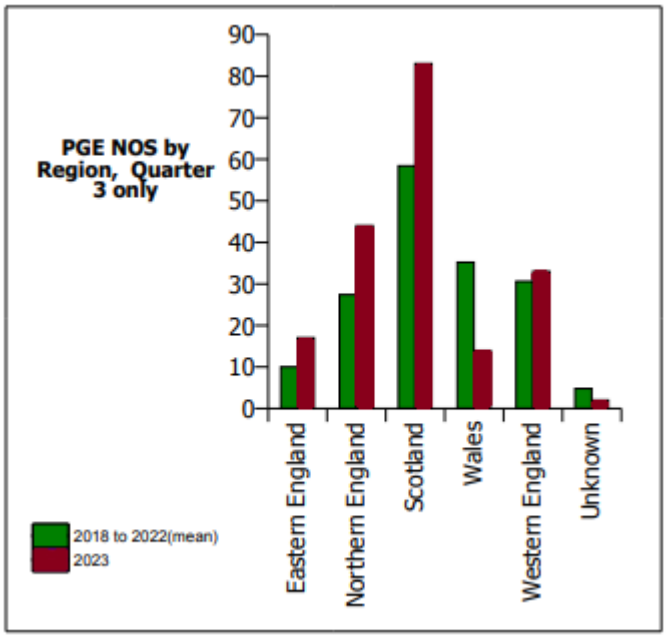

Figure 2: PGE cases by region in Q3, 2023

Systemic disease

Drenching gun or bolus injuries

The number of diagnoses of drenching gun or bolus injuries this quarter was markedly higher than the same quarter the previous year. This was a significant increase for APHA figures only, with 7 diagnoses being made in England and Wales, compared to 3 in Scotland. The total GB incidents as a percentage of diagnosable submissions was the highest it has been for the preceding 10 years, as demonstrated by figure 3.

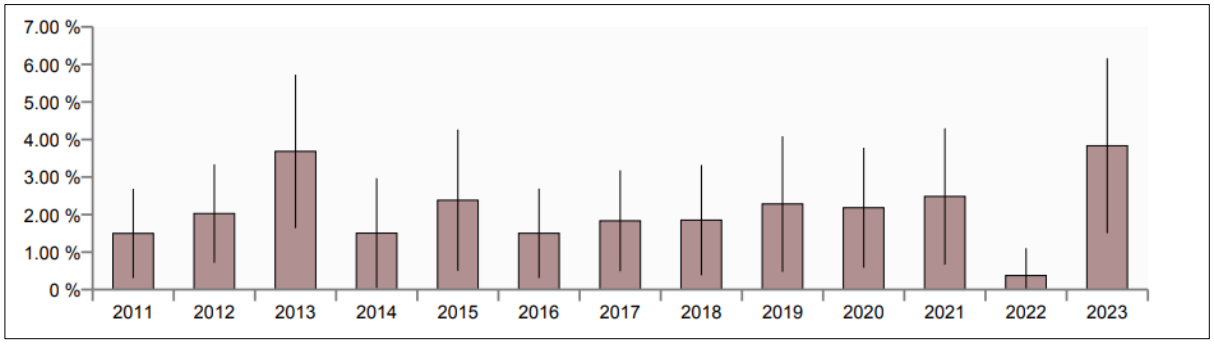

Figure 3: Increased GB incidents of drenching gun injuries for quarter 3, 2023, as a percentage of diagnosable submissions compared to previous equivalent quarters

Most drenching gun or bolus injury diagnoses were made in adult and post-weaned animals equally, which differed from the previous 5 years where post-weaned animals represented two-thirds of all diagnoses. Two typical cases are described below.

A 14-week-old lamb was submitted to Carmarthen Veterinary Investigation Centre (VIC) to investigate the sudden death of three lambs from 262, over two days. The lambs had been weaned two weeks previously and given a clear worming drench and a mineral drench.

At postmortem examination a necrotic sinus in the neck, consistent with a drenching gun injury, was detected in the ventral neck area, with evidence of an associated blood vessel erosion (shown in figures 4 and 5). The lamb was anaemic and large blood clots were present in the rumen and blood-stained content in the forestomachs. The cause of death was likely due to blood loss from the drenching gun injury. An urgent review of drenching technique, equipment used, animal restraint and operator training, was recommended to ensure further pharyngeal injuries are prevented.

Figure 4: Necrotic tract in the ventral neck area of a lamb with a drenching gun injury

Figure 5: Necrotic lesion, because of a drenching gun injury, in the pharynx of a lamb, containing a blood clot and fibrous material

A dead March-to-April-born fattening lamb was submitted to Shrewsbury VIC, to investigate the sudden deaths of two lambs out of a group of 280, and malaise with mucoid nasal and oral discharge in another 6 lambs. The group of lambs had been wormed with a levamisole anthelmintic about three weeks before and, had been given a trace element and mineral bolus one week before submission. There was palpable swelling of the ventral neck just behind the jaw, and on sectioning a penetrating lesion was found in the pharyngeal wall, to the left of midline. A grey bolus was embedded in the pharyngeal tissues in a purulent tract that extended 8cm along the neck, dorsal to the oesophagus. Some lung consolidation was also present, with multifocal abscesses scattered throughout, suggesting this had occurred secondary to inhalation of material from the throat lesion. A farm visit by the referring vet was encouraged to assess the remaining lambs, with euthanasia recommended for any other lambs that were identified

with a suspected bolus injury. The submitted lamb was also found to have a heavy worm burden, 20,500 adult *Teladorsagia* spp. worms were found in the abomasum along with significant numbers of immature worms. Further monitoring, and the development of a worming plan was also recommended.

