Animal & Plant Health Agency

SRUC

Great Britain small ruminant quarterly report

Disease surveillance and emerging threats

Volume 26: Quarter 4 – October to December 2023

Highlights

Contents

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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 fourth quarter of 2023, October to December. 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 uses 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.

Temperatures for October overall were near average in Scotland but above normal elsewhere, particularly across southern England with anomalies of 1.5 to 2°C. This was provisionally the equal-sixth wettest October on record for the UK in a series from 1836, whilst eastern Scotland had its wettest October on record.

Temperatures for November were near average overall; slightly below average across northern Scotland. Despite the wet first half of the month, rainfall totals were near average across much of England, Wales and eastern Scotland, although it was wetter than average for some southern counties. Western Scotland and Northern Ireland were drier than average.

Temperatures for December were above average across the whole of the UK except northern Scotland, with anomalies mostly around 1.5 to 2.0°C. This was the fifth / equal-fifth warmest December for England and Wales in respective series from 1884. It was a particularly mild December for the southern half of England and Wales, with minimum temperature anomalies of over 2.5°C, and very few frosts after the first week of the month. This was the equal-eighth wettest December for the UK in a series from 1836, and fourth wettest for Northern England. Parts of central and north-east England, and much of north east Scotland recorded more than twice the normal rainfall.

The wet weather will increase suitable habitat for the intermediary host of both liver fluke and rumen fluke and may cause an increase in incidence. The nature of these diseases is such that increases will only be seen a few months later. The wind contributed to the current Bluetongue infections in England. Midges, infected with Bluetongue virus, were blown across from the Netherlands outbreak, resulting in infection of cattle and livestock in Kent and Norfolk in November and December. Above average Autumn temperatures created ideal and prolonged conditions for midges to spread Schmallenberg virus to livestock in several counties, although no active spread of Bluetongue virus was detected.

Industry

AHDB lamb market updates:

- **Prices:** For the week ending 30 Dec, the GB deadweight new season lamb standard quality quotation SQQ averaged 598 pence per kilogram. The GB new season lamb liveweight SQQ sat at 287.9p for the week ending 30 December 2023. Store sheep prices averaged £80 per head in the final four weeks of the year, ending 2023 at £80.59 per head for the week ending 30 December, up 14% year on year.

- **Production:** Clean sheep slaughter in December sat at 1.14m head, which is the lowest December kill since 2019, with reports of wet weather making it harder to finish**.** Sheep meat production in the UK totalled 286,000 tonnes for 2023, a fall of 5,300t (-1.8%) from 2022 (Defra).

- **Trade**: Year to date (Jan-Nov 2023) imports of sheep meat totalled 52,00 tonnes, down 14% on the same period of the previous year. Some of this decline can be attributed to reductions in product received from New Zealand. On the flipside, exports have increased to 80,000 tonnes for the year to date (Jan-Nov 2023), up 13% on the same period of 2022. These exports totalled at a value of £497million, with a large proportion destined for France.

- **Demand:** In the 12 weeks to the 24 December, retail spend on lamb increased by 9.3% year-on-year, as volumes grew by 7.6%. Prices paid rose by 1.5% on average across lamb cuts and products. Christmas fell in this period, and demand for centrepiece proteins was up year- on- year. As a result, demand for primary lamb increased, driven by leg roasting joints and steaks.

Acknowledgment for the lamb updates: Freya Shuttleworth, AHDB

The market update details provided give an indication of the financial health of the sheep industry, which may influence the willingness of farmers to investigate disease or productivity issues in their flocks.

Bluetongue serotype 3 (BTV-3)

Between the first outbreak in the Netherlands on 5th September 2023 and 22nd January 2024, there have been 1,573 premises with clinically positive BTV-3 cases, and 4,300 premises with PCR positive BTV-3 cases reported. Germany has reported 37 outbreaks since the first detection on 10th October 2023. Belgium has reported five total outbreaks.

One bovine tested positive for Bluetongue virus (BTV) serotype 3 on a farm premises in Kent, tested as part of the annual Bluetongue survey on 2nd November 2023. The remaining 74 cattle tested negative, and the positive animal was culled. Following confirmation, a 10km temporary control zone (TCZ) was put in place and was subsequently extended to the coast following positive cases being confirmed in Sandwich Bay, Kent on 4th December 2023.

On 8th December 2023, two samples tested positive for BTV-3 on a farm premises in Norfolk sampled as part of the annual Bluetongue survey. Following confirmation, a 10km temporary control zone (TCZ) was put in place around the positive case and was subsequently extended on 27th January 2024.

Further guidance and information are available on the Ruminant Health & Welfare site and the GOV.UK site.

Schmallenberg

Following acute infection (that is mostly subclinical in sheep) during the autumn of 2023, Schmallenberg virus was confirmed as the cause of deformed lambs being born from December onwards. Details of the outbreak in sheep and an updated Schmallenberg disease guide have been published.

Unusual diagnoses

Systemic erysipelas in a pre-weaned lamb

An approximately 9-day-old lamb was submitted to investigate the death of three lambs, in a flock of 165 pedigree Poll Dorset ewes, over the preceding two weeks. Affected lambs had all been one of twins, which were strong at birth, but became weak, floppy, and lost the use of their limbs at around one week of age. Lambing was inside in individual pens, and then they were turned out (if the lambs were strong enough) after 3-4 days. Pens were

limed between each ewe. Lambs were left to suck colostrum from the dam. There were no clinical signs in the dams.

Gross postmortem findings in this lamb were limited and included a slight joint effusion in both elbow joints, with a small fibrin clot in one joint, pale kidneys, and enlarged retropharyngeal lymph nodes. Creamy material in the trachea indicated some aspiration of milk. The navel was dry, the lamb had been ear-tagged and had a ring around the tail.

