



Animal &  
Plant Health  
Agency



# Great Britain small ruminant quarterly report

## Disease surveillance and emerging threats

Volume 26: Quarter 2 – April to June 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 second quarter of 2023, June to April. 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 new Endemic Disease Alert System

This is a new 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](mailto: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 new messaging system to be beneficial and any suggestions or feedback are welcome.

## Issues and trends

### Weather

April was a predominantly unsettled month, with little in the way of consistent warmth, though it was more settled for a time around mid-month, when it became warmer especially over Scotland. This was followed by a return to rather chilly and unsettled conditions until just before month-end.

May was mostly dominated by settled, anticyclonic conditions which yielded a much drier and rather warmer than average month. Most of the month's rainfall came between the 5th and the 12th, with several days of scattered locally intense thundery downpours, especially across a belt stretching from the south-west through central southern and into eastern England.

Figure 1 shows the mean UK (January to June) 2023 temperatures compared to the average for 1991 to 2020. For this quarter the mean temperature for April was very similar to the long-term average, for May and June it was well above average in all areas.

Figure 2 shows the UK (January to June) 2023 rainfall compared to the average for 1991 to 2020. The rainfall for this quarter was below the average for 1991 to 2020 in most parts of the country.

Source: [Climate summaries – Met Office](#) and [UK temperature, rainfall and sunshine anomaly graphs – Met Office](#)

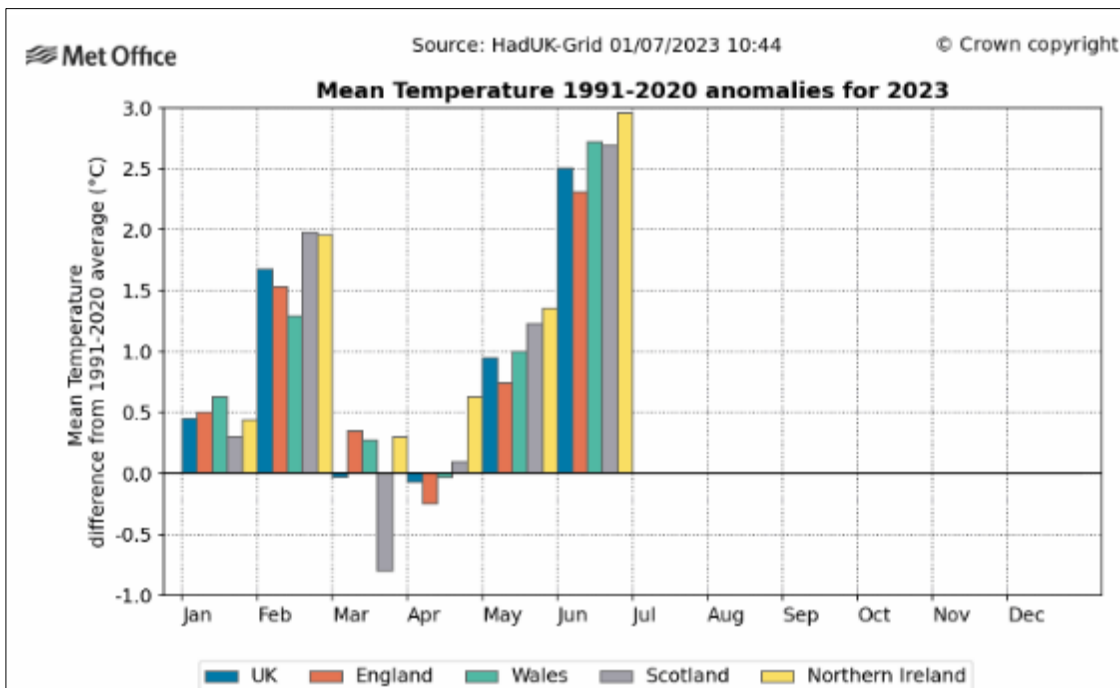
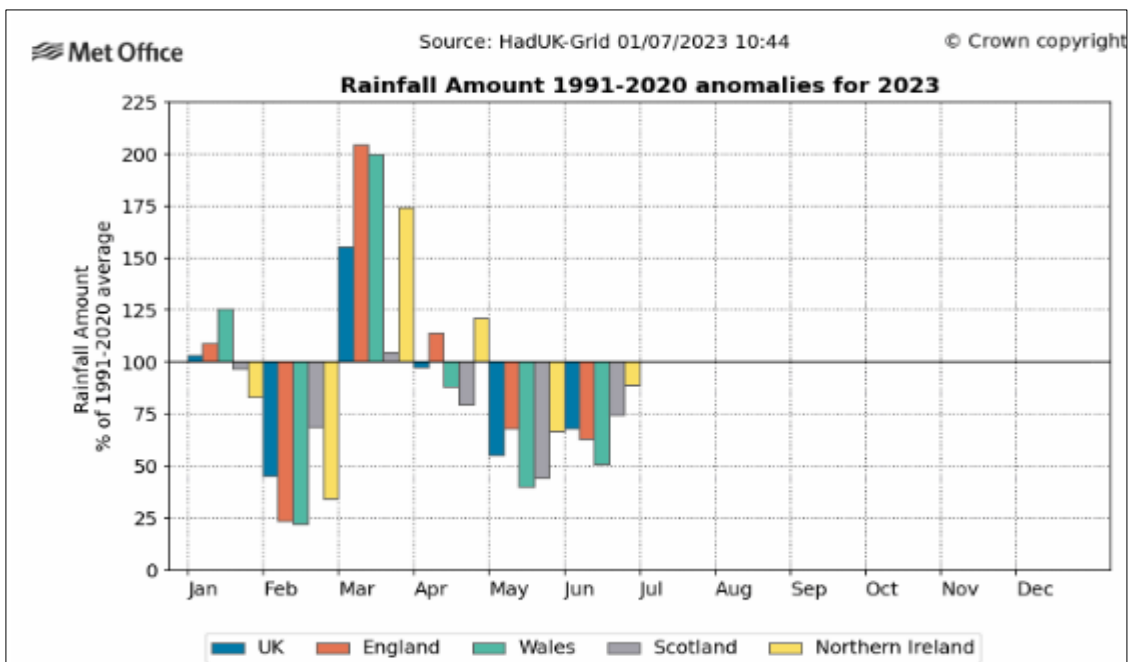


Figure 1: Anomaly graph showing the monthly variation of the mean temperature for 2023



**Figure 2: Anomaly graph showing the monthly variation of rainfall for 2023**

## Industry

AHDB lamb market updates:

- Prices:** For the week ending 22 July, the [Great Britain deadweight new season lamb SQQ](#) averaged 592p per kg, down 30p on the year, following price fluctuation throughout the second quarter. Prices averaged 743p for the week ending 20 May, with lambs slow coming to market, but have since dropped with seasonal supply increases. [Great Britain liveweight new season lamb](#) prices also stood above 2022 levels through April-May, but averaged 265p for the week ending 22 July (-16p year on year (YOY)).
- Production:** [June's lamb production](#) ramped up compared to the first 2 months of the quarter, totalling 24,900 tonnes. This brought year to date (YTD) (January to June) production to 141,000 tonnes, up 1% YOY. UK clean sheep kill hit 5.95 million head for the YTD, up 4% on 2022, and adult sheep kill was up 4% (29,700 head) on the year at 823,000 head (Defra).
- Trade:** [Imports of sheep meat](#) fell in May to 4,600 tonnes, down 25% YOY, largely driven by less product from New Zealand. For the YTD (January to May), imports were down 33% YOY. By contrast, exports remained relatively stable in May at 5,500 tonnes (-0.6% YOY). For the YTD, exports were up 12% YOY, largely driven by increased shipments to France and Germany.