Nutritional cardiomyopathy related to Vitamin E and or selenium deficiency

Nutritional cardiomyopathy was found to be the cause of death of a four-month-old Herdwick lamb, which was submitted to APHA Penrith VIC following an acute episode of malaise, which was non-responsive to antimicrobial and anti-inflammatory therapy. This was a mixed flock consisting of 60 Herdwicks, 10 Shetland and 30 Swaledale sheep. Ever since lambing, losses had been reported only in the group of Herdwick lambs, with five lambs dying in the first week of life and eight more between two and four-months-old. On-farm postmortem examinations had revealed different causes of death: lamb nephrosis, severe peritonitis, septicaemia, chronic pneumonia, although no formal testing had been carried out in any of these cases. Other breeds did not seem to be affected despite being managed in the same way. The lambs were outside at pasture, with hay available for added fibre. The ewes had been administered a trace elements bolus pre-lambing and the lambs had had two doses of a pasteurellosis combined clostridial disease vaccine.

Postmortem examination revealed congested conjunctivae, minimal fat deposits, diffusely reddened and oedematous lungs with a mottled appearance and heavy cranial lobes, pasty large intestinal content, and a grossly unremarkable heart. The internal parasite egg burden was low (200 eggs per gram of faeces), with a low to moderate coccidial oocyst burden (60 450 oocysts per gram, of which only 2% belonged to pathogenic Eimeria species). Bacterial cultures of lung tissue were unrewarding and Border disease PCR was negative. Testing for trace minerals identified borderline low selenium levels (0.78 mg/kg DM, range 0.9-3.5 mg/kg DM).

Histological examination of tissues found pulmonary congestion and oedema with mild acute bronchiolitis and multifocal and polyphasic myocardial necrosis, with mineralisation and fibrosis, strongly suggestive of nutritional myopathy, related to vitamin E and or selenium deficiency. Assessment of vitamin E levels was recommended.

Malignant multicentric lymphoma in a ewe

A four-year-old ewe was submitted to APHA Carmarthen VIC for euthanasia and postmortem examination (PME) following a four-week course of disease. Clinical signs included weight loss, a body condition score of 1.0 at submission, increased bilateral chest lung sounds, abdominal discomfort and hindlimb weakness. A mass was palpable cranial to the right hip.

At PME there was a striking lymphadenopathy with the majority of all visible lymph nodes markedly enlarged (figure 6), multifocal small circular white lesions present within the liver

(figure 7), and focal lesions in the kidneys (figure 8). The histopathological changes observed were consistent with a malignant multicentric lymphoma with secondary metastasis. Lymphomas are considered amongst the most common neoplasms in sheep, third in the list after pulmonary and intestinal adenocarcinomas. These commonly arise from lymph nodes and propagate through haematogenous and/or lymphatic spread to multiple locations including the liver, kidneys, spleen, and other lymph nodes.

Figure 6: Enlarged lymph nodes in the abdomen of a ewe with malignant multicentric lymphoma with secondary metastasis

Figure 7: Multifocal small white circular lesions in the liver of a ewe with malignant multicentric lymphoma with secondary metastasis

Figure 8: Small white circular lesion in the kidney of a ewe with malignant multicentric lymphoma with secondary metastasis

Thymic tumour in a goat

A 6-year-old Toggenberg had been unwell for about 12 months and was euthanased by the vet on day of submission to investigate chronic respiratory disease.

Findings at PME were as follows:

- The right cranial lung lobe was massively enlarged, measuring about 18 by 22cm, consisting of nodular firm white tissue, large fluid filled pockets containing yellow/green fluid and multiple pockets of white gritty caseous material from 2mm to 5cm diameter (figures 9 and 10)
- There were scattered nodules about 2cm diameter adhered to the right body wall and scattered nodules adhered to the right ventral lung
- There was excess pleural fluid
- The spleen was enlarged and there was generalised lymphadenopathy, with lymph nodes reddened and enlarged throughout the carcase

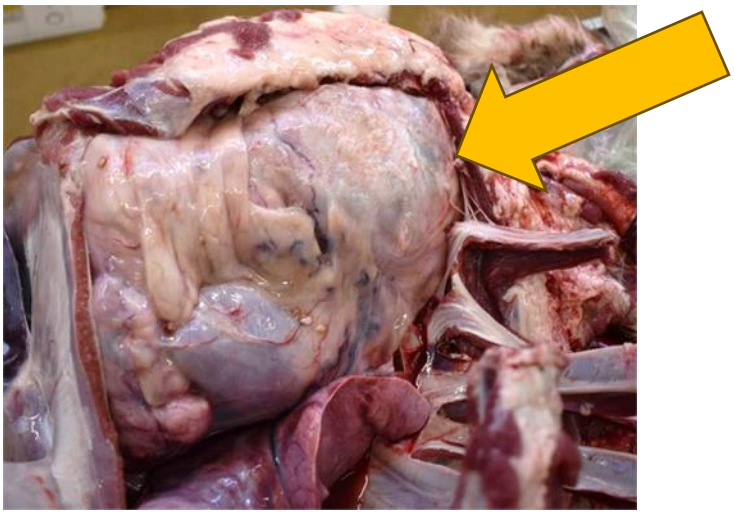

Figure 9: Arrow pointing to a large firm mass (18 x 22cm) in the right cranial lung of a goat with a thymic tumour.