Erysipelothrix rhusiopathiae was isolated in mixed flora from brain, liver and one elbow joint. Infection with *E. rhusiopathiae*, which is a soil organism, can follow any minor skin wound. In sheep *E. rhusiopathiae* most commonly causes polyarthritis, and this diagnosis is more frequently made in postweaned and older sheep rather than preweaned animals. However, septicaemia due to *E. rhusiopathiae* has been described in neonatal lambs, and entry via the umbilical cord or following tail docking, castration or tagging are possible routes of infection.

PCRtesting for border disease virus was negative, and histopathology of brain, spinal cord, liver and kidney was unremarkable.

A farm visit was carried out to investigate further and the biggest risk factor was identified as being the early ear tagging of lambs. The flock had since had cases of joint ill affecting slightly older lambs at around 3-4 weeks of age. Bacteriology of a swab of pus from the joint of one of these lambs isolated *Staphycoccus aureus* in pure growth, which is a known cause of joint ill in lambs.

Guidance on the measures that can help to reduce the incidence and severity of joint ill was given, which included but was not limited to:

- maintaining strict hygiene of lambing pens, lambing equipment, and hands
- dipping navels in a strong iodine solution at birth and again four hours later
- ensuring all lambs receive adequate colostrum
- monitoring all lambs for early signs of illness and investigating the cause
- initiating prompt and appropriate treatment in the early stage of disease
- maintaining strict hygiene and wearing gloves when ear tagging, tail docking, and castrating

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 farmer. 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 here about the Animal Health and Welfare Pathway and how to carry out the Annual Health and Welfare Review.

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 will not provide accurate or useful results.
- 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, please refer to the SCOPS guidance and 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 fourth quarter (Q4) of 2023, compared to Q4 in 2022, and Q4 for 2015 to 2023 inclusive, through the Great Britain (England, Wales, and Scotland) scanning surveillance network are illustrated in Table 1. Please note that the diagnosis of Parasitic Gastroenteritis (PGE), excludes PGE due to Haemonchosis and PGE due to Nematodirus. Pneumonia due to Other Causes, excludes Pneumonias due to *Mannheimia haemolytica, Mycoplasma ovipneumoniae, Pasteurella multocida*; and parasitic pneumonia (lungworm).

Table 1: Great Britain scanning surveillance 5 most frequent goat submission diagnoses in Q4 of 2023, Q4 of 2022, and Q4 for 2015-2023

	5 most frequent diagnoses Q4 2023	5 most frequent diagnoses Q4 2022	5 most frequent diagnoses Q4 2015-2023
1	**Parasitic Gastroenteritis (PGE)**	Parasitic Gastroenteritis (PGE)	Parasitic Gastroenteritis (PGE)
2	**Clostridium perfringens D infection**	Johne's Disease	Johne's Disease
3	**Hypocupraemia or Hypocuprosis**	Pneumonia – other causes	Clostridium perfringens D infection
4	**Coccidiosis**	Clostridium perfringens D infection	Coccidiosis
5	**Chronic fascioliasis**	Coccidiosis	PGE-Haemonchosis

Sheep disease surveillance dashboard outputs

The most frequent diagnoses in sheep from submissions made in the fourth quarter (Q4) of 2023, compared to Q4 in 2022, and Q4 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 (as above) that Parasitic Gastroenteritis (PGE), excludes PGE Haemonchosis and PGE Nematodirus. Pneumonia due to Other Causes, excludes Pneumonia due to M. haemolytica, M. ovipneumoniae, P. multocida, and lungworm.

Table 2: Great Britain scanning surveillance 10 most frequent sheep submission diagnoses in Q4 of 2023, Q4 of 2022, and Q4 for 2015-2023

	10 most frequent diagnoses Q4 2023	10 most frequent diagnoses Q4 2022	10 most frequent diagnoses Q4 2015-2023
1	**Parasitic gastroenteritis (PGE)**	Parasitic gastroenteritis (PGE)	Parasitic gastroenteritis (PGE)
2	**Hyposelenaemia**	Hyposelenaemia	Hyposelenaemia
3	**Pine or cobalt deficiency**	Pine or cobalt deficiency	Pine or cobalt deficiency
4	**Johne's Disease**	Pneumonia due to M. haemolytica	Systemic Pasteurellosis

5	**Pneumonia due to other causes***	PGE Haemonchus	Pneumonia due to M. haemolytica
6	**Chronic fascioliasis**	Pneumonia due to mycoplasma	Chronic fasciolosis
7	**Pneumonia due to M. haemolytica**	Pneumonia due to other causes	Pneumonia due to other causes
8	**PGE Haemonchus**	Johne's Disease	Johne's Disease
9	**OPA (Jaagsiekte)**	PGE Nematodirus	Sheep Scab
10	**Systemic Pasteurellosis**	Systemic Pasteurellosis	OPA (Jaagsiekte)

*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:

- Pine or Cobalt deficiency (APHA only)
- Chronic fasciolosis (SRUC only)
- PGE – Haemonchosis (APHA only)
- Pneumonia Not otherwise specified (APHA only)
- Tick-borne fever

Decreases:

- Bibersteinia trehalosi septicaemia (SRUC only)
- PGE Not otherwise specified

Parasitology

Chronic Fasciolosis

Very few cases were detected for APHA during quarter four over the past few years, and no cases were recorded this quarter. In contrast there was a significant increase for SRUC cases, with 24 cases recorded, which equates to 13% of the diagnosed enteric cases. This compares to eight cases for the same quarter in 2022. The increase for SRUC cases is shown in figure 1.

