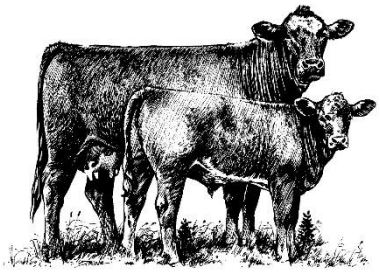
Animal & Plant Health Agency



SRUC

# GB cattle quarterly report

# Disease surveillance and emerging threats

# Volume 27: Quarter 4 (October to December) 2023

## Highlights

- **Bluetongue virus update – page 3**
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# Introduction and overview

This quarterly report reviews disease trends and disease threats for the fourth quarter of 2023 (Quarter 4), October to December. It contains analyses carried out on disease data gathered from APHA, SRUC Veterinary Services division of Scotland's Rural College (SRUC) and partner postmortem providers; and intelligence gathered through the Cattle Expert Group networks. In addition, links to other sources of information, including reports from other parts of the APHA and Defra agencies, are included. A full explanation of how data is analysed is provided in the annexe available on GOV.UK https://www.gov.uk/government/publications/information-on-data-analysis

## Dairy update

- **Prices:** UK farmgate milk prices averaged 37.83ppl in December, which was 1.41ppl (3.9%) from where they ended the last quarter in September. Prices inched up over the last quarter, although are still a way down from the highs of late 2022. Positively, input costs continue to move downwards, but are still ahead of where they were prior to inflation rocketing.
- **Production:** UK milk production lifted in December, down only 0.4% on the same month of the previous year. However, up until December, Q4 deliveries had been declining quite sharply. We estimate that 3,572 million litres of milk were produced in the 3 months Oct – Dec, bringing the total volume for the year to an estimated 14.86 billion litres, 0.4% above 2022.
- **Trade:** Year-to-date (Jan-Nov 2023) volumes of dairy exports from the UK totalled 1.13 million tonnes, a 1.2% increase compared to the same period in the previous year. These exports totalled £1.7 billion. Import volumes have been lower year on year at 1.07 million tonnes.
- **Demand:** During the 52 weeks ending 30 December 2023 volumes of cow's dairy declined 1.6% year-on-year but spend increased by 11.4% as inflation causes rises in average prices paid by 13.2%. While the year saw volume decreases, latest data for the Christmas 2023 indicated that cow's dairy performed well with the majority of categories in volume growth on Christmas 2022. (Copyright © 2023 Nielsen Consumer LLC. All Rights Reserved.)

## Beef update

- **Prices:** Following a small dip of 2.6p towards the middle of Q4 the GB deadweight cattle price strengthened week on week. The quarter ended at a strong price, with the all-prime average price sitting at 489p/kg for the w/e 30 December. Cull cow prices began Q4 at an overall price of 328.7p/kg for the week ending 7 October. From there they fell throughout the first two months of the quarter, before seeing some fluctuations during December rising to a final price of 307.8p/kg.
- **Production:** For the first 2 months of Q4, beef production volumes rose to the highest seen so far in 2023 (a seasonal uplift due to Christmas demand) but remained lower year on year. Volumes then fell in December bringing total UK beef production for 2023 to 901,000 tonnes, a 2.5% decline from 2022. This was driven

by a combination of lower prime slaughter numbers at 2.04 million head, down 1.3% year on year and lower carcase weights which averaged 342kg, the lowest weight since 2018.

- **Trade:** Beef exports grew in October and November, due to increased European demand, although volumes remain below those seen a year ago. For the year to date (Jan - Nov), the UK has exported 123,000 tonnes of beef, a 15.2% decline from 2022. UK imports of beef also saw growth in October and November with shipments from Ireland increasing, likely supported by a widening gap between GB and Irish cattle price. For the year to date (Jan – Nov), the UK has imported a total of 267,000 tonnes of beef, a decline of 2.9% year on year.
- **Demand:** In the 12 weeks ending the 24 December 2023, spend on beef in retail increased by 6.9% year-on-year (YOY), while volumes fell by 0.3%. Average prices paid increased by 7.2% across all beef products, as inflation continues to influence food costs. In terms of the Christmas period, total roasting performed positively with volumes up 7.1%. Volumes of primary beef fell by 1.6% YOY, with a reduction in purchases of mince and stewing cuts. Processed beef including burgers + grills and sliced cooked meats saw an increase of 2.9% YOY.