Figure 10: Cut surface of the nodular thymic tumour in a goat, containing gritty white material.

The gross findings were suggestive of a tumour, however, the gritty nature of the caseous material raised the suspicion of tuberculosis (TB) and a Kinyoun cold stain detected acid fast organisms. This was reported as a suspect TB. Mycobacterial PCR testing of lesioned tissue was undertaken with negative results and the suspicion of TB could be ruled out.

Histopathology of the lung tissue confirmed secondary neoplasia, suspected to be of thymic origin. Thymomas are considered the third most common neoplasm in goats and are commonly an incidental post-mortem finding. Occasionally, if the growth of these is severe, animals may present with clinical signs such as respiratory distress, deglutition difficulty, and ventral head and neck oedema due to compression of blood and lymphatic vessels. In this case, the neoplastic process was likely to have been a secondary metastatic focus. There were no other changes suggestive of a possible *Mycobacterium sp.* insult. Necrotic and mineralised foci seen within the neoplasm are common due to tumour growth and the formation of areas of ischemic tissue and calcificantion.

Circulatory disease

No significant trends were identified this quarter.

Skin disease

No significant trends were identified this quarter.

Severe orf outbreak in ram lambs

Six, February-to-March-born lambs, out of a group of 130 pedigree Texel ram lambs were severely affected by suspected orf (*Parapoxvirus*). The first animal started showing signs in mid-August and the other five started showing clinical signs within a few weeks. The lesions started with pink areas on the tips of the ears that developed into white scabs. The

lesions then developed into large proliferative wart-like masses on the ears and poll as shown in figure 11.

Figure 11: Three of the lambs affected with orf, with a varying severity of lesions

A farm visit was undertaken in October to further investigate and take samples. Electron microscopy of scabs from the lesions confirmed orf in the ram lambs. No other underlying cause of immunosuppression was detected on testing for border disease virus and trace element deficiency.

The lesions seen in the severely affected ram lambs were typical in distribution and severity to those previously described in rams; with cases of infection of the poll in rams described as typically extending to involve the ears and being prone to proliferate into extensive cauliflower like growths that can persist for long periods. The timing of infection being close to the stress of weaning may have predisposed these animals to disease, or increased severity of signs. Gorse was present in hedges bordering fields that the lambs had been grazing. The presence of prickly plants such as gorse is another predisposing factor for orf in lambs especially at weaning time.

Recommendations were made to vaccinate at-risk animals in future and to limit access of susceptible groups, such as lambs immediately post-weaning, to fields with gorse hedges. Continuing supportive treatment of the worst affected animals was also advised along with the use of analgesia when necessary. Ongoing monitoring for possible underlying causes of immune suppression was recommended, including regular faecal worm egg counts.

Sheep scab

The surveillance report into free ectoparasite examination for sheep scab in Wales between 1st April 2022 and 31st March 2023 is available to read on the APHA Vet Gateway.

Respiratory disease

There was an increase in respiratory disease diagnoses in adult lowland sheep in Northern England and Scotland this quarter. There was no single cause, suggesting other factors such as nutritional stress or concurrent parasitic gastroenteritis may have contributed to

this rise. The increased respiratory diagnoses noted in adult sheep included lungworm (APHA), *Mannheimia haemolytica* (SRUC), and Pneumonia NOS (not otherwise specified) (APHA).

Coughing in fattener lambs and yearling ewes

Of note this quarter were investigations and private vet discussions about persistent coughing in either lambs or yearling ewes. In some cases, secondary issues such as rectal prolapse and reduced weight gain were also reported. It is often difficult to get suitable material to test for the full range of potential pathogens in these outbreaks, as often there are no fatalities to allow post mortem tissue examination. Bronchioalveolar lavage is an option, but it is a difficult technique and not commonly used. The submission of plucks when any lambs from the group go to slaughter is another way to get good diagnostic material. Extreme coughing can occur without extensive consolidation. This is due to marked bronchiole reaction and severe inflammatory changes localised around the airways (See figure 12) with hyperplastic airway epithelium, interstitial infiltrates of lymphocytes and plasma cells cuffing around airways, and mild BALT hyperplasia. Various causal infections, including combined infections, have been described including Parainfluenza-3 virus (PI3), *Dictyocaulus* sp. lungworm, *Mannheimia/Pasteurella* and *Mycoplasma ovipneumoniae* infection.