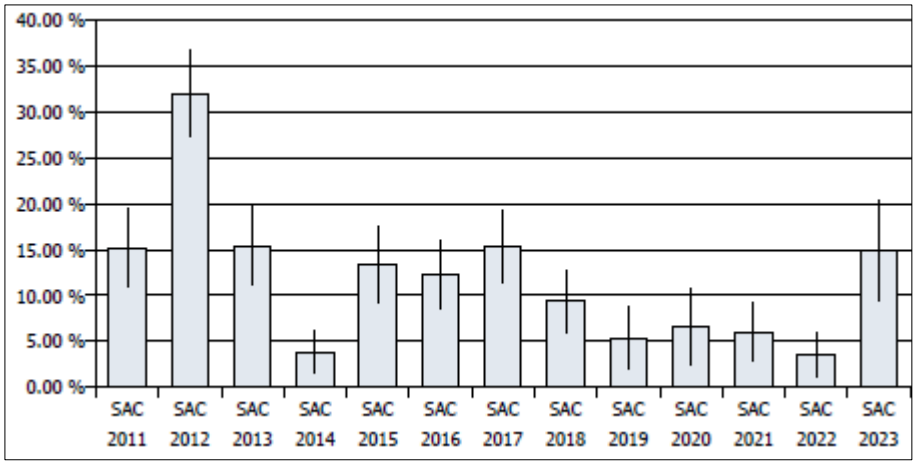

Figure 1: A significant increase in the percentage of diagnosable submissions for Chronic Fasciolosis cases in Q4, 2023 for SRUC, compared to the equivalent quarters in previous years.

Haemonchosis

The number of submissions diagnosed remained increased since 2022, in comparison to the average over the same quarter for the previous six years, as shown in figure 2. This increase was significant for APHA, where subsidised testing for the differential fluorescent staining of *Haemonchus* eggs was in place. This will have increased the numbers diagnosed, but anecdotal feedback from private veterinarians indicates that there was a genuine increase.

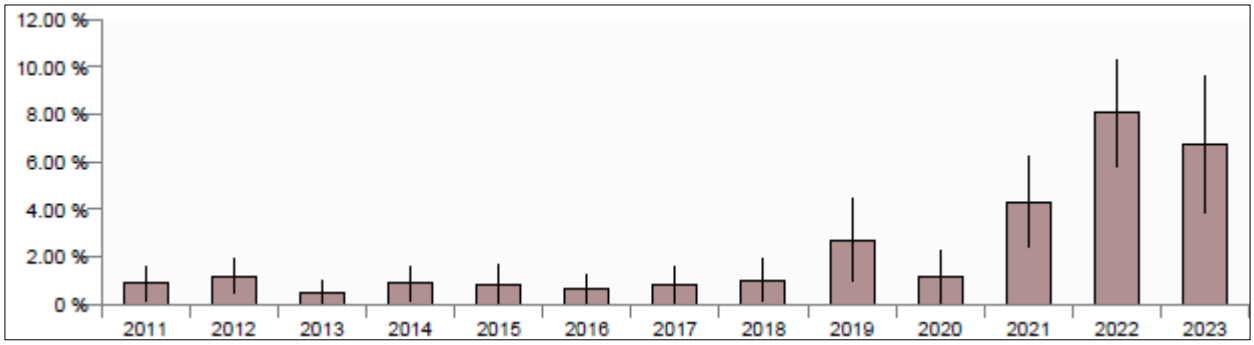

Figure 2: An increase over the past three years in the percentage of diagnosable submissions for Haemonchosis cases in Q4 for GB, compared to the equivalent quarters for the years prior to 2021.

Systemic disease

Pine or cobalt deficiency

There was a significant increase in the incidents diagnosed by APHA this quarter, at 12% of diagnosable submissions, compared to 5% for the same quarter over the previous 5

years. The total GB incidents as a percentage of diagnosable submissions was similar to quarter 4 of the previous year, with a general upward trend over the preceding 4 years, as demonstrated by Figure 3.

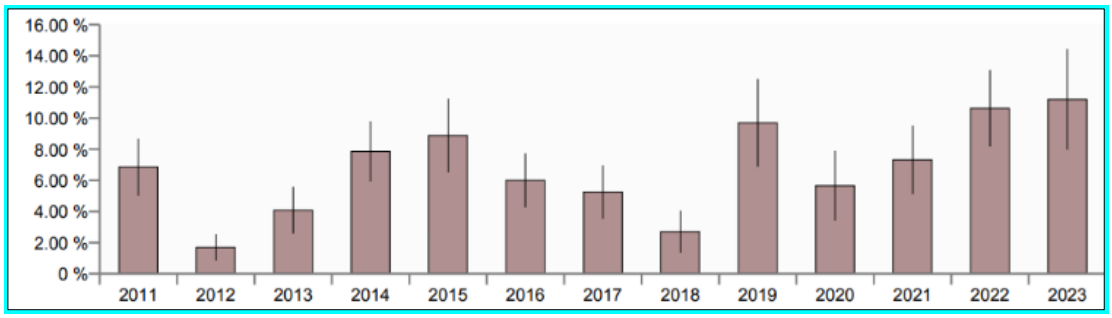

Figure 3: A general upward trend over the preceding 4 years of GB incidents of Pine or cobalt deficiency for quarter 4, 2023, as percentage of diagnosable submissions.

Most diagnoses of pine/ cobalt deficiency, during quarter 4, were made in post-weaned animals. Like the previous 5 years, diagnoses during this quarter were made in all regions of GB, with the majority being in Scotland, and Northern England second, as demonstrated by Figure 4.

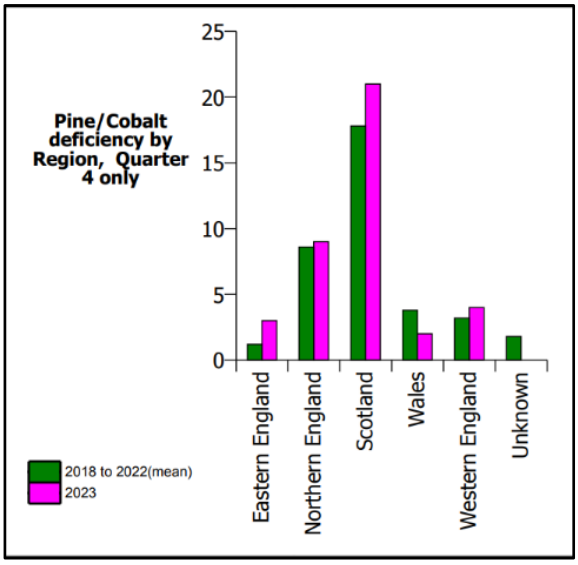

Figure 4: Pine or cobalt deficiency by region in quarter 4, 2023.