- **Demand:** In the 12 weeks to 09 July, [spend on lamb in retail](#) fell 3.8% YOY, while volumes fell by 7.2%. Prices paid rose by 3.6% on average across all lamb cuts and products as inflation causes price rises. Looking at products specifically, chops and diced lamb were the only categories of primary lamb to see volume growth on the year, up 3.5% and 6.8% respectively, as overall primary lamb volumes declined by 8% YOY.

Acknowledgment for the lamb updates: Freya Shuttleworth, AHDB

## Vaccine supply issues

There have been ongoing issues with shortages of sheep vaccines (issues for around 24 months, with the specifics varying from month to month), and for several months for cattle clostridial vaccines. APHA has also been made aware of recent issues with pharmaceutical companies obtaining vaccines for bovine leptospirosis in the UK. Two leptospirosis vaccines are licensed – one is unavailable in the UK, and the other is in very short supply. Some private veterinary practitioners have also reported difficulty in obtaining lungworm vaccine. Vaccine supply issues have been discussed at stakeholder meetings during July and August.

At a recent meeting, the potential reasons for the supply problems were discussed. These include delays in manufacture due to human vaccines being prioritised in plants which make both human and animal vaccines; issues around batch release to the UK from other countries; issues of vaccine batch failure; and issues related to importation.

There may also be increased demand for livestock vaccines, as part of the effort to minimise antimicrobial use, supply chain and certification scheme requirements, and with farmers following veterinary advice on herd and flock health planning.

The problems arising from vaccine supply issues include:

- limited ability to prevent further cases of disease during outbreaks – private vets have reported difficulties in dealing with outbreaks of blackleg, abortion and orf
- disruption to vaccine courses and programmes
- impact on farmer and vet practice incomes
- stress
- damaging of relationships between the vet and their clients
- costs of stockpiling vaccines – private vets report buying-in extra stock when it is available, and risking over-buying

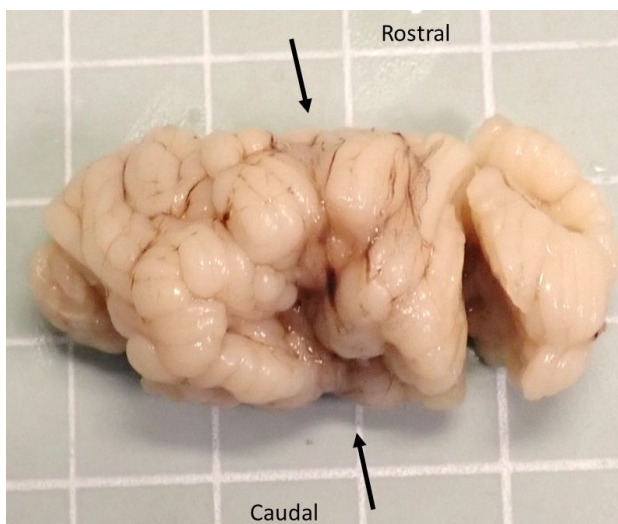
There are also potential One Health impacts if zoonotic diseases increase, such as toxoplasmosis, orf, and leptospirosis. Vaccine shortages may also impair the effectiveness of the Defra-funded, Animal Health and Welfare Pathway vet review flock or herd health planning visits, as the use of vaccines may be one strand of the recommendations from the visit. APHA is liaising with stakeholders and industry bodies on this issue and, will

monitor trends in the relevant diseases in ruminants. It was raised at the APHA Veterinary Risk Group in August.

## Unusual diagnoses

### Agenesis of the cerebellar vermis in a lamb

A one-week-old lamb was submitted to the Veterinary Investigation Centre (VIC) Carmarthen for postmortem examination to determine the cause of weakness and neurological signs seen since birth. The lamb was slow to stand and when standing displayed ataxia, splayed hindlimbs and disorientation. Gross examination of the fixed brain revealed malformation of the cerebellar vermis (shown in figure 3) consistent with a diagnosis of agenesis of the cerebellar vermis. This is a congenital defect which is occasionally seen in lambs and calves and is similar to Dandy-Walker Malformation in humans. The condition is thought to be a primary midline developmental defect and is often accompanied by cystic dilation of the fourth ventricle and sometimes hydrocephalus and agenesis of the corpus callosum. Several genetic and chromosomal anomalies have been linked to the condition in humans, and there are reports of 'outbreaks' in lambs linked to introduction of a new sire. However, the exact aetiology of this condition remains poorly understood.



**Figure 3: Dorsal view of cerebellum. The left and right hemispheres meet in the centre but there is no median lobe. There is a fissure in the right hemisphere, which is an artefact.**

## Swaledale encephalopathy detected in 2 separate flocks

Focal, symmetrical, polioencephalopathy was diagnosed by histopathology of lamb brains from 2 separate flocks. All affected lambs were Swaledales, with one flock having six affected lambs and the other, three. Findings were similar to those described previously by Scholes et al (2007) and a genetic aetiology is suspected. Cases have mostly been seen in the Swaledale breed but are occasionally seen in other breeds including Scottish Blackface and Welsh Mountain Badger Face.

Swaledale encephalopathy is a neurodegenerative disorder affecting young lambs typically in the first few weeks of life. Signs include ataxia, stiffness and head tremors, progressing rapidly to recumbency and spasms. The aetiology is unknown, but comparison has been made to Leigh Syndrome in humans. Leigh syndrome has been linked to several genetic lesions influencing oxidative phosphorylation and other steps in production of ATP, but the expression of the condition is likely multifactorial.

Scholes, S.F.E., Higgins, R.J., Holliman, A., Watson, P.J., Hutchinson, J.P. and Daniel, R. (2007), Subacute symmetrical necrotising encephalopathy in young lambs. *Veterinary Record*, 160: 775-775. <https://doi.org/10.1136/vr.160.22.775>

## Spinal cord compression or spinal cord infection cases

There were several cases of neurological disease in lambs associated with spinal cord infection or compression, diagnosed across several VICs this quarter.

Spinal cord infection was diagnosed in 2 cases submitted to VIC Shrewsbury. The first was a four-month-old Suffolk lamb that had developed progressive hindlimb paresis. A ruptured bladder was found on postmortem examination, but with no evidence of an obstructed urethra or urolithiasis. Histological examination of the spinal cord however identified a multifocal, segmental, subacute to chronic, lymphoplasmacytic meningitis. It was suggested that the spinal cord lesions could have occurred secondary to a chronic ascending bacterial infection from a traumatic lesion, perhaps originating from a tail docking wound. The ruptured bladder was likely the result of over-distention, secondary to nervous dysfunction of the pudendal nerve or sacral spinal cord segment.

The second case was a one-month-old lamb that presented with a three-day history of stiffness progressing to recumbency and rigid limb flexion. Postmortem examination revealed narrowing of the spinal cord at the level of the T1 vertebra, and histological examination of this section of the cord confirmed an acute, suppurative meningomyelitis, with visible bacterial colonies. These findings were consistent with a bacterial infection of the spinal cord, occurring either from localised extension of infection from an adjacent vertebral body, or via the haematogenous route. Embolic spread of bacteria lodging in the vertebrae is the usual cause of spinal abscesses in lambs of this age, with infection typically originating from the umbilicus, tail or castration rings, ear tags or injection sites.



Compressive spinal cord lesions were identified in 3 separate submissions submitted to VIC Penrith. The first case involved a four-week-old Swaledale tup lamb which had initially presented with hindlimb weakness, which then progressed to bilateral hindlimb paresis. It was euthanased on welfare grounds. Postmortem examination identified skin lesions consistent with a previous tick infestation, numerous well-demarcated abscesses containing thick inspissated purulent material throughout the lung lobes, and a large golf-ball sized vertebral abscess originating from T9 and T10 and extending into the sub-pleural space. These findings were consistent with a diagnosis of tick pyaemia and subsequent vertebral empyema, with secondary compression of the spinal cord. A review of tick treatment and prevention protocols was recommended.