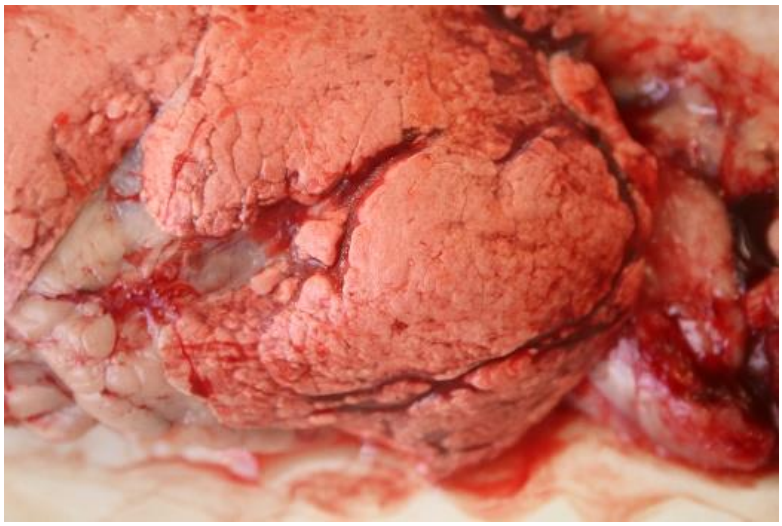

Figure 12: Lung tissue from a lamb with persistent coughing, with strips of consolidated tissue localised around the small airways

A four-month-old lamb from a flock of 180 pedigree Blue Texels was submitted for post mortem examination, where approximately 50% of the lambs were coughing and there had been an ‘outbreak’ of rectal prolapses, with approximately ten lambs affected. Dark purple lung consolidation was found in the left and right cranial and middle lung lobes and both *Mycoplasma haemolytica* and *Mycoplasma ovipneumoniae* were confirmed. Coughing secondary to pneumonia was likely contributing to the rectal prolapses because of increased intrabdominal pressure.

Three weaned Texel-cross lambs were submitted for postmortem examination to investigate the cause of coughing and respiratory signs, as well as poor growth/ill thrift, in a group of 800 home-bred fattener lambs. The lambs had been housed at weaning a month before and were being intensively fattened on proprietary concentrates. Lung consolidation was found in all three lambs and histology confirmed chronic or non-progressive or atypical pneumonia in the lambs**,** a multifactorial condition, often associated with management (mainly housing, including crowded conditions and poor ventilation). *Mycoplasma ovipneumoniae* is thought to be the primary agent in most cases, however, respiratory viruses (e.g., PI3, RSV, etc.) and other bacterial respiratory pathogens (e.g., *P. multocida, B. trehalosi,* etc.) may also be involved. In this case mixed respiratory pathogens were confirmed consisting of *Mycoplasma ovipneumoniae*, *Mannheimia haemolytica* and *Pasteurella multocida.* PI3 virus serology was negative in all lambs. Concurrent chronic PGE lesions were also confirmed, which had likely contributed to the poor weight gains. Interestingly, one of the three lambs had a head tilt and was found to have a mucoid discharge within the middle-ear. A *Mycoplasma ovipneumoniae* middle ear infection was confirmed, a presentation of *M. ovipneumoniae* not previously described in lambs, although otitis due to *Mycoplasma bovis* is a well-recognised condition in calves.

Localised chronic suppurative bronchopneumonia with bronchiolar hyperplasia and marked bronchus associated lymphoid tissue hyperplasia, was identified histologically from lungs released from the abattoir, submitted to investigate the cause of persistent coughing in six culled yearling ewes. Although lung consolidation was limited to narrow strips of affected tissue, the localised pathology around the airways was marked and was typical of a *Mycoplasma ovipneumoniae* infection, which was confirmed by DGGE-PCR testing. No other bacterial, *Dictyocaulus* sp. lungworm, or PI3-virus involvement were identified in this case.

Enteric disease

No significant trends were identified this quarter, apart from PGE which is described under the parasitology section.

Reproductive disease

Fetopathy due to Campylobacter

In sheep, *Campylobacter* spp. is mostly associated with late term abortion, and has been considered to be the third most common aetiological agent after enzootic abortion in ewes (EAE) and toxoplasmosis. However, this year, analysis of GB ovine fetopathy VIDA (Veterinary Investigation Diagnosis Analysis) data has found campylobacteriosis to be the most common cause of abortion, closely followed by toxoplasmosis and EAE (figure 13). The prevalence of toxoplasmosis in 2023 was like previous years whereas cases of EAE have gradually decreased in recent years (figure 14). Abortion caused by *Campylobacter*

spp. tends to peak every three to four years; the exact reason for this is unknown but is suspected to be due to the gradual replacement of immune animals with naïve replacements. Another possible explanation is the increased feeding of root crops, driven by higher feed prices. This could provide ideal conditions for transmission of the bacteria. As well as abortion, infection can also result in the birth of live, weak lambs. Up to 20% of the group may abort (Mearns, 2007) but ewes generally remain well in themselves, although infection with *C. jejuni* can occasionally cause a mild transient diarrhoea.