Diagnoses of pine or cobalt deficiency were approximately equally split between lowland and upland/ hill flocks during quarter 4, as can be seen in Figure 5.

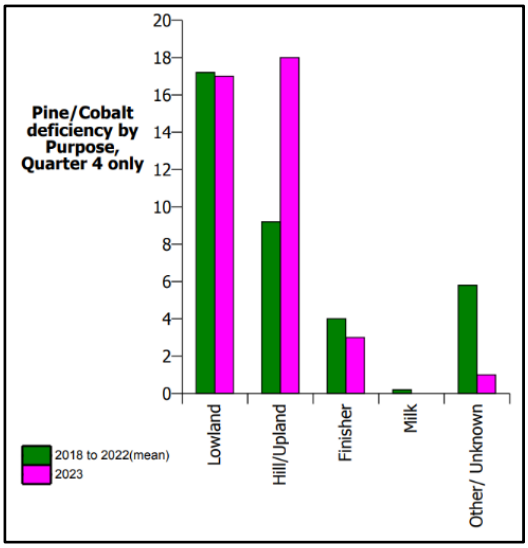

Figure 5: Pine or cobalt deficiency by flock purpose in quarter 4, 2023.

Trace element deficiencies can result from suboptimal dietary intakes, or arise because of parasitic damage to the gastrointestinal tract, or both. Pine or cobalt deficiency, along with other trace element deficiencies, are therefore often diagnosed concurrently with parasitic gastroenteritis and other diseases as illustrated in the case below.

Pasteurellosis due to *Bibersteinia trehalosi* in a 6-month-old lamb, with concurrent PGE and trace element deficiencies.

A ram lamb was submitted to investigate wasting of several weeks' duration, followed by weakness, malaise, and increased respiratory effort for two to three days prior to death. Approximately 12 lambs had died, and another 10 were showing clinical signs of wasting and weakness, in a group of 46. The lambs had been dipped for clinical sheep scab in August. The lamb had been wormed three weeks previously with albendazole, and three days previously with a moxidectin - triclabendazole combination product. The lambs were at grass, with supplementary creep feed. No vaccines were used. Post-mortem findings included poor condition, pallor, icterus, pale friable liver, discoloured urine, and caecal mucosal reddening. Lungs were slightly firm and reddened with irregular mottling on the cut surface. Increased pericardial and thoracic fluid with fibrin clots were also noted.

Significant findings of further testing included:

- A tetracycline resistant *Bibersteinia trehalosi* isolated from lung, and based on histopathological examination, potentially the cause of the typhlitis
- A significant gastrointestinal worm burden, predominantly *Teladorsagia* sp., likely the result of reinfection since albendazole treatment three weeks previously
- Suboptimal results for liver cobalt (B12) and selenium, with copper deficiency and toxicity having been ruled out

- Dead *Psoroptes* sp. mites were seen on potassium hydroxide (KOH) preparation, confirming the previous history of scab

Taken together, it seems likely that underlying parasitic disease, with concurrent and consequential trace element deficiency, predisposed the lamb to pasteurellosis due to *Bibersteinia trehalosi,* which was likely the ultimate cause of death. A review of parasite control and nutrition/trace elements was advised. Vaccination can also aid in the control of ovine pasteurellosis. This **SRUC article** provides a good overview of systemic pasteurellosis, predisposing factors and control.

Parasitic gastro-enteritis (PGE), listerial septicaemia and *Salmonella* Typhimurium in a weaned lamb

The carcase of a weaned lamb was submitted to Starcross Veterinary Investigation Centre to investigate wasting, poor condition, scour and deaths, in two groups of approximately 200 lambs. Gross findings were consistent with scour and weight loss, with minimal carcase fat reserves and watery gut content. Parasitology confirmed a diagnosis of parasitic gastroenteritis with 29 000 *Teladorsagia spp.* worms and 34 500 immature L4s identified within the abomasum, and from the small intestine 500 Nematodirus battus, 3 000 *Trichostrongylus spp.* and 5 500 immatures.

Listeria ivanovii was isolated from the heart blood and lung. Visceral *L. ivanovii* infection has been previously reported in weaned lambs with alimentary tract pathology, typically caused by parasitic gastroenteritis (Dunnett and others 2020). It is assumed that the gastrointestinal damage caused by the endoparasites allows portal spread and systemic infection, being an “end stage event” in already debilitated lambs.

Culture of caecal content also isolated ***Salmonella* Typhimurium**. This was also suspected to be secondary to PGE damage to the intestinal tract. Advice regarding the zoonotic potential of this organism was provided.

Dunnett, E., Florea, L., Thurston, L., Floyd, T., Collins, R. and Otter, A. (2020), Deaths of weaned lambs with visceral *Listeria ivanovii i* nfections. Vet Rec Case Rep, 8: e001254. https://doi.org/10.1136/vetreccr-2020-001254

Hepatocellular carcinoma in a ewe

An adult ewe was submitted to Starcross VIC with history of rapid loss of condition over a three-week period. Clinical examination by the submitting veterinary surgeon identified a severe anaemia, but ancillary testing prior to submission had ruled out Haemonchosis, cobalt deficiency, liver fluke, and Johne’s disease. On post mortem examination a huge quantity of clotted blood was present in the abdominal cavity which appeared to originate from a large liver mass. The liver itself was grossly enlarged and misshapen by several large firm masses which had irregular necrotic centres. Similar masses were present in the spleen. These findings were consistent with a metastatic liver neoplasm and

histopathology confirmed a hepatocellular carcinoma, a relatively uncommon tumour of sheep.