*Acknowledgment for the dairy and beef updates: Freya Shuttleworth, AHDB*

## Cattle disease surveillance dashboard outputs

The most frequent diagnoses from carcase 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. These can be interrogated further using the interactive cattle disease surveillance dashboard which was launched in October 2017.

**Table 1: Great Britain scanning surveillance 10 most frequent carcase submission diagnoses in Q4 of2023, Q4 of 2022, and Q4 for 2015-2023**

| 10 most frequent carcase diagnoses Q4 2023 | 10 most frequent carcase diagnoses Q4 2022 | 10 most frequent carcase diagnoses Q4 2015-2023 |
|---|---|---|
| **1. Pneumonia due to *Pasteurella multocida*** | 1. Pneumonia due to *Mycoplasma bovis* | 1. Pneumonia due to *Mycoplasma bovis* |
| **2. Pneumonia due to *Mycoplasma bovis*** | 2. Pneumonia due to *Mannheimia haemolytica* | 2. Pneumonia due to *Pasteurella multocida* |
| **3. Pneumonia due to *Haemophilus somni*** | 3. Pneumonia due to *Pasteurella multocida* | 3 Pneumonia due to *Mannheimia haemolytica* |
| **4. Pneumonia due to *Mannheimia haemolytica*** | 4. Cryptosporidiosis | 4. Respiratory – other cause (not listed) |

| | | |
|---|---|---|
| **5. Respiratory – other cause (not listed)*** | 5. Salmonellosis due to S. Dublin | 5. Cryptosporidiosis |
| **6. Parasitic gastroenteritis** | 6. Pneumonia due to BRSV | 6. Pneumonia due to *Haemophilus somni* |
| **7. Salmonellosis due to S. Dublin** | 7. Respiratory – other cause (not listed) | 7. Digestive disease due to other causes (not listed) |
| **8 Cryptosporidiosis** | 8. Systemic disease due to other causes (not listed) | 8. . Salmonellosis due to S. Dublin |
| **9. Parasitic pneumonia (lungworm)** | 9. Parasitic gastroenteritis | 9. Pneumonia due to BRSV |
| **10. Pneumonia due to BRSV** | 10. Digestive disease due to other causes (not listed) | 10. Rotaviral enteritis |

This quarter, the other causes of respiratory disease (*) included sporadic lymphoma, necrotic laryngitis, pneumonia with *Mycoplasma dispar* involved, and pneumonia with *Aspergillus fumigatus* and *Bacillus licheniformis* isolated from the lung.

If the data for Q4 2023 includes all submission types (not just carcase submissions), then the top five diagnoses for Q4 2023 were (from 1 to 5): Johne's Disease, pneumonia due to *Pasteurella multocida*, pneumonia due *Mycoplasma bovis*, salmonellosis due to S. Dublin, and pneumonia due to *Histophilus somni*.

# New and re-emerging diseases and threats

## Bluetongue serotype 3 (BTV-3) update

Between the first confirmed outbreak of BTV-3 in the Netherlands on 5th September 2023, and 22nd January 2024, there were 1,573 premises with clinically positive cases, and 4,300 premises with PCR positive 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 BTV-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 Bluetongue Virus - Ruminant Health & Welfare (ruminanthw.org.uk), and Bluetongue: how to spot and report it - GOV.UK (www.gov.uk).

## Schmallenberg disease

Following acute infection (that is mostly subclinical in sheep) during the autumn of 2023, Schmallenberg virus (SBV) 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. It is expected that cases of SBV related congenital deformity will be seen in cattle during Q1 and Q2 2024.