C. fetus and *C. jejuni* are the most common species associated with sheep, but occasionally other isolates may be found such as *C. coli* and *C. sputorum*, all of which may inhabit the ovine gastrointestinal tract and gall bladder as commensals. The estimated prevalence of *Campylobacter* species in sheep is 25 to 30% (Sproston and others 2011) and a seasonal pattern is apparent for *C. jejuni,* with peak prevalence in the summer months (Grove-White and others 2010). In agreement with previous studies*, C. fetus* was the most common species associated with ovine abortion this year, accounting for 91% of *Campylobacter* abortions. *C. jejuni* accounted for 5.6% (figure 15).

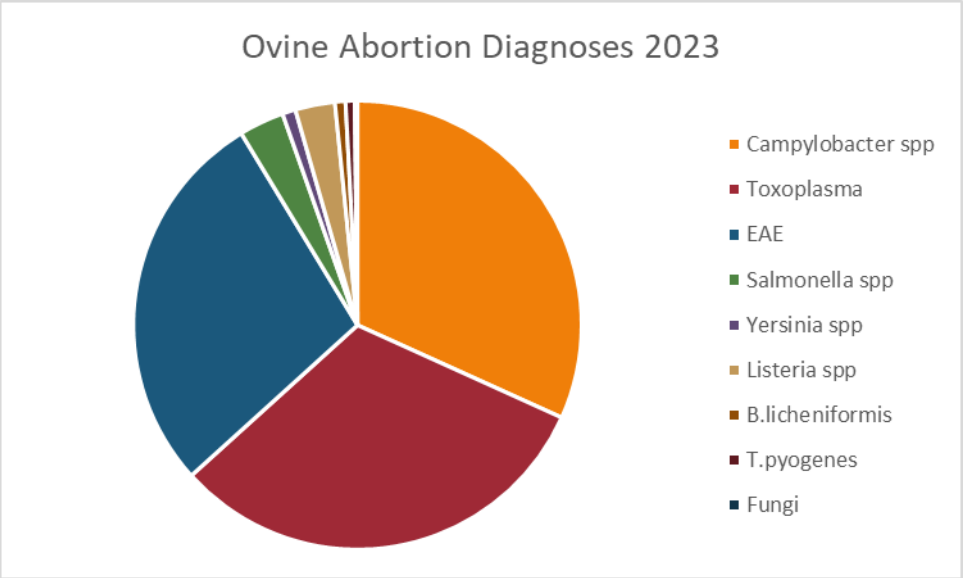

Figure 13: 2023 diagnoses of ovine abortion in GB, showing campylobacteriosis to be the most common cause, closely followed by toxoplasmosis and EAE

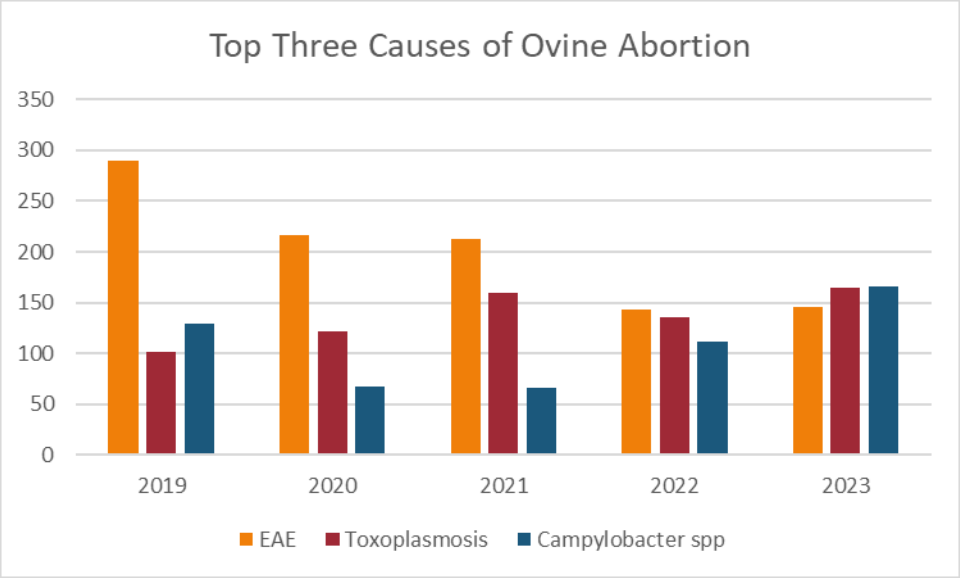

Figure 14: The frequency of diagnosis of the three most common causes of ovine abortion over the last five years in GB, showing that EAE was the most common, generally followed by toxoplasmosis. In 2023 Campylobacter was most common, followed by toxoplasmosis and then EAE