In the second case a two-day-old lamb became recumbent with an acute onset. It was euthanased and submitted to VIC Penrith. There were no significant findings on postmortem examination to explain the recumbency, so fixed brain and spinal cord were submitted for histopathological evaluation. This identified focal compression or narrowing of the spinal cord at the level of C6 with associated focal axonopathy and Wallerian-type degeneration. Unfortunately, the precise cause could not be elucidated, but differentials suggested included a prolapsed disc, vertebral fracture, or instability or congenital deformity of the spinal canal.

Hindlimb weakness progressing to hindlimb paresis was also reported in the third case, a four-month-old pedigree Suffolk tup lamb. Again, gross postmortem examination was unremarkable, with the diagnosis achieved using histopathology. This identified a marked, focally extensive compressive lesion affecting the T7 segment, which had decreased the diameter to one third of its original size, in comparison to the remaining thoracic spinal cord, with histopathological evidence of Wallerian degeneration. As discussed previously, compressive lesions are typically associated with spinal cord abscesses, however, none were seen grossly in this case. Other differentials include osseous compression of the spinal cord or protruding discs. Trauma was suggested as a possible aetiology.

## Animal Health and Welfare Pathway and the Worming Treatment Check

### Background

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, is now ready to be rolled out and is a funded annual visit from a vet or a vet lead 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 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.

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](mailto:Carmarthen@apha.gov.uk). Upon receipt of the request, APHA Carmarthen will provide 15 sample pots for the collection of 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 cross 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.

## Changes in disease patterns and risk factors

### Syndromic analysis

Syndromic alerts were raised this quarter for Great Britain for the following diseases.

#### Increases:

- Border disease (SRUC only)
- hyposelenaemia or hyposelenosis
- salmonellosis dt Salmonella not otherwise specified (NOS)
- neonatal hypothermia or starvation
- Clostridium perfringens B disease (SRUC only)

- Johne's disease
- parasitic gastroenteritis (PGE) – haemonchosis
- pneumonia dt *Mycoplasma ovipneumoniae*
- parasitic pneumonia
- nervous disease – diagnosis not listed (APHA only)
- fetopathy dt toxoplasma (abortion causes best analysed over whole of abortion season)

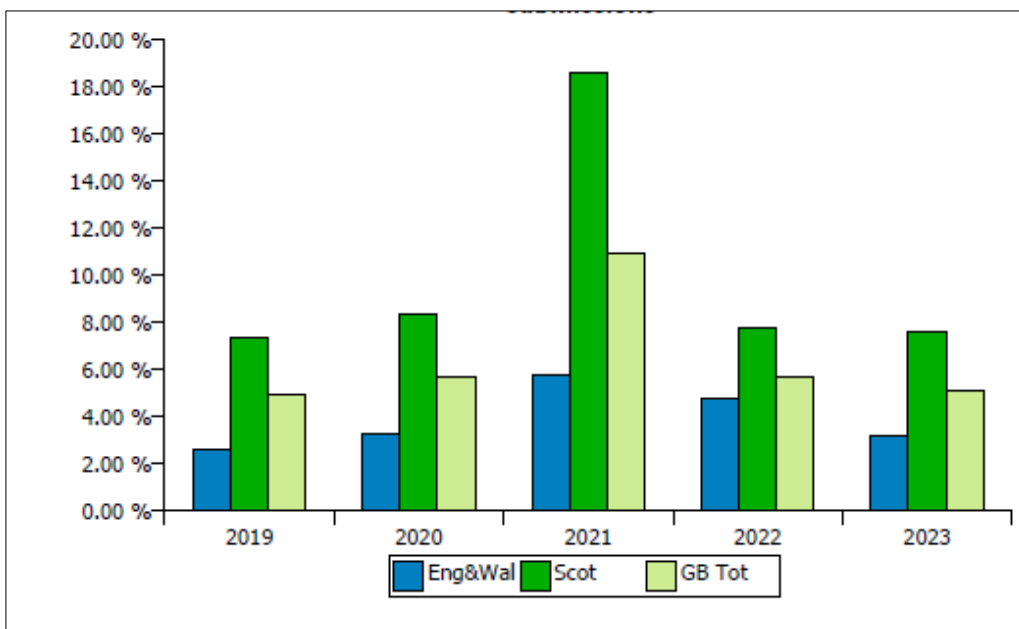
#### Decreases:

- PGE – nematodirosis
- chronic fasciolosis

## Parasitology

### Nematodirus

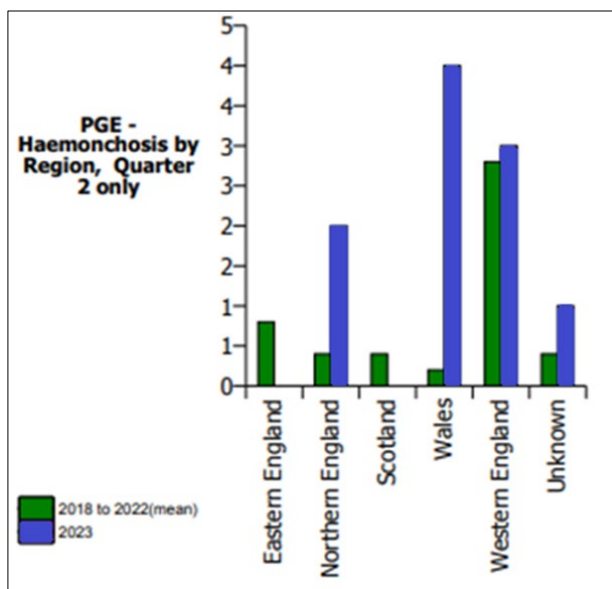
Diagnoses of PGE due to *Nematodirus* have reduced from a high in 2021 across Great Britain, with only 26 cases recorded in 2022 and 2023. Nematodirosis only made up 4% of diagnosable submissions in England compared to 9% in Scotland this quarter, as shown in figure 4. The reduction in cases has mainly been observed on lowland farms, with numbers remaining like previous years on hill and upland farms. The weather at the start of spring was unsettled and the lack of a consistent frost period followed by a period of warmth may have reduced the opportunity for a mass hatch to occur.



**Figure 4: Incidents of PGE Nematodirosis in sheep as percentage of diagnosable submissions**

## Haemonchosis

Haemonchosis has been diagnosed more frequently with 10 cases diagnosed across April, May and June. Only 25 cases were diagnosed in the same quarter over the previous five years combined. This increase has mainly been observed on lowland farms in Northern England and Wales, as shown in figure 5. Temperatures for both May and June were above average this year, likely improving the survival of *Haemonchus* on pastures.