## The potential for 'later than normal' liver fluke challenge

The strange weather patterns of 2023 have had a significant impact on the level and timing of the risk of liver fluke disease across the UK, said experts within the Sustainable Control of Parasites in Sheep (SCOPS) and Control of Cattle Parasites Sustainable (COWS) groups. As predicted, the dry cold spring, hot early summer and extremely wet July and August, followed by a mini heatwave in early September and heavy rain throughout the autumn and early winter, have all contributed to the disease picture. Experts say this has pushed the fluke risk much later, with the first significant reports of losses due to liver fluke not shared until late November 2023.

Speaking on behalf of the two groups, Rudolf Reichel of the Animal and Plant Health Agency (APHA) said: "There was little evidence of liver fluke activity in the autumn, but towards the end of the year we started to get reports from abattoirs and private postmortem providers of acute fluke cases. This was mirrored by other laboratories across the country and, while overall numbers of cases are not high, this does represent a significant increase in recent weeks." This was echoed by Dr John Graham-Brown, University of Liverpool, and National Animal Disease Information Service (NADIS) contributor. He said: "The NADIS liver fluke forecast mostly predicted low to medium risk in the normal development period, but the delayed threat this autumn means we are concerned some livestock farmers may get caught out, either because they treated too early or have had negative test results earlier in the autumn and think they are safe."

Dr Philip Skuce from the Moredun Research Institute also feared that some farmers may have had a false sense of security. He urged them to continue with testing in early 2024. He says: "Flukicides do not have any residual activity, which means there is no protection for treated livestock if they meet a challenge from fluke later in the season. The risks are so farm-specific this year that the only way to avoid potential losses is to keep testing." Rebecca Mearns of the Sheep Veterinary Society (SVS) and Biobest Laboratories said: "We have seen a steady increase in the number of people using the Elisa blood test this year". Until quite recently, most samples were negative. But in common with postmortem

data and increases in liver condemnations in November and December, we are seeing more positive samples coming through. Do not rely on an early negative test. If you keep livestock, you need to keep testing throughout the season."

Diana Williams of the University of Liverpool said: "At this stage of the year (January/February), when we would expect adult flukes to be present in the livers of infected livestock, we can also use faecal testing methods. Dung samples can be tested for an antigen produced by the liver fluke (coproantigen) and of course the detection of fluke eggs is also a valuable tool. Ask your vet or adviser which test is most appropriate for your farm and never rely on a single negative test, particularly if you have had problems in the past. "Professor Williams explained: "The only test that can be used with pooled samples is the faecal egg count. This is because the sensitivity of a pooled test is much lower and may give a negative result even though one or more animals are positive. For faecal egg counts the whole pooled sample is processed, so the sensitivity remains comparable with testing individual samples. For blood tests and copro-antigen tests, individual samples should be tested."

Faecal egg counts are also likely to pick up infections with rumen fluke. Normally this is nothing to worry about and animals should not be routinely treated for adult rumen fluke. If animals are looking poor, losing weight, or are dehydrated; speak to your vet about risks from immature rumen fluke (these will not be detected using a faecal egg count). There is more on rumen fluke on the SCOPS and COWS websites at www.scops.org.uk/internal-parasites/liver-fluke/rumen-fluke and www.cattleparasites.org.uk/app/uploads/2023/09/liver-fluke-310823.pdf respectively.

## A case of Black Disease following liver fluke infection

Infectious necrotic hepatitis, known as Black Disease (BD), was the cause of death in an adult dairy cow that displayed acute malaise prior to death. This was the third recent death in the herd of 600. Widespread jaundice was observed grossly, and the liver was friable and orange except for a well-demarcated but irregular 20cm diameter area of black discolouration which extended deep into the parenchyma (Figure 1). The diagnosis was confirmed by FAT testing performed on liver, which was positive for *Clostridium noyvi*. Liver fluke infection predisposes to BD and in this case the bile ducts were thickened and multiple adult fluke were observed. Additionally, the spleen was markedly enlarged, and PCR testing was positive for both *Babesia divergens* (the causal agent of bovine babesiosis) and *Anaplasma phagocytophilum* (the causal agent of tickborne fever). Tick-borne disease coinfection may have contributed to an immunosuppressive state and the malaise seen clinically. Mortality within the herd can be high in cases of BD, and clostridial vaccination of the group was recommended.