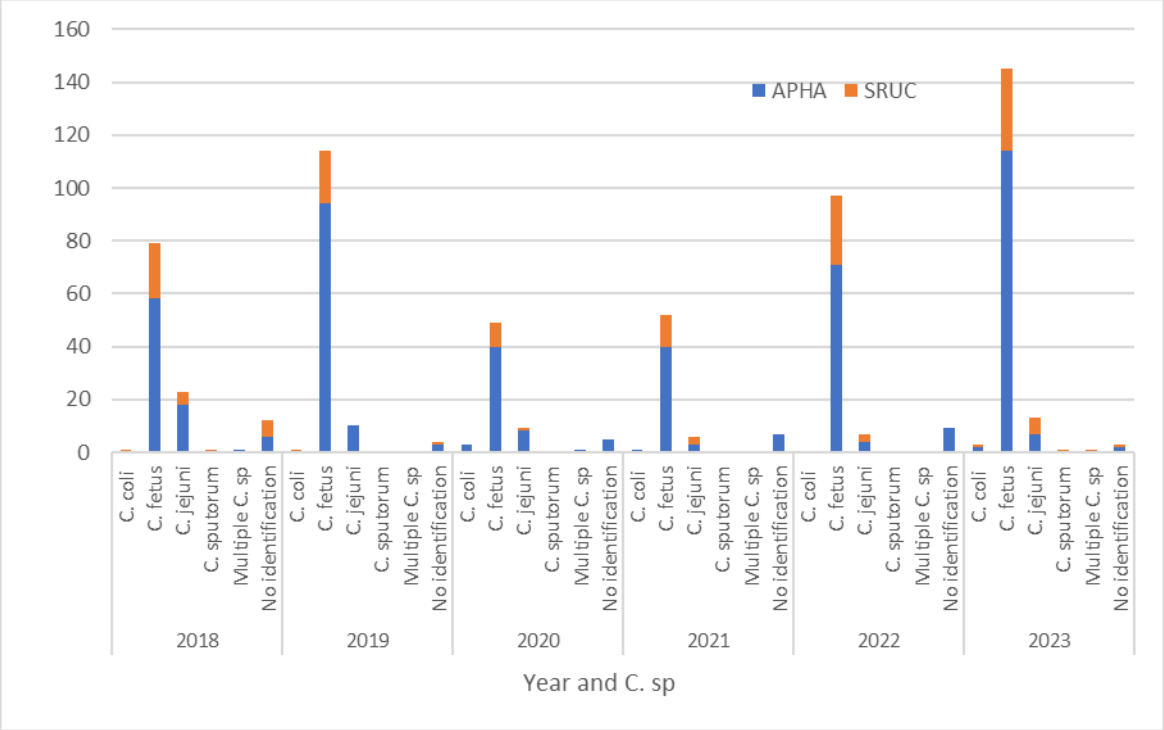

Figure 15: The frequency of different *Campylobacter* spp. isolates from ovine abortions submitted to APHA and SRUC from 2018 to 2023, showing *C. fetus* to be the most common species.

Figure 16 shows the liver of one of the lambs aborted due to campylobacteriosis, and shows the circular 'target' lesions which can be seen in these cases.

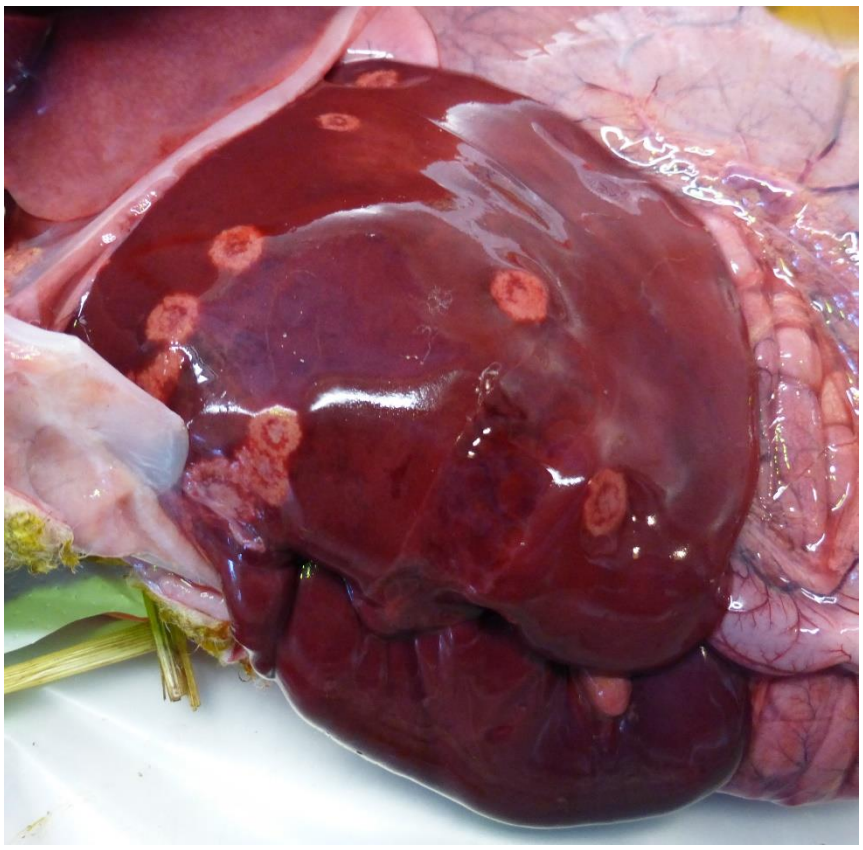

Figure 16: Pale, circular, necrotic liver lesions, typical of *Campylobacter* spp. infection, in an aborted sheep fetus

GROVE-WHITE DH, LEATHERBARROW AJ, CRIPPS PJ, DIGGLE PJ, FRENCH NP. (2010) Temporal and farm-management-associated variation in the faecal-pat prevalence of Campylobacter jejuni in ruminants. Epidemiol Infect. 138(4):549-58.