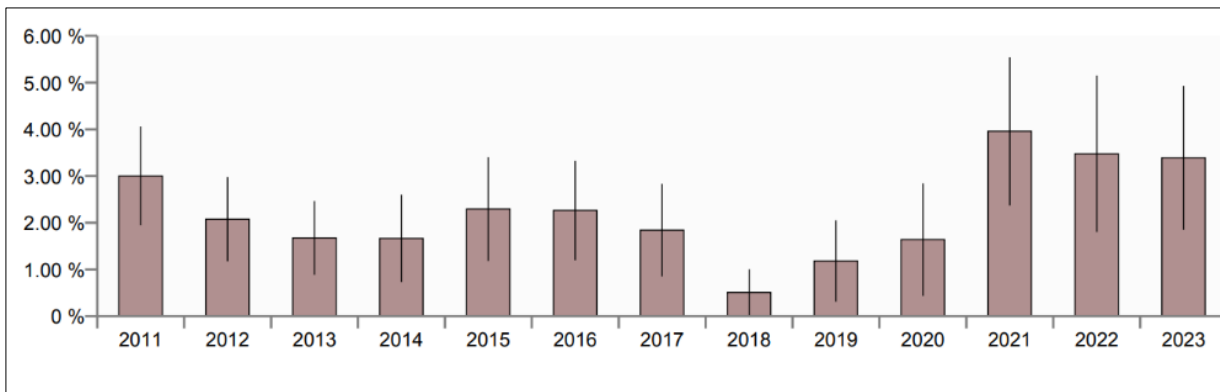
**Figure 5: Haemonchosis by region for quarter 2**

Although case numbers are relatively small, it is still early in the season for this parasite, which generally peaks in August and September. The APHA has been offering subsidised *Haemonchus* testing since July 2023.

## Systemic disease

### Border disease

The number of diagnoses of Border disease for this quarter showed a significant increase for SRUC figures only. The total Great Britain incidents, as a percentage of diagnosable submissions, have remained similar to the equivalent quarter for the previous 2 years (2021 and 2022), which were higher than the preceding 10 years, as shown in Figure 6. Of the 18 diagnoses of Border disease made during quarter two, the most frequently recorded presenting sign was abortion, in 7 (38.8%) cases.



**Figure 6: Great Britain incidents of Border disease for quarter 2 as percentage of diagnosable submissions**

### **Border disease “hairy shaker” lambs from a group of bought-in ewes**

“Hairy shakers” (or hairy or rough-coated lambs) were born in a group of 500 purchased yearling ewes in a flock of 3000 Mule-cross ewes. Of 250 yearlings that had lambed, 24 had affected lambs. PCR testing of spleens taken from 2 lambs confirmed the diagnosis of persistent border disease virus infection. Interestingly the flock had also experienced early-stage abortions, the small hairless fetuses presenting with varying degrees of mummification, but no infectious agent was detected despite Border disease virus testing of numerous fetuses. Border disease seropositivity was however confirmed in the affected group of ewes.

### **Hyposelenaemia or hyposelenosis**

There was an increase in the percentage of cases diagnosed with hyposelenaemia or hyposelenosis for this quarter. The change was significant for both APHA and SRUC figures. Hyposelenaemia or hyposelenosis during this quarter was most recorded in adults, with a range of other age groups being represented as shown in Figure 7. Figure 8 shows that the main presenting clinical sign was ‘wasting’ followed by ‘found dead’

Age category	Number of animals with hyposelenaemia or hyposelenosis
Adult	8
Postwean	2
Prewean	2
Unknown or other	2

**Figure 7: Age category of Great Britain cases diagnosed with hyposelenaemia or hyposelenosis during quarter 2, 2023**

Clinical sign	Number of animals with hyposelenaemia or hyposelenosis
Wasting	9
Found dead	3
Malaise	1
Others	1

**Figure 8: Primary clinical sign recorded for diagnoses of hyposelenaemia / hyposelenosis in Great Britain during quarter 2, 2023**

## Cases of navel ill and joint ill with a concurrent selenium deficiency

Shrewsbury VIC investigated a significant problem with joint-ill in lambs at 1 to 2 weeks of age, with 30 to 50 lambs affected, in a large outdoor lambing flock with 1000 ewes. In 15 lambs, this was severe enough to warrant euthanasia. Problems had started about a fortnight into lambing. A polyarthritis was confirmed postmortem, with *Streptococcus dysgalactiae dysgalactiae* isolated and a concurrent selenium deficiency diagnosed.



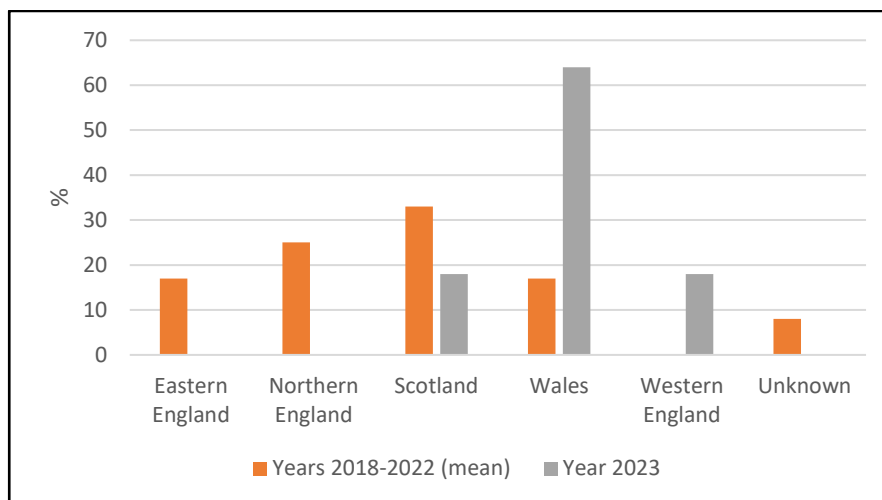
**Figure 9: Joint-ill due to *Streptococcus dysgalactiae dysgalactiae* in a lamb**

Also submitted to Shrewsbury VIC was a dead 15-day-old EasyCare lamb to investigate the cause of lamb losses within a flock of 1000 outdoor lambing ewes, with approximately 1500 lambs. Twenty to 30 ewes had had lamb losses at varying stages, from the first 12 hours post-lambing to 17 days of age. Several lambs examined postmortem on farm had large quantities of fluid in the body cavities, and firm red lungs were found in a few others. Gross examination of a partially examined lamb revealed abscessed umbilical remnants with the small intestine adhered to the peritoneal surface of the abscess. Bacterial cultures isolated mixed *Trueperella pyogenes* and *Mannheimia glucosida* from the umbilical abscess. A peritonitis and bacteraemia/endotoxaemia secondary to the abscess was therefore the likely cause of death. Other potential predisposing factors in this case included selenium deficiency; the lamb had a liver selenium of 0.75 mg per kg DM (reference interval 0.9 to 3.5 mg per kg DM), and there were notably reduced quantities of ingesta/contents throughout the gastrointestinal tract of the lamb, possibly indicating that poor milk supply could also have been a factor.

## Neonatal hypothermia or starvation

The number of diagnoses of neonatal hypothermia or starvation for this quarter showed a significant increase, with 12 submissions with this diagnosis compared to 3 for the equivalent quarter the previous year. Figure 10 shows the majority (64%) of diagnoses for this quarter were made in Wales and the rest in Scotland and Western England. This differs from the regional distribution for the equivalent quarter over the previous five years

when the majority of cases were in Scotland, followed by Northern England and then Eastern England and Wales.



**Figure 10: Percentage of diagnoses of neonatal hypothermia or starvation by region, Q2 2023 compared to the average percentage over the same quarter for previous 5 years**

Two neonatal lamb carcasses were submitted from an outdoor-lambing Greyface Dartmoor flock. Ewes received no supplementary forage or concentrate and had been given a pre-lambing clostridial vaccine booster. Two sets of twins and 2 single lambs had died unexpectedly overnight, within 24 hours of birth. Hypothermia was suspected due to the absence of milk in the abomasum of both lambs, and this was supported by a ZST of 3 units in both, indicating absolute failure of colostrum absorption. No neonatal enteric pathogens were detected. Advice was given to monitor ewe and lamb management more closely during inclement weather.