There have been 37 diagnoses of *Clostridium Novyi* infection (this count includes both cases of BD and Bacillary Haemaglobinuria, but predominantly BD) in cattle recorded across the surveillance network in the last five years. The majority of cases (n=21, 57%) were adult cattle, with 12 (32%) postweaned animals affected. In five cases the age was not recorded. Scotland is a high prevalence area, representing 17 (46%) of these (Figure

2). The most common presenting sign was sudden death which was reported in 30 cases (77%), demonstrating the rapid clinical course of this clostridial disease. Interestingly, only a small handful of total cases had active fluke infection at the time of death, however as warned by SCOPS above, testing for fluke throughout the season is imperative to prevent production losses, especially on farms with a fluke history.

**Figure 1: Sections of pale liver parenchyma, surrounded by dark red/black liver tissue, in a cow with chronic and acute fasciolosis and Black Disease**

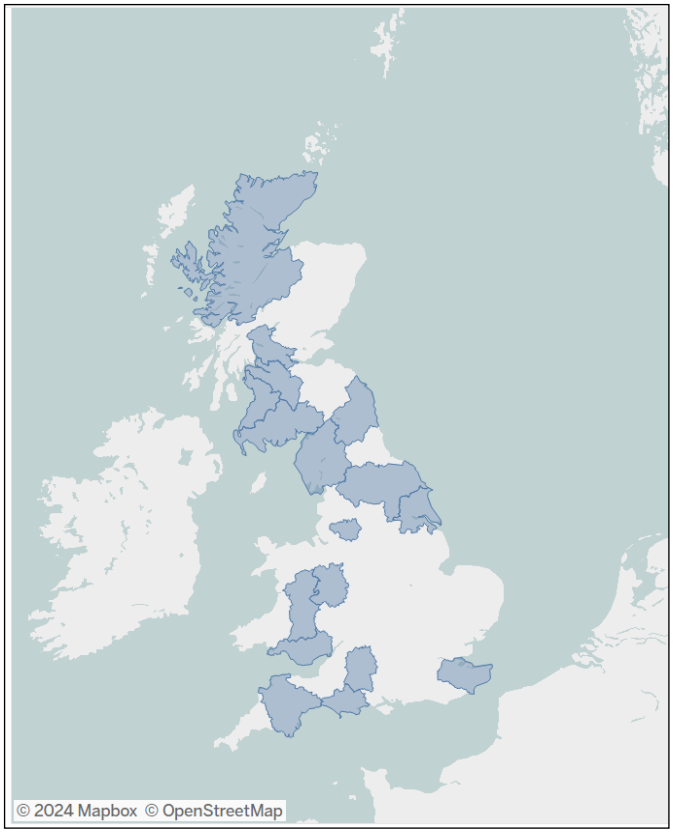


**Figure 2: Map showing geographical location of Clostridium Novyi diagnoses in cattle 2019-2024. Produced using the APHA cattle disease dashboard**

# Changes in disease patterns and unusual diagnoses

# Systemic disease

## Blackleg in calves

Clostridial myositis or ‘blackleg’ is sporadically diagnosed in cattle, being most common in weaned animals and very rarely occurring in adults. Three outbreaks were confirmed by Carmarthen and Shrewsbury Veterinary Investigation Centres (VICs) during this quarter; two of these were in calves at pasture while in the third the animals had never been outdoors. At the time of the postmortem examinations (PME), four of 35 unweaned suckler calves had died in the first herd, and two of 14 unweaned suckler calves had died in the second. In the third case, three of a group of 16 nine-month-old weaned dairy cross calves died over a period of only 24 hours. In each calf examined, there were typical necrotising lesions in skeletal muscles at more than one site; these consisted of blackened, relatively dry, muscle lesions, within which were emphysematous foci (Figure 3). Fluorescent antibody testing (FAT) on the affected muscles identified *Clostridium chauvoei* and confirmed blackleg.