Multilocular peritoneal inclusion cysts in an adult goat

A five-year-old female goat, one in a pen of seven at grass, had a four-day history of malaise and reluctance to move, followed by anorexia and death. Postmortem examination revealed a grossly distended abdomen due to a very large intra-abdominal multi-cystic structure, which weighed more than 30kg, was oval-shaped, and measured 45x35 cm in size, as shown in figure 6. The cystic structure was pale and thin-walled and was full of yellow fluid and fibrinous sheets, with some separate pockets of fluid. The structure was adhered to the serosal surface of the stomachs and to the proximal intestinal tract. Three smaller (10cm diameter) spherical structures were adhered to the abomasum. The massive cystic structure was thought to have put pressure on the abdominal organs ultimately leading to death.

Histological examination of the peritoneal surface of several organs and the cystic structure suggested there had been ongoing infection and an inflammatory process, consistent with a bacterial peritonitis. *Trueperella pyogenes* was isolated in a heavy growth from the cystic fluid, and histopathology identified large colonies consistent with this isolate in areas of the cystic wall.

The overall picture was suggestive of multilocular peritoneal inclusion cysts, also called cystic mesotheliomas or a mesenteric cyst. The aetiopathogenesis of the process is poorly understood, but in both veterinary and human medicine there appears to be a tentative correlation between the appearance of these lesions and a prior inflammatory peritoneal insult. In this case, the presence of a bacterial peritonitis could have been the triggering factor, although it was hard to be certain whether there had been a primary infection, or if infection had occurred secondary to the cysts.

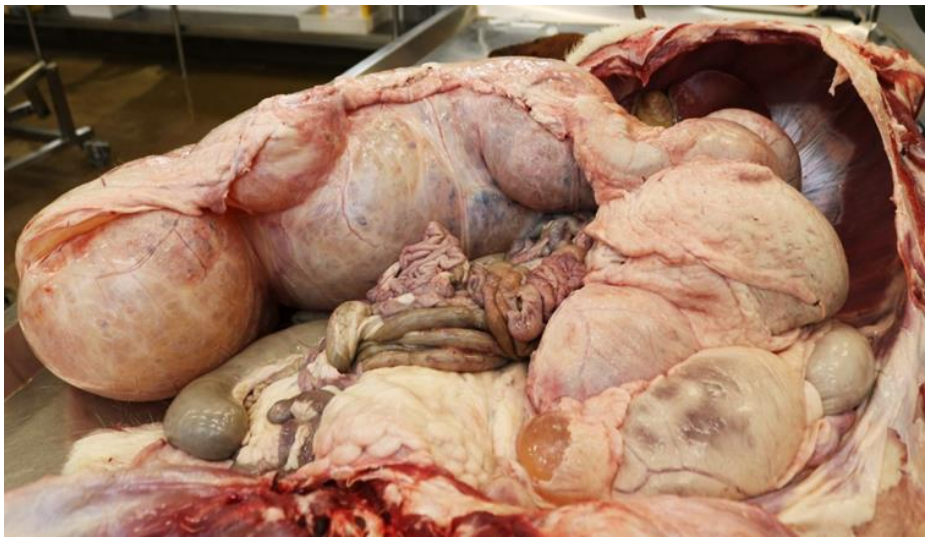

Figure 6: Large intra-abdominal multi-cystic structure in the abdomen of a five-year-old female goat

Circulatory disease

Tick pyaemia

A north country Cheviot shearling tup was found dead approximately three weeks after purchase and submitted to an SRUC centre. Postmortem examination findings suggested bacterial septicaemia, and a combination of bacteriology and histopathology confirmed *Staphylococcus aureus* to be the cause. *Anaplasma phagocytophilum* DNA was detected on PCR testing of spleen. The tup had been purchased in south-west Scotland and transported to Caithness. It was hypothesised that it may not have been exposed to tick borne fever prior to its relocation, making it susceptible to tick pyaemia. Two other tups purchased from the same area were unaffected at the time of submission.

Tick-borne fever (Anaplasma phagocytophilum) and Tick pyaemia

There were 53 cases of Tick-borne fever (TBF) in sheep recorded during 2023 in GB and 69 in 2022, most of which represented newly diagnosed premises. This compared to an annual average of 28 per year over the preceding 5 years, indicating a significant increase in detection of the infection, as shown in figure 7. The availability of the PCR test over the past few years, will have increased the number of cases detected too. Co-infections are often identified as the cause of disease signs or death, but with TBF significantly contributing as an immunosuppressor, exacerbating the severity of the co-infection or increasing the risk of disease. Co-infections can involve a wide array of infections that commonly occur in sheep, although the most common infections recorded along with TBF have been *Bibersteinia trehalosi* septicaemia, *Mannheimia* pneumonia, Louping Ill and PGE. Cases of TBF infection have increased in preweaned lambs, postweaned lambs and adult sheep on lowland and hill/upland farms, particularly in North-East England, Scotland, Wales, and West England.

Tick pyaemia diagnoses have also increased this year, although numbers remain relatively low at 12 cases (compared to an annual average of four per year over the last five years). Although the risk of tick pyaemia increases when animals are concurrently infected with *Anaplasma phagocytophilum,* some cases of TP occur without a concurrent TBF infection. These are due to exposure to high tick numbers, or other immunosuppressors present in the flock.

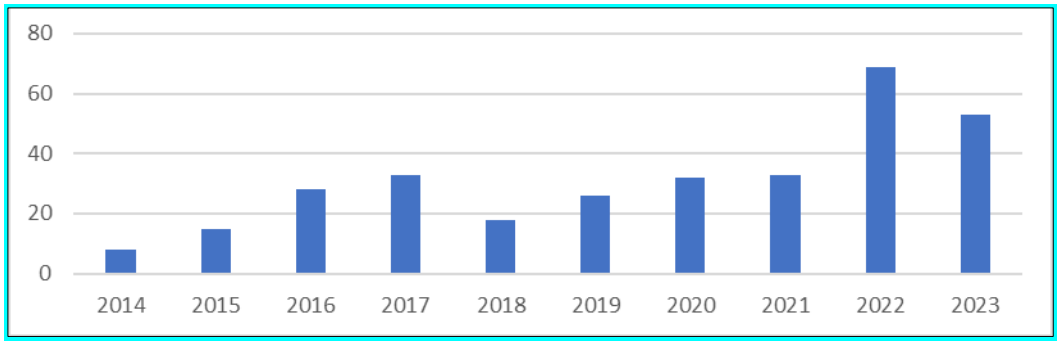

Figure 7: Annual Tick-borne Fever cases recorded in GB, showing the increase in the past two years compared to previous years.