### Salmonellosis not otherwise specified (NOS)

Continuing the trend from Q1, diagnoses of Salmonellosis NOS were also increased this quarter, with 13 (2.23%) incidents reported in 2023 compared to 5 (0.97%) in 2022. Increased case numbers were seen by both APHA and SRUC. The most reported serovar was *Salmonella enterica* subspecies *diarizonae* 61:k:1,5,(7) typically being detected in association with other enteric conditions, such as parasitic gastroenteritis or intestinal torsion.

## Circulatory disease

### Aortic aneurism in one ewe lamb, and tickborne fever, PGE and pneumonia in a group of extensively managed ewe lambs

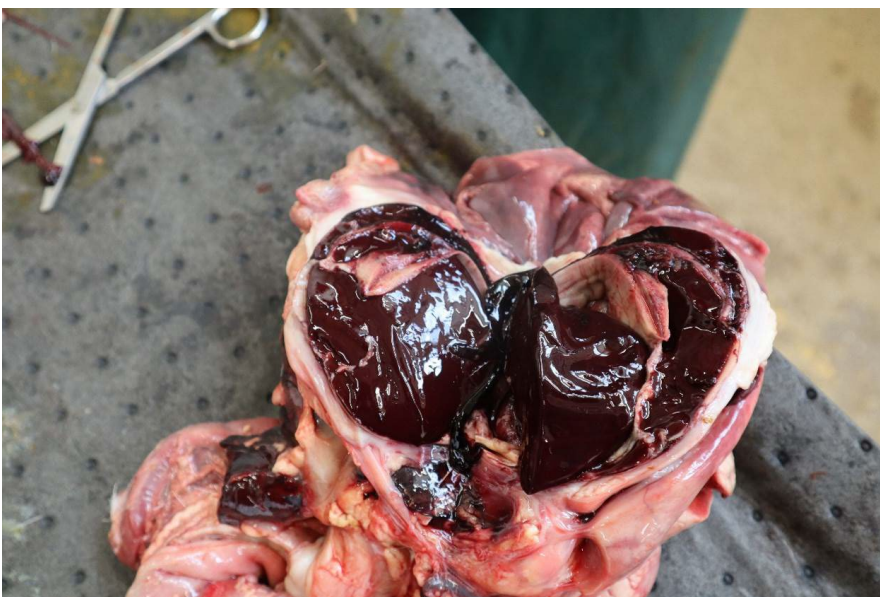
Two ewe lambs were submitted to Carmarthen VIC for postmortem examination to investigate loss of body condition, coughing, anaemia and inappetence following turn out



to hill land. Ticks were found attached to one of the submitted lambs. Ticks recovered from the body are shown in figure 11. Both lambs had high worm egg counts confirming parasitic gastroenteritis (PGE) and were also positive for *Anaplasma phagocytophilum* by PCR (the cause of tickborne fever). A pneumonia caused by combined *Mannheimia haemolytica*, *Mycoplasma ovipneumoniae* and *Dictyocaulus filaria* lungworm infection was confirmed in one lamb. The second lamb unusually had an aneurismal dilation of the wall of the thoracic aorta (as shown in figure 12), which had progressed to rupture causing death of this lamb. Aneurisms are only recognised sporadically in livestock and are an unusual finding in a sheep.



**Figure 11: Several *Ixodes ricinus* ticks that were recovered from a lamb that had tickborne fever, PGE and pneumonia**



**Figure 12: A dilated and ruptured part of the aorta, with an associated blood clot, in a yearling ewe that suffered an aortic aneurism**

## Skin disease

### Severe Orf in a Wensleydale shearling ewe, in a flock with selenium and cobalt deficiency

A 12-month-old Wensleydale shearling ewe was submitted for examination and testing to investigate the cause of severe, persisting, proliferative, and crusty skin lesions. The lesions had started on the ears and face and had then spread to form focal nodular lesions on the legs (shown in figure 13), with the lesions persisting for a five-month period.

The farm, with 60 ewes consisting of several pure-bred types, has had a previous similar case in a shearling. Electron microscopy confirmed the lesions were due to Parapoxvirus or “Orf”, and histopathology did not identify lesions in the affected tissues apart from those induced by the Parapoxvirus.

In the majority of orf cases the lesions are expected to resolve within 4 to six weeks, with up to 2 months duration occurring in a lower number of typical cases. Lesion persistence for five months is unusual. An underlying immunosuppressant was discussed, and subsequent blood testing identified very low selenium and low cobalt levels in the yearling group specifically; interestingly this group had been grazed on separate ground away from the main flock.

Other immunosuppressants that can be considered with these unusually severe persisting orf lesion cases include persistent Border Disease infection, and a suspected genetic susceptibility seems to occur in some individual sheep.

Parapoxvirus can also opportunistically infect already damaged skin as a secondary though significant invader, and in such cases the orf lesions can also be severe and long lasting.

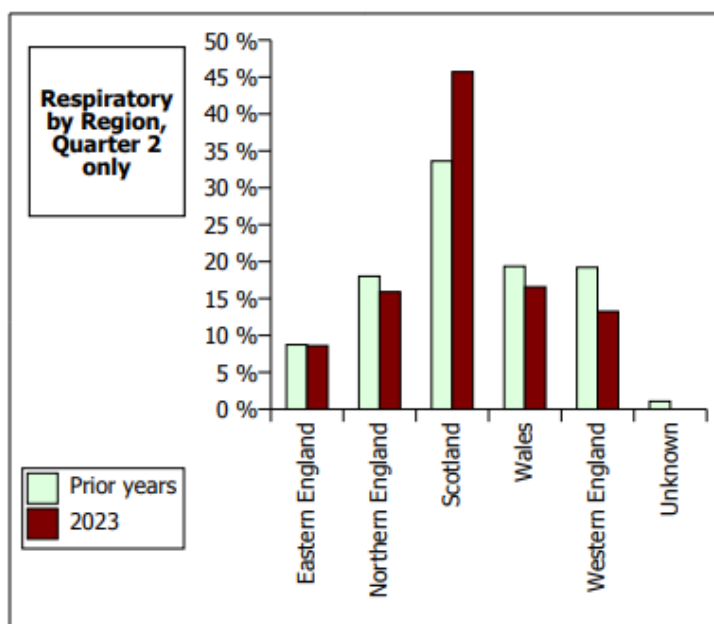


**Figure 13: Large proliferative Orf lesion on the distal limb of a Wensleydale shearling ewe**

## Respiratory disease

### Increase in respiratory disease cases

There was an increase in respiratory disease cases recorded in lowland post-weaned lambs and in ewes in Scotland, when compared to previous years for this quarter. The previous five-year average in quarter 2 was 50 cases per year, which had increased to 69 during this quarter. In comparison the number of cases in Wales and England showed a slight reduction as shown in figure 14.



**Figure 14: Respiratory disease by region for quarter two**

This increase in diagnoses in Scotland was mainly due to a rise in the number of *Mannheimia haemolytica* pneumonia with 23 cases, equating to 10.95% of diagnosable submissions, and Pneumonia NOS (not otherwise specified) with 21 cases, equating to 10.05% of diagnosable submissions (usual NOS range 5-17 recorded cases).

### Parasitic pneumonia

A relative increase in parasitic pneumonia diagnoses was recorded this quarter in England (8 cases) and Scotland (2 cases). Cases were identified in lowland and hill adult sheep, and unusual for this quarter also in post weaned lambs. Case numbers however are typically small for quarter 2, with a 5 year mean of 5.8 having increased to only 10 diagnoses for this quarter. A carry-over of infection in adult sheep from the 2022 late grazing season is a potential cause of this increase, with high late season lungworm challenge, and reduced immunity in nutritionally challenged adult sheep; both factors likely contributing to infection at that time.