Blackleg is most often seen in the summer and autumn in livestock which are at pasture, some cases occurring following excavations of earth, such as when a new building is constructed or fencing erected. It is less commonly diagnosed in housed animals, although high prevalence outbreaks have been diagnosed indoors. The causative organism is an anaerobic spore-forming environmental bacterium. It is believed that bacterial spores are ingested, escape the intestine, and are distributed to various organs, including the cardiac and skeletal muscles; the spores remain at these sites until trauma causes anaerobic conditions, initiating germination of the spores, bacterial proliferation and development of necrotising myositis. However, there is little supporting evidence for this, and the fact that recurrent outbreaks of blackleg arise when animals are moved onto certain pastures or, may occur in different groups of animals following introduction of the same feed, suggests an alternative pathogenesis.

Diagnosis can only be confirmed at PME. *C. chauvoei* infection can be demonstrated by FAT or anaerobic culture on the affected muscle sites. Histopathology on fresh cases is supportive but does not identify the causative organism. Once recognised on a premises, vaccination of at-risk livestock is commonly practiced and is usually highly effective in disease prevention.

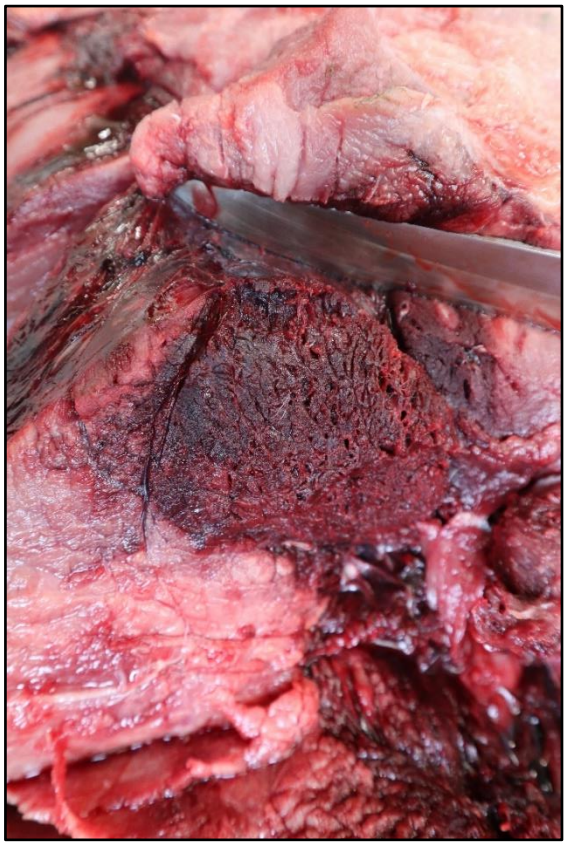

**Figure 3: Dark dry emphysematous lesions in the muscle of a suckler calf with Blackleg**

## An unusual cases of salmonellosis

An unusual case of *Salmonella* Dublin septicaemia, with haemorrhagic diathesis as the main presenting sign, was diagnosed in a four-month-old Holstein Friesian calf, which was

found bleeding from the skin at multiple sites all over the lateral aspect of the body on the day prior to submission. On examination, the animal was pyrexic, tachycardic, tachypnoeic with white mucous membranes, scleral haemorrhages and blood-tinted scant faeces. The animal appeared to be subdued and unsteady and died after examination.

There were numerous petechiae and ecchymoses throughout the carcase and watery blood. S. Dublin was isolated from the lung and kidney, but interestingly not the faeces. Epizootic haemorrhagic disease (EHD) was considered as a differential diagnosis but was ruled out on history and investigation findings. The calves were on the current farm as part of a rearing contract. Following diagnosis, it was decided to start vaccinating for S. Dublin on the farm of origin. As haemorrhagic diathesis is a very unusual presentation for *S.* Dublin infection, histopathological examination of the bone marrow and other tissues was undertaken. The histopathology suggested that the salmonellosis was concurrent, or secondary, to a thrombocyte disorder. As no other incidents were reported in this herd, it was suspected this was a one-of case, with a thrombocyte disorder specific to the submitted calf.