MEARNS, R. (2007), Abortion in sheep 1. Investigation and principal causes. In Practice, 29: 40-46.

SPROSTON EL, OGDEN ID, MACRAE M. (2011) Temporal variation and host association in the Campylobacter population in a longitudinal ruminant farm study. Applied and Environmental Microbiology77(18):6579-6586.

Urinary disease

No significant trends were identified this quarter.

Nephrosis

Nephrosis has been diagnosed more frequently compared to previous years as shown in figure 17. There were eight cases diagnosed across July, August and September; compared to only six cases diagnosed in the same quarter over the previous five years combined. Most diagnoses were made in post-weaned animals. The main presenting sign

in cases diagnosed with nephrosis was wasting, with diarrhoea / gastrointestinal clinical signs and ‘found dead’ also being reported by submitting vets.

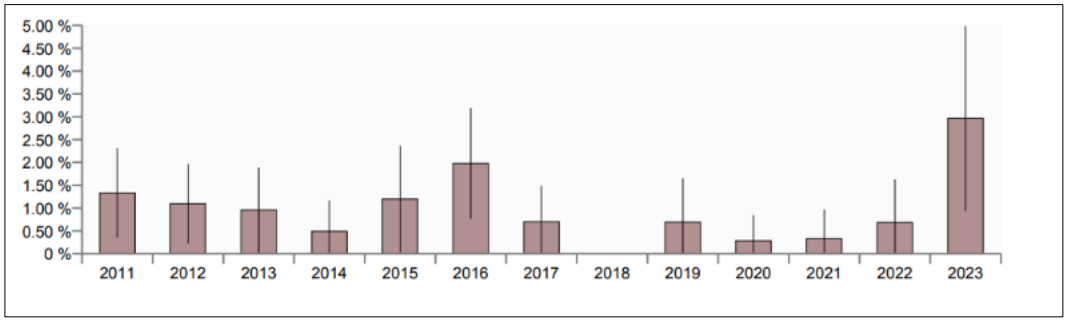

Figure 17: GB incidents of Nephrosis for quarter 3 as percentage of diagnosable submissions, showing an increase compared to the equivalent quarter in previous years

Musculoskeletal disease

No significant trends were identified this quarter.

Nervous disease

No significant trends were identified this quarter.

Cases of spinal cord compression

Spinal abscesses with subsequent spinal cord compression were diagnosed by Starcross VIC in two, three-month-old lambs that had “gone off their legs”. One lamb presented in a “dog sitting” position and on postmortem examination a large purulent abscess was found between the lumbar vertebrae L5 and L6. The second lamb was in lateral recumbency and in this lamb the abscess was found between the thoracic vertebrae T4 and T5. Spinal abscesses typically arise from embolic spread of bacteria which lodge in the vertebrae to set up a purulent infection. In many cases the emboli originate from the umbilicus, tail or castration rings, ear tags or injection sites.

Poisoning

Read the most recent [APHA chemical food safety reports (livestock)] on GOV.UK.

Lead poisoning risk from lead shot

Two cases of acute lead toxicity, one in fattening cattle and the second in finishing lambs, has highlighted the potential risk posed by lead shot when ingested by livestock. Primarily regarding the impact on animal health in respect to death; however, the potential for considerable financial loss regarding lost production and additional ancillary costs can be considerable.

The first case involved finishing cattle provided maize silage, contaminated with lead shot. The maize had been grown adjacent to a clay pigeon shoot which was described as a Lead-Free Shoot. Maize crops are often grown adjacent to clay pigeon establishments to provide a backdrop of cover, enhancing the experience for the participants. Large amounts of lead shot landed on the silage and was ensiled when harvested. Acute lead poisoning was displayed by the cattle and lead shot was visible in the rumen contents at post-mortem. A total of 48 cattle were lost, 26 dying from acute lead toxicity and the remainder culled due to unmanageable residue levels.