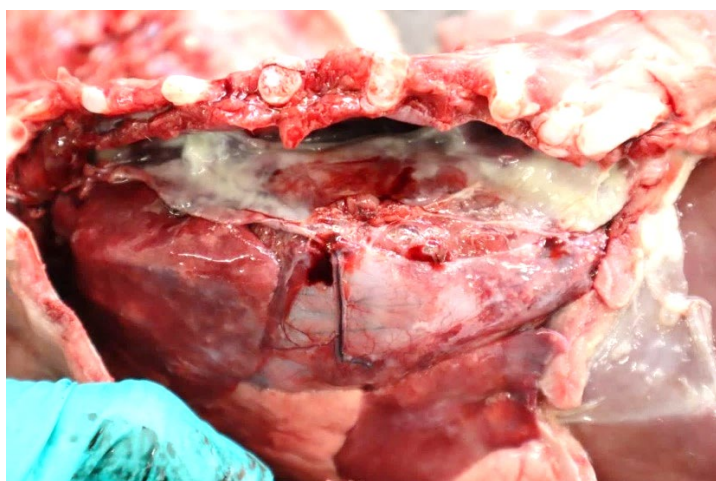


## **Mycoplasma ovipneumoniae pneumonia**

*Mycoplasma ovipneumoniae* pneumonia diagnoses were increased this quarter, with 20 cases, where the mean over the previous 5 years was 15.8 cases. The increase in diagnoses was particularly in pre-weaned lambs in Wales, although Northern England and Western England also recorded marginal increases.

*Mycoplasma ovipneumoniae* is relatively uncommon in young preweaned lambs, however, this quarter was notable for cases occurring in unusually young lambs of between 2 and 6 weeks of age, some already having developed chronic lung lesions. Although it is often difficult to establish all the likely factors involved in young lamb *Mycoplasma ovipneumoniae* infections, it is presumed factors such as poor colostrum intake, over-crowded sheds at lambing time, high challenge from ewes with established lung lesions, prolonged housing periods, poor milk supply and concurrent disease challenge of the lambs (such as endoparasitism) can increase the risk of disease in affected flocks.

Three cases in pre-weaned lambs were submitted to Carmarthen VIC. In the first case 3 out of 40, four-week-old Texel lambs had died. Pneumonia and pleuritis caused by *Mycoplasma ovipneumoniae* and *Mannheimia haemolytica* infection, with confirmed concurrent coccidiosis, were diagnosed.



**Fig 15: Pleuritis in a four-week-old lamb with *Mycoplasma ovipneumoniae* and *Mannheimia haemolytica* infection**

In the second case, *Mycoplasma ovipneumoniae* and *Mannheimia haemolytica* pneumonia were diagnosed in a 6-week-old lamb, with evidence of a prior chronic endoparasitism, in a flock with diarrhoea and multiple deaths in the pre-weaned lambs. The third case was *Mycoplasma ovipneumoniae* pneumonia in a 6-week-old lamb, with suspected prior endoparasitic challenge, one of four 6-week-old lambs to die in the flock.

Fresh and fixed lung tissue were received at Starcross VIC to investigate an outbreak of respiratory disease in a group of 30 housed, bucket reared lambs, where 10 had died. Post mortem examination on farm had identified bilateral dark red consolidation of the

cranial lung lobes. *Mannheimia haemolytica* and *Mycoplasma ovipneumoniae* were both confirmed.

Three, four-week-old lambs at grass had shown excess salivation and died following a brief period of malaise. Postmortem examination of a lamb submitted to Starcross VIC found multiple attached ticks on the wool-less areas of skin and widespread consolidation and abscessation of both lungs. *Mannheimia haemolytica* was also isolated on culture of lung and brain, confirming septicaemic spread. *Mycoplasma ovipneumoniae* was detected from lung tissue. PCR testing proved positive for *Anaplasma phagocytophilum*, indicating underlying immunosuppression because of tickborne fever infection was a contributing factor to the disease issues in these lambs.

## Pasteurellosis or Mannheimiosis

*Mannheimia haemolytica* was isolated in purity from multiple organ sites in a two-week-old lamb submitted to Starcross VIC, which presented with malaise and hind quarter paresis, one of five lambs affected. Gross findings included a peritonitis, fibrinous fluid in the alanto-occipital joint and fibrinous pericarditis. Infection within the atlanto-occipital joint was likely to have induced the paresis as a result of localised spinal cord inflammation. The coccidial oocyst count was markedly elevated (2470000 oocysts per gram), with speciation revealing 90% of the burden as a highly pathogenic species. Concurrent coccidiosis therefore had likely increased the risk of a Mannheimia septicaemia in this lamb.

## Enteric disease

### Lamb dysentery

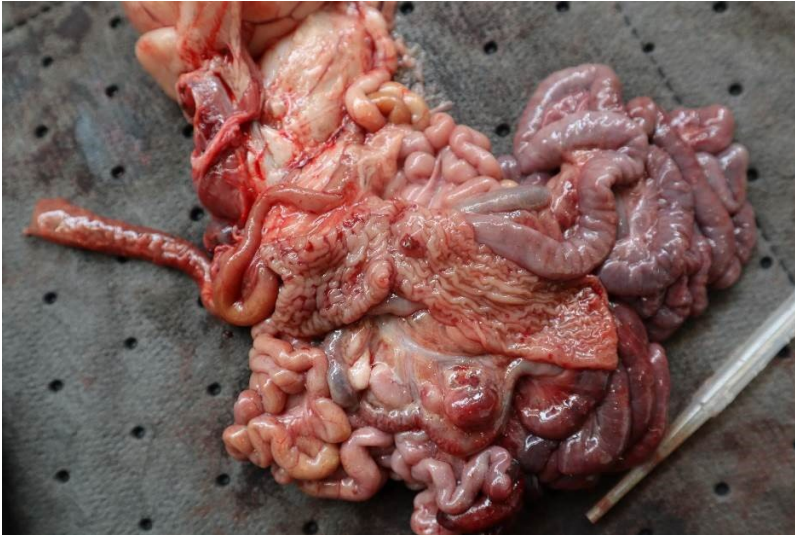
Cases of lamb dysentery have increased in Scotland making up 8% of diagnosable submissions compared to an average of 5% over the previous five years, although a significant increase was also seen in 2022. This increase has occurred predominantly on lowland farms in the neonatal and pre-weaned age group. Clostridial vaccines have anecdotally been difficult to procure and may have impacted on the annual boosters ewes receive pre-lambing, leaving more lambs susceptible to disease.

Carmarthen VIC investigated high mortality in lambs under 7 days old. Thirty lambs out of a group born to 270 ewes had died after a short period of diarrhoea. The deaths occurred over a month. At postmortem examination:

- the distal small intestine was found to be dark red, thickened and contained haemorrhagic liquid content
- the jejunal mucosa was yellow, roughened and necrotic
- the large intestine was thickened, with patchy reddening and contained dark brown watery content that was semi-formed in the rectum

- there were multiple small (approximately 1mm to 4mm diameter) circular reddened areas throughout the large intestinal mucosa and at the ileocaecal junction

The lesions described are shown in figures 16 and 17. Postmortem lesions were typical of an enterotoxaemia due to *Clostridium perfringens* type B (lamb dysentery) and this diagnosis was confirmed on detection of beta and epsilon toxin in the intestinal contents. Gammaglobulin testing indicated that the lamb had received sufficient colostrum shortly after birth. It was reported in the history that the ewes were unvaccinated.