The 2022 edition of the *Salmonella* in animals and feed in Great Britain (previously called *Salmonella* in Livestock Production in GB) has been published and is now available here: Salmonella in animals and feed in Great Britain: 2022 (publishing.service.gov.uk)

## Border disease in a calf

Three calves in a group of 18 had lost condition and become recumbent, with poor appetites. Out of the three affected calves, one recovered and two died. At postmortem examination the calf was found to be in very poor body condition and had lung consolidation. *Linognatus vituli*, a sucking-louse was found on the skin. *Histophilus somni, Trueperella pyogenes, Mycoplasma bovis* and *Mycoplasma arginini* were detected in lung tissue. PCR testing for pestiviruses gave a weak positive result for Border disease virus. Histopathology was not suggestive of persistent infection, but it is likely that the BDV contributed to immune-suppression and the poor condtion of the calf.

## Mycoplasma wenyonii in bulls

Cases of pyrexia, scrotal and hindlimb oedema in three groups of yearling bulls were investigated. Affected animals were approximately 16-18 months of age and were all housed on wood chippings. The prevalence of clinical signs was reported to be up to 50%. Not all affected animals had all three clinical signs, some were just pyrexic with reduced feed intakes. EDTA blood samples were submitted from five affected animals and *Mycoplasma wenyonii* was detected by DGGE/PCR in one of these samples. The farm had a similar presentation in bulls four years previously, when a blood sample from one out of three affected animals tested positive for *M. wenyonii*. Cases appeared to resolve whether they were given empirical treatment or not. Follow up fertility testing was performed on four of the affected bulls, two of which passed breeding soundness examination and two were found to be infertile.

## Digestive system disease

For 2023, the five most common digestive system diseases diagnosed from carcase submissions, for each age category, were as follows (with the most common diagnosis first):

- For neonatal calves: rotaviral enteritis, cryptosporidiosis, colibacillosis ETEC, abomasitis, and coronavirus infection.
- For pre-wean calves: cryptosporidiosis, rotaviral enteritis, abomasal ulceration, rumen drinking, and intestinal torsion (red gut).
- For post-wean calves: parasitic gastroenteritis, coccidiosis, digestive disease not listed, ruminal acidosis, and abomasal ulceration.
- For adults: digestive disease not listed, ruminal acidosis, abomasal ulceration, jejunal haemorrhage syndrome, and traumatic reticulo-peritonitis.

## Respiratory system

Respiratory disease is always predominant in Q4, and 2023 was no exception. It was notable however that there was a change in the main pathogens diagnosed as part of the bovine respiratory disease (BRD) complex, compared to the same quarter of previous years. For example, there was an increase in percentage of diagnoses of pneumonia due to *Histophilus somni,* compared to the average for Q4 over the last 10 years (2012-2022), in Great Britain, which is shown in Figures 4, 5, and 6.