Tick-borne fever and *Bibersteinia* septicaemia causing numerous deaths in a group of bought-in store lambs

Three dead Scottish Black Face store lambs were submitted to investigate the cause of sudden deaths, when 40 out of a batch of 750 had been found dead over a six-day period. The lambs had been on the current farm for just two weeks when losses started, and were at grass with no exposure to ticks on this farm. Pathology typical of *Bibersteinia trehalosi* septicaemia was found in all three lambs and was confirmed with bacterial cultures. Pharyngeal ulcers detected in the lambs are shown in figure 8. PCR testing also proved positive for *Anaplasma phagocytophilum* or Tick-borne fever infection in all three lambs.

Figure 8: Multiple pharyngeal ulcers in a store lamb with *Bibersteinia* septicaemia

Adult ewes positive for Tick-borne fever, dying from *Bibersteinia* septicaemia

Four ewes from a group of 26 were found dead during over one week. The group was not vaccinated against pasteurellosis, was at pasture with no supplementary feed available, and had been moved onto the current field three weeks previously after tupping. Marked pathology was found in a ewe on post mortem examination, consisting of an enlarged spleen, necrotic foci in the liver, renal bacterial foci (Figure 9), laryngeal ulceration, and brain oedema. It is unusual to see such extensive *Bibersteinia* associated pathology in a mature sheep, this would be more typical in growing lambs. Concurrent TBF infection appeared to have significantly exacerbated the severity of disease.

Figure 9: Multiple, small pale foci of firm tissue throughout the renal cortex in an adult ewe with Tick-borne fever, that died from *Bibersteinia* septicaemia

Skin disease

Cutaneous actinobacillosis in a ram

Cutaneous actinobacillosis was found to be the cause of an abscess on the face of a ram. An *Actinobacillus sp.* suspected to be *Actinobacillus lignieresii* was cultured from a pus sample submitted to Axiom. Sheep affected with cutaneous actinobacillosis often have numerous small abscesses containing granular pus in the soft tissues of the face. The

condition is uncommon and sporadic but, can eventually be fatal in individual animals if left untreated.

Cutaneous lymphoma

Cutaneous lymphoma was diagnosed on histopathology of a , thickened and encrusted skin sample submitted to Axiom from the shoulders and head of a Soay sheep. Cutaneous lymphoma is rare in sheep and there is no known underlying cause. Outside the UK it has been experimentally linked to infection with BLV (Bovine Leukaemia virus).

Respiratory disease

Pneumonia trends for quarter 4

There was an increase in Pneumonia NOS (not otherwise specified) diagnoses during quarter 4 of 2023, mostly in post-weaned lambs, and to a lesser degree adult sheep, in England and Wales. More than half of the pneumonia NOS diagnoses were record as *Bibersteinia* or suspect Pasteurellosis (without bacterial confirmation). APHA also recorded an increase in diagnoses of Ovine pulmonary adenocarcinoma this quarter.

There was an increased number of diagnoses of *Mannheimia haemolytica* for this quarter, similar to the previous two years, and an increase in systemic Pasteurellosis or Mannheimiosis, identified by both APHA and SRUC.

Sheep respiratory disease, annual trends 2023

The annual figures for *Mannheimia haemolytica* pneumonia diagnoses recorded by APHA and SRUC have now shown consistent elevation for the last six years, when compared to numbers recorded prior to that time. It is possible that factors such as with flocks with higher stocking rates, and increased issues with concurrent diseases such as PGE (or as illustrated by the graph below lungworm), as well as variable availability of the *Mannheimia/Bibersteinia* vaccines could all have increased the risk of disease issues due to *Mannheimia* pneumonia.

Pasteurella multocida pneumonia diagnosis numbers also increased during 2023, with the increase in diagnoses occurring in postweaned lambs and adults in lowland flocks in all regions of England, Scotland and Wales. Many co-risk factors for *Mannheimia* pneumonia will also apply to *Pasteurella multocida*, although there is no vaccine available for *P. multocida* infection.

There is also a gradually increasing trend in annual Maedi Visna diagnoses for GB, with growing numbers of diagnoses particularly notable since 2020 as shown in figure 10. There has been raised awareness in recent years of chronic wasting diseases such as Maedi Visna, which may have encouraged more testing, although increased purchasing to expand flock sizes could also potentially have encouraged more spread of disease.

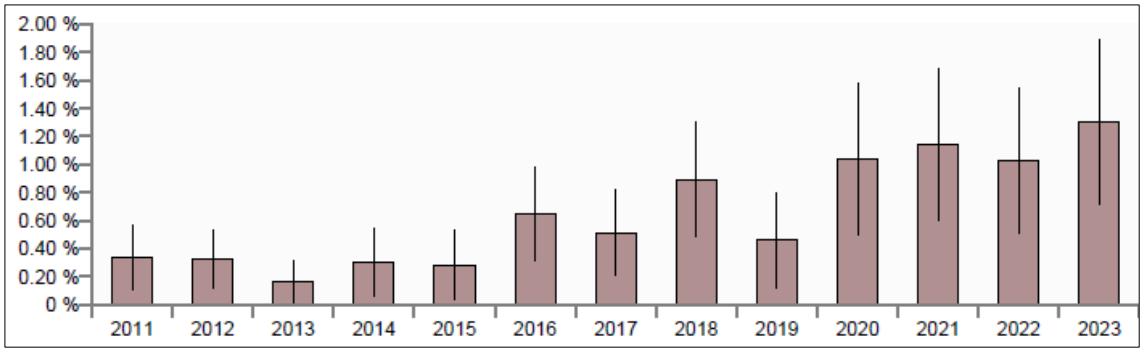

Figure 10: Annual GB incidents of Maedi Visna in sheep as % of diagnosable submissions, showing an increase over the past four years compared to previous years.