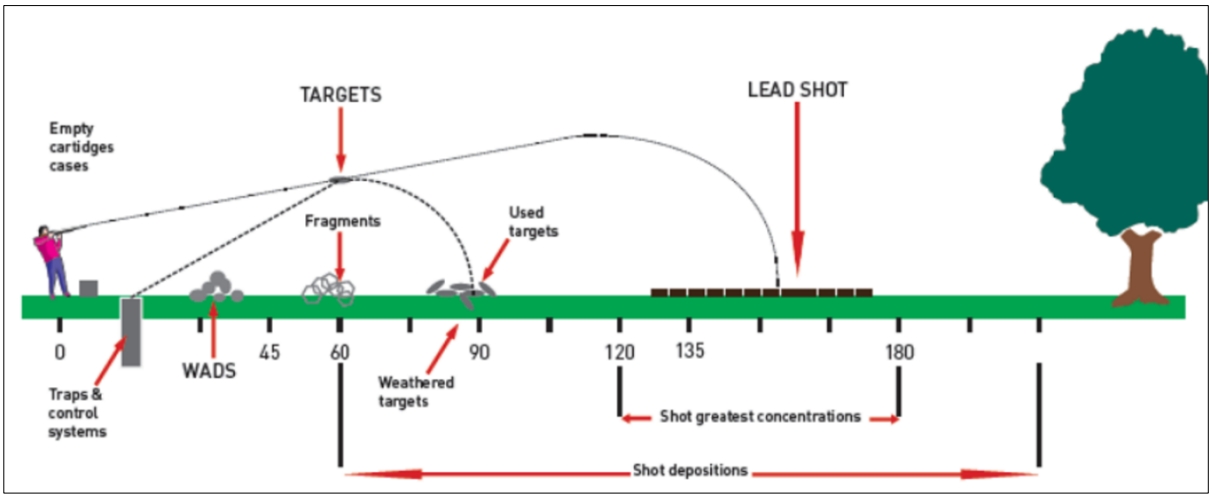

Figure 18: Diagram showing the distance that lead shot can travel after being shot at a clay target. The greatest concentration is between 120 to 180 metres from the shooter, but the contaminated area will be from 60 to 210 metres

In the second case involving fattening lambs, a group of 170 lambs had been turned out onto a grazing area adjacent to a clay pigeon shoot. The shoot had been in operation for several years and no issues had been noted previously. The lambs started to display vague malaise with ten deaths over a two-week period. Lead toxicity was diagnosed, and the entire group were moved to fresh pasture. As their lead status was undetermined, they were placed under restrictions and prevented from entering the food chain. Additional screening by blood sampling at the owner's expense established the lead levels in the lambs. They were allowed to enter the food chain under the proviso that all offal was

discarded. The landowner has decided to adapt the contaminated grazing area into a wildlife meadow.

Centre of Expertise for Extensively Managed Livestock (COEEML)

The COEEML was developed by APHA to address potential surveillance gaps for extensively managed animals. Extensive management of livestock potentially makes regular or close inspection for disease detection more challenging. The Centre is based at the APHA Veterinary Investigation Centre in Carmarthen; however, it is a Great Britain-wide resource and forms part of the wider veterinary surveillance system operated by APHA. For more details, please see the COEEML pages on the Vet Gateway.

TSE

Surveillance for transmissible spongiform encephalopathies (TSEs) is carried out in the United Kingdom in animals susceptible to the disease. This includes cattle, sheep, and goats. The main aim is to monitor trends in disease incidence and prevalence, to evaluate the effectiveness of TSE disease controls.

There are 2 categories of surveillance.

Passive surveillance

This is when an animal with clinical signs suspicious of BSE or scrapie is reported to an APHA Office to be investigated. Such cases are slaughtered, and the examination of the brain determines whether the animal was affected by a TSE.

APHA has been recording and analyzing data from reported cases in cattle since the start of the BSE epidemic in 1986, and for scrapie in sheep and goats since this disease became notifiable in 1993.

Active surveillance

The UK carries out active surveillance for TSEs. The UK has:

- tested cattle since July 2001
- tested sheep and goats since January 2002
- conducted a survey in 2007 and 2008 of farmed and wild deer.

Updated TSE statistics were published in December 2021:

- sheep: TSE surveillance statistics
- goats: TSE surveillance statistics

Horizon scanning

Bluetongue virus (BTV)

Bluetongue virus (BTV) has been circulating in European countries for some time. However, on 5 September 2023 the Netherlands reported their first outbreak of Bluetongue (BT) since 2009 and been confirmed to be BTV-3 serotype (in sheep). Additionally, on 21 September 2023 French authorities confirmed the presence of new strain of BTV-8 which is causing more severe clinical signs in cattle and sheep.

Links for further information:

- Topical issues: Imports, exports and EU trade of animals and animal products: topical issues - GOV.UK (www.gov.uk)
- Latest outbreak assessments: Animal diseases: international and UK monitoring - GOV.UK (www.gov.uk)

How to spot and report bluetongue:

- England - Bluetongue: how to spot and report the disease - GOV.UK (www.gov.uk)
- Wales - Bluetongue | GOV.WALES
- Scotland - Bluetongue: how to spot and report the disease - gov.scot (www.gov.scot)
- Veterinary Practice article on EHD and BTV: https://www.veterinary-practice.com/article/btv-and-ehdv
- Bluetongue imports requirements: Bluetongue requirements for imports or transits from the EU (defra.gov.uk)

Publications of interest

APHA (2023) Disease surveillance in England and Wales, September 2023. Veterinary Record: Disease surveillance in England and Wales, September 2023 (wiley.com)

Monthly APHA disease surveillance reports can be found at this link: APHA disease surveillance monthly reports - GOV.UK (www.gov.uk)

APHA focus articles in the Veterinary Record can be found at: APHA focus articles in the Veterinary Record - GOV.UK (www.gov.uk)

Salmonella in animals and feed in Great Britain - GOV.UK (www.gov.uk)

Statement regarding use of this material

This publication is available at:https://www.gov.uk/government/collections/animal-disease-surveillance-reports

Any enquiries regarding this publication should be sent to us at SIU@apha.gov.uk
http://apha.defra.gov.uk/vet-gateway/surveillance/index.htm

The Animal and Plant Health Agency (APHA) is an executive agency of the Department for Environment, Food & Rural Affairs, and works on behalf of the Scottish Government and Welsh Government.