**Figure 16: Inflamed small intestine, with small areas of mucosal ulceration in the large intestine of a lamb that died from lamb dysentery**

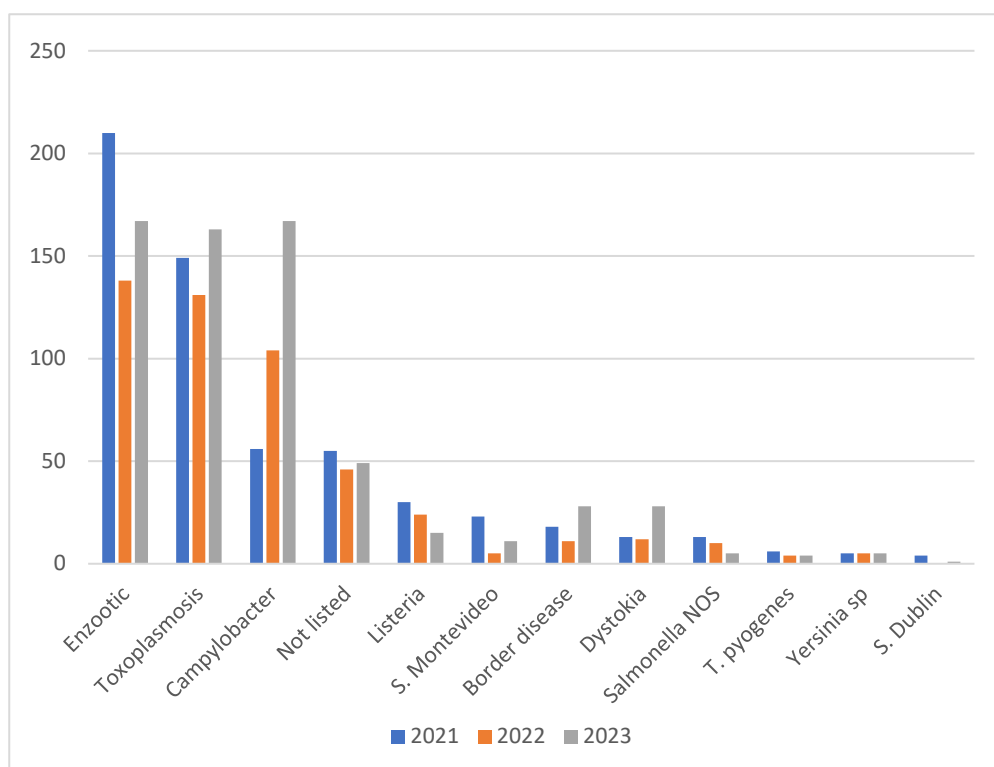


**Figure 17: Diffuse necrosis of small intestinal mucosa in a lamb that died from lamb dysentery**

## Reproductive disease

### Fetopathy analysis for the 2023 lambing season

There were 600 diagnoses reached for sheep in Great Britain, during the lambing period January 2023 to June 2023. The most common diagnoses, in comparison to the same periods for the 2 previous years, are shown in Figure 18. This shows that fetopathy due to *Campylobacter* was the most common diagnoses for the past lambing season. This a change from previous years where enzootic abortion in ewes (EAE) was the most common diagnoses, followed by *Toxoplasma* and then *Campylobacter*. One possible reason may be an increase in the trend to feed root crops to ewes during pregnancy.



**Figure 18: Common diagnoses for sheep abortion Jan-Jun 2021-2023**

Border disease also include other non-fetopathy presentations such as “Hairy shaker lambs”.

## Urinary disease

No significant trends were identified this quarter.

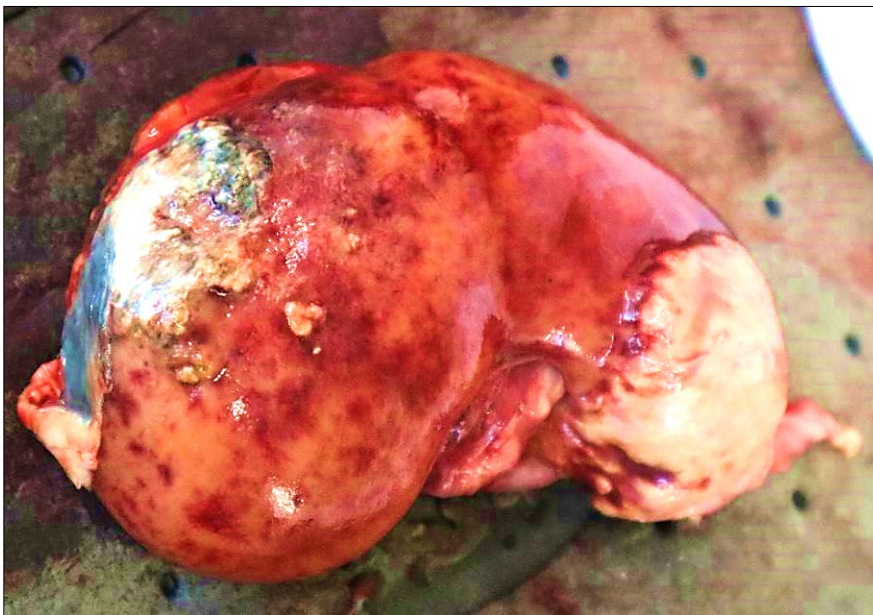


## Suppurative glomerulonephritis in a 2-year-old Suffolk ewe

A 2-year-old Suffolk ewe, that had lambed one month previously, had been lethargic for 2 weeks before dying. It had been treated with penicillin and streptomycin one week previously. No other animals in the group of 10 were affected.

Significant PME findings:

- the rumen had a poor fill
- the gastrointestinal contents smelled strongly of ammonia
- the right kidney was enlarged, and the capsule was firmly adhered at both poles
- there was a pale mass on the cranial pole of the right kidney approximately 40 mm in diameter and 2 mm proud of the kidney surface and extending into the cortex as shown in figure 19
- there was a similar lesion on the caudal pole with caseous content and coalescing haemorrhages on the surface
- the renal pelvis contained yellow mucoid material and firm caseous material
- the left kidney showed coalescing haemorrhages on surface and subcapsular caseous material



**Figure 19: Markedly enlarged and deformed kidney of 2-year-old ewe with suppurative glomerulonephritis**

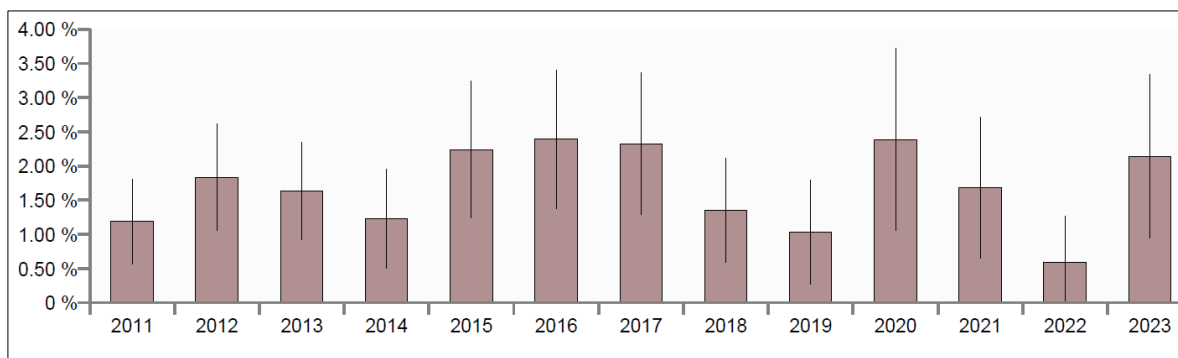
Histopathology confirmed a severe, chronic-active suppurative glomerulonephritis. The pattern of distribution, the areas of infarction, and presence of vascular injury were suggestive of a haematogenous insult rather than an ascending bacterial infection. Differentials would include *Corynebacterium pseudotuberculosis*, *E. coli*, *Staphylococcus* sp., *T. pyogenes*, etc. Bacteriology was unrewarding, possibly due to prior antibiotic treatment. There were also oxalate crystals within tubules suggesting the consumption of oxalate containing plants, and these may have exacerbated the renal pathology. Aqueous

humour urea and creatinine were both high and this would have contributed the clinical signs described.