Urinary disease

Renal failure in a post weaned lamb with PGE

Ataxia, loss of balance, and collapse were reported in two, post-weaned lambs from a group of 30, during gathering. One of the affected lambs was euthanased and submitted for postmortem examination. Gross findings included liver abscessation, liquid intestinal content and swollen, pale kidneys. Parasitology confirmed PGE with 12 750 Trichostrongyle-type eggs per gram in caecal contents. Serum urea levels were also significantly raised. Brain histopathology revealed a symmetrical vacuolar leukoencephalopathy. In addition, there was evidence of subacute renal tubular injury, which was consistent with the markedly elevated urea levels. The renal pathology was deemed responsible for the changes seen in the brain and was very similar to that seen in cases of lamb nephrosis. This is typically seen in younger lambs secondary to enteric coccidiosis and/or nematodirosis. The severe PGE in this lamb was deemed the inciting cause.

Bladder rupture because of urolithiasis in housed fattening lambs

An April-born Romney ram lamb was presented for postmortem examination, following the eleventh death in a week from a group of 1100 housed fattening lambs, of which all bar one had been male. The lambs had been housed for around five weeks on a diet of hay or silage, and a commercial blend fed ad-lib. Prior to this they were at grass with no supplementary feed. A large volume of fibrinous turbid pink fluid with a strong odour of ammonia was found within the abdomen. A 5mm hole was found in the bladder wall and some ‘gritty’ deposits remaining within the bladder. The glans penis was dark-purple and the distal end of the vermiform appendage was hard with a gritty texture. The findings supported a diagnosis of urethral obstruction due to urolithiasis, with the resulting bladder rupture and uroperitoneum as the cause of death. A review of the diet and implementing measures to ensure adequate water intake were recommended to prevent further cases.

Musculoskeletal disease

Arthritis due to *Streptococcus dysgalactiae* subsp. *dysgalactiae*

In comparison to the downward trend reported in 2022, there has been an annual increase this year in diagnoses of arthritis due to *Streptococcus dysgalactiae* subsp *dysgalactiae* across GB. In 2023 a total of 20 cases or 0.96% of diagnosable submissions were recorded, compared to 11 cases or 0.54% of diagnosable submissions in 2022. These changes are shown in figure 11. APHA recorded the biggest increase in case numbers, diagnosing 16 cases in 2023 compared to 9 in 2022. The poor spring weather in England and Wales, which delayed the turnout of ewes and lambs this year, was a likely contributory factor.

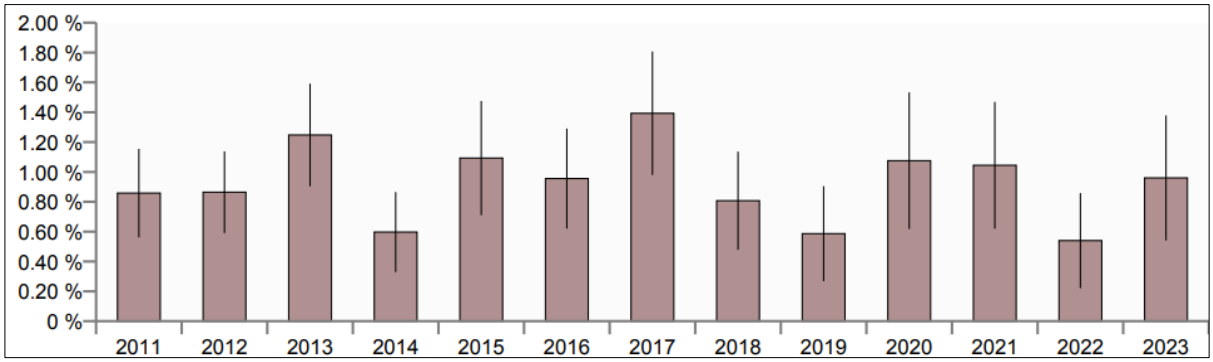

Figure 11: Annual GB incidents of Arthritis due to Streptococcus dysgalactiae subsp. dysgalactiae in sheep as % of diagnosable submissions

Nervous disease

Louping Ill

As discussed in previous reports the interpretation of the trend for diagnoses of Louping ill is a challenge due to the small number of cases reported each year. Although the annual data for 2023 shows a slight decrease in case numbers compared to 2022 (21 cases vs 27 cases) these are still significantly high compared to recent years and have remained above the more usual rate of 1% of diagnosable submissions. The rate in 2023 being 1.39%.

As the ecology of *Ixodes ricinus,* the tick that transmits the virus, is strongly correlated to environmental conditions, it is not unusual to see yearly fluctuations in Louping ill cases. It would therefore seem that the climatic conditions seen in 2023, like 2022, have been ideally suited to tick survival and activity. It will be interesting to see if this continues into 2024.

Salmonellosis

Salmonellosis due to *Salmonella* Dublin (non-fetopathy)

Continuing the trend from last year, annual case rates for *Salmonella* Dublin infection in sheep in 2023 remained low with only two cases reported.

Salmonellosis NOS (non-fetopathy)

Analysis of the annual data for 2023 shows diagnoses of Salmonellosis NOS on an upward trend since 2021 as shown in figure 13. As in previous years, the most reported serovar was *Salmonella enterica* subspecies *diarizonae* 61:k:1,5,(7). It was typically detected in association with other disease processes, with parasitic gastroenteritis being the most frequent concurrent disease recorded. Clinical signs reported in the submissions included found-dead, wasting, and diarrhoea.

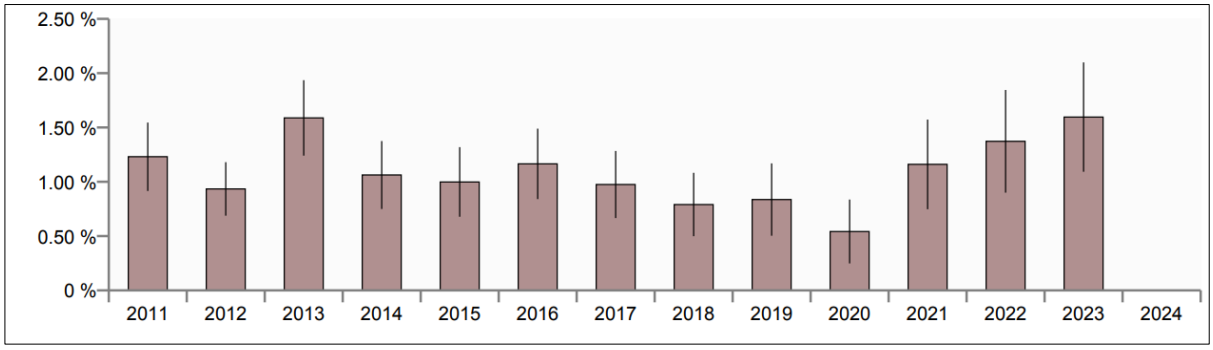

Figure 13: Annual GB incidents of Salmonellosis NOS (non-fetopathy) in sheep as % of diagnosable submissions

A handful of other *Salmonella* serotypes were isolated in 2023 including *Salmonella* Montevideo, *Salmonella* Ohio, and *Salmonella* Derby.

Salmonellosis due to *Salmonella* Typhimurium (non-fetopathy)

Incidents of *Salmonella* Typhimurium were slightly increased in 2023 with 10 cases recorded, compared to 7 cases in 2022. As expected, many of the cases were enteric system related, with diarrhoea and wasting the most common reasons for submission. Concurrent diagnoses of parasitic gastroenteritis or coccidiosis were typically recorded with the *Salmonella* infection deemed to be an opportunistic infection of already debilitated animals.

Systemic Salmonellosis associated with *Salmonella* Typhimurium Phage Type 105, Sequence Type 19, was diagnosed by VIC Carmarthen in a recently purchased adult ewe. It was the fourth animal to die from a group of 45 since purchase two weeks previously. Post mortem examination found changes suggestive of systemic infection including an enlarged spleen, congested lungs, ecchymoses over the surface of both kidneys, reddening and thickening of the gastrointestinal tract and cloudy meninges. *Salmonella* Typhimurium was isolated from the lungs, spleen, and faeces. The stress of recent

transport was thought to be the predisposing factor for infection in this case. Advice regarding the zoonotic potential of the organism was provided.

Poisoning

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

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 available at these links:

- Sheep: TSE surveillance statistics - GOV.UK (www.gov.uk)
- Goats: TSE surveillance statistics - GOV.UK (www.gov.uk)

Horizon scanning

Epizootic haemorrhagic disease (EHD)

EHD is an exotic notifiable disease, very similar to BTV in terms of vectors and routes of transmission, which has recently spread to Europe and mainly infects deer and cattle, but sheep can also be infected. It belongs to the family *Reoviridae*, genus *Orbivirus*, and 8 or more serotypes have been found. Due to the clinical presentation, bluetongue is a key differential diagnosis, along with foot-and-mouth disease (FMD) in deer and cattle. Additional differential diagnoses in cattle are bovine viral diarrhoea (BVD), infectious bovine rhinotracheitis, vesicular stomatitis, malignant catarrhal fever, and bovine ephemeral fever (WOAH, 2019).

Updated information regarding EHD outbreaks can be found on https://www.gov.uk/government/publications/epizootic-haemorrhagic-disease-in-europe

Outbreaks of EHD have been confirmed in southern Europe, both in Sardinia and in Spain for the first time. A case in the wild red deer in Sardinia is significant as the first case confirmed in wildlife, which could potentially behave as a reservoir of infection over time.

Deer may be showing the following signs - excessive salivation, fever, weakness, stiffness, lameness, inappetence, facial oedema, coronitis, stomatitis, hyperaemia of the conjunctivae and oral mucous membranes, oral ulcers on the dental pad, hard palate, or tongue, excessive bleeding - bloody diarrhoea, haematuria, dehydration or just been found dead.

Bluetongue strains other than BTV3 in Europe

Updates for other bluetongue strains can be found in this updated outbreak assessment for Bluetongue virus in Europe.

Please see below 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)

- How to spot and report EHD:
    - England - Epizootic haemorrhagic disease: how to prevent, spot and report it - GOV.UK (www.gov.uk)
    - Wales - Epizootic haemorrhagic disease (EHD) | GOV.WALES
    - Scotland - Epizootic haemorrhagic disease: 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)
- Bluetongue – the latest info and updates from the NFU – NFUonline
- Bluetongue outbreak in the Netherlands | AHDB

Publications of interest

WHO releases step by step guide to help countries develop their national genomic surveillance strategy for pathogens with pandemic and epidemic potential

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

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)

Nocardia farcinica abortion in a goat - Helena Vogel, Joshua B. Daniels, Chad B. Frank, 2023 (sagepub.com)

Lloyd JB; Clune T; Jacobson C; Schröder J (2023), **Detection of ovine respiratory syncytial virus in pneumonic lungs from apparently healthy sheep slaughtered at 5 abattoirs in Australia.** *Canadian Journal of Veterinary Research 87 (4) 303-305*

Hempstead MN; Waghorn TS; Gibson MJ; Sauermann CW; Ross AB; Cave VM; Sutherland MA; Marquetoux N; Hannaford R; Corner-Thomas RA; Sutherland IA (2023), **Worms and welfare: Behavioural and physiological changes associated with**

gastrointestinal nematode parasitism in lambs. *Veterinary Parasitology 324* https://doi.org/10.1016/j.vetpar.2023.110056

SCOPS podcasts: www.scops.org.uk/podcasts - SCOPS principles, Practical options for performing wormer treatment checks and Tackling sheep scab

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.