## Musculoskeletal disease

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

Diagnoses of arthritis due to *Streptococcus dysgalactiae* subsp. *dysgalactiae* were increased this quarter with 12 (2.14%) incidents recorded compared to 3 (0.59%) in 2022 as shown in figure 20. This was due to an increase in cases reported by APHA. No significant changes were seen by SRUC. Quarter 2 often sees the peak in diagnoses of arthritis due to *Streptococcus dysgalactiae* subsp. *Dysgalactiae*, as the environmental burden of the organism increases as lambing comes to an end. This may have also been compounded by the poor spring weather in England and Wales which delayed the turnout of ewes and lambs this year.

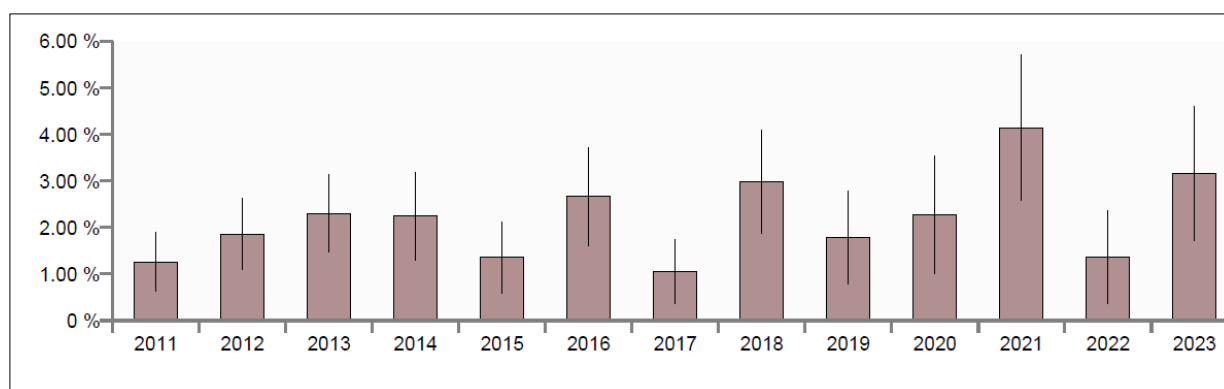


**Figure 20: Great Britain incidents of arthritis due *Streptococcus dysgalactiae* subsp. *dysgalactiae* as percentage of diagnosable submissions**

## Nervous disease

### Listerial encephalitis

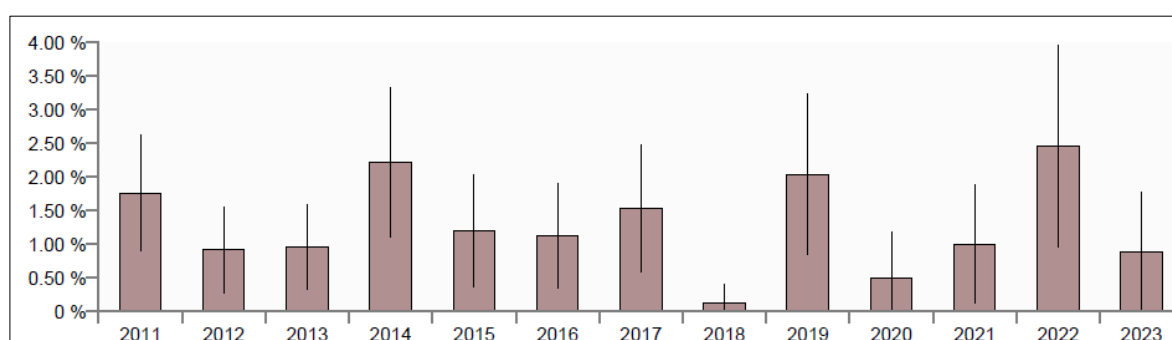
Increased diagnoses of Listerial encephalitis were recorded this quarter as shown in figure 21; 18 cases (3.16%) were reported in 2023 compared to 7 cases (1.36%) in 2022. Increases were seen by both APHA and SRUC. The slow start to Spring, with large rainfall amounts and chilly temperatures, is likely to have led to prolonged feeding of adult animals, and potentially with poorer quality forage. Furthermore, the risk of soil ingestion would have been increased due to the subsequent poor spring grass growth and if supplementary concentrate was being fed directly from pasture.



**Figure 21: Great Britain incidents of listerial encephalitis as percentage of diagnosable submissions**

## Louping ill

Compared to 2022, diagnoses of Louping ill are considerably decreased this quarter as shown in figure 22. Only 4 cases (0.89%) were reported in 2023 compared to 10 cases (2.46%) in 2022. Decreases were seen by both APHA and SRUC.



**Figure 22: Great Britain incidents of louping ill as percentage of diagnosable submissions**

There have been significant fluctuations in the number of Louping ill diagnoses over the last few years, with the second quarter of 2023 following the more usual trend of less cases. Interestingly, this rise and fall of cases is similar to the pattern over the 2019 to 2020 season where there was a large rise in cases in 2019 followed by a significant decrease in cases during 2020. As in 2020, the decrease in case numbers this year does not appear to be associated with reduced tick activity, as tickborne fever (TBF) cases have been diagnosed throughout this quarter. This would again suggest that there is currently a level of Great Britain flock immunity due to the high levels of tick activity and exposure of sheep to Louping ill virus during 2022.

## Poisoning

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

# 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

Low risk – no change and nothing new to report this quarter.

## Publications

### APHA Staff

CARSON A; REICHEL R; BELL S; COLLINS R; SMITH J; Bartley D (2023) *Haemonchus contortus*: an overview. *Veterinary Record* 192 (1) 26-28. <https://doi.org/10.1002/vetr.2613>

### Other publications of interest

Bovingdon M (2023)

**Sheep farmers challenge e-shock dog collar ban in England.**

*Farmers Weekly* 3<sup>rd</sup> May 2023

<https://www.fwi.co.uk/livestock/sheep/sheep-farmers-challenge-e-shock-dog-collar-ban-in-england>

Hargreaves-Méndez MJ; Hötzel MJ (2023)

**A systematic review on whether regenerative agriculture improves animal welfare: A qualitative analysis with a One Welfare perspective.**

*Animal Welfare* 32

<https://doi.org/10.1017/awf.2023.28>

Schrott J; Sodoma E; Dünser M; Tichy A; Khol JL (2023)

**Mycobacterium avium subsp. paratuberculosis in Sheep and Goats in Austria: Seroprevalence, Risk Factors and Detection from Boot Swab Samples.**

*Animals* 13 (9)

<https://doi.org/10.3390/ani13091517>

**Effectiveness of Probiotic and Combinations of Probiotic with Prebiotics and Probiotic with Rumenotronics in Experimentally Induced Ruminal Acidosis Sheep**

[Combinations of probiotics in ruminal acidosis sheep | VMRR \(dovepress.com\)](https://doi.org/10.3390/ani13091517)

**Susceptibility of sheep to experimental co-infection with the ancestral lineage of SARS-CoV-2 and its alpha variant**

[Susceptibility of sheep to experimental co-infection with the ancestral lineage of SARS-CoV-2 and its alpha variant - PubMed \(nih.gov\)](https://doi.org/10.3390/ani13091517)

**Postpartum clostridial gangrenous metritis in 12 dairy goats in France**

<https://doi.org/10.1177/10406387231161508>



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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](mailto:SIU@apha.gov.uk)  
<http://apha.defra.gov.uk/vet-gateway/surveillance/index.htm>

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