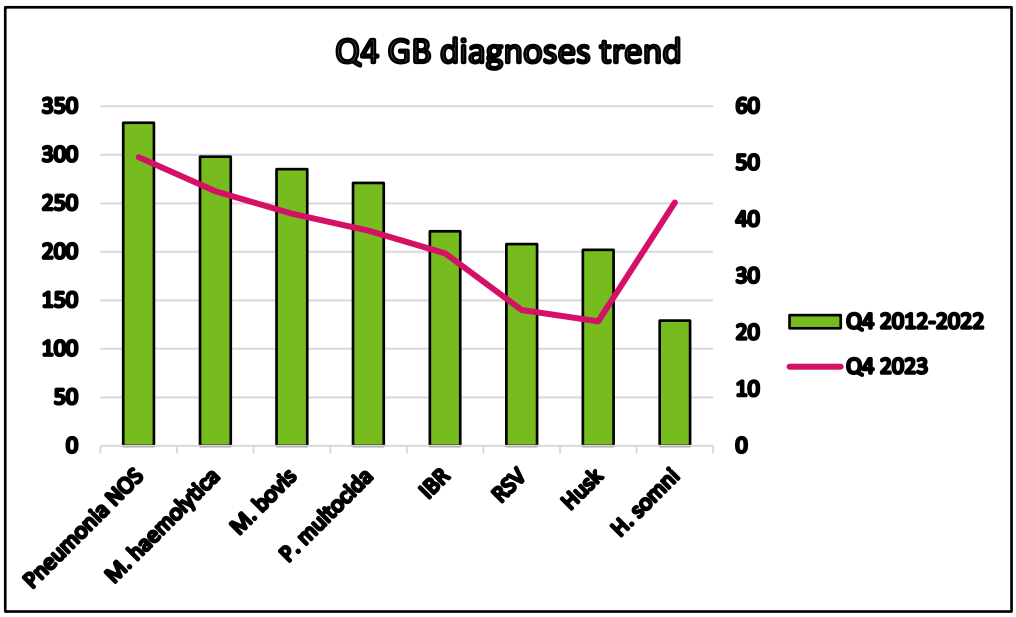


**Figure 4: The numbers of the main diagnoses for GB for respiratory disease from Q4 2012-2022 (green bars and left axis), compared to the numbers for Q4 2023 (red line and right axis)**

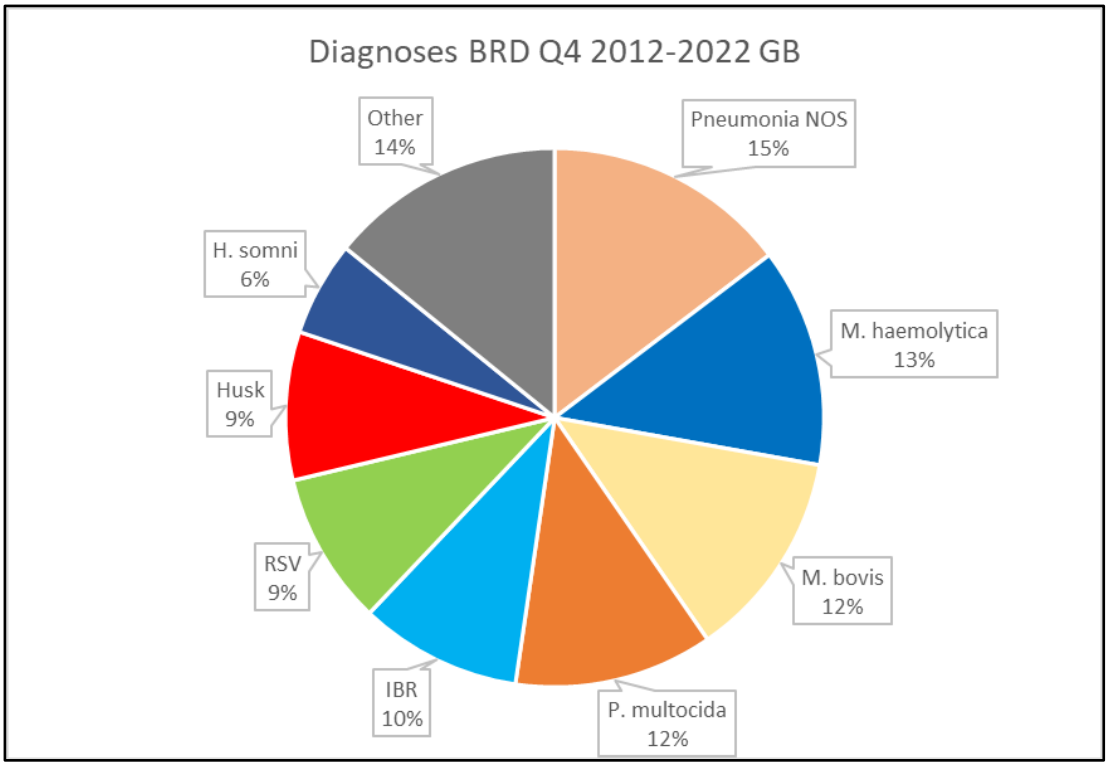


**Figure 5: Bovine respiratory disease diagnoses for GB for Quarter 4 for 2012-2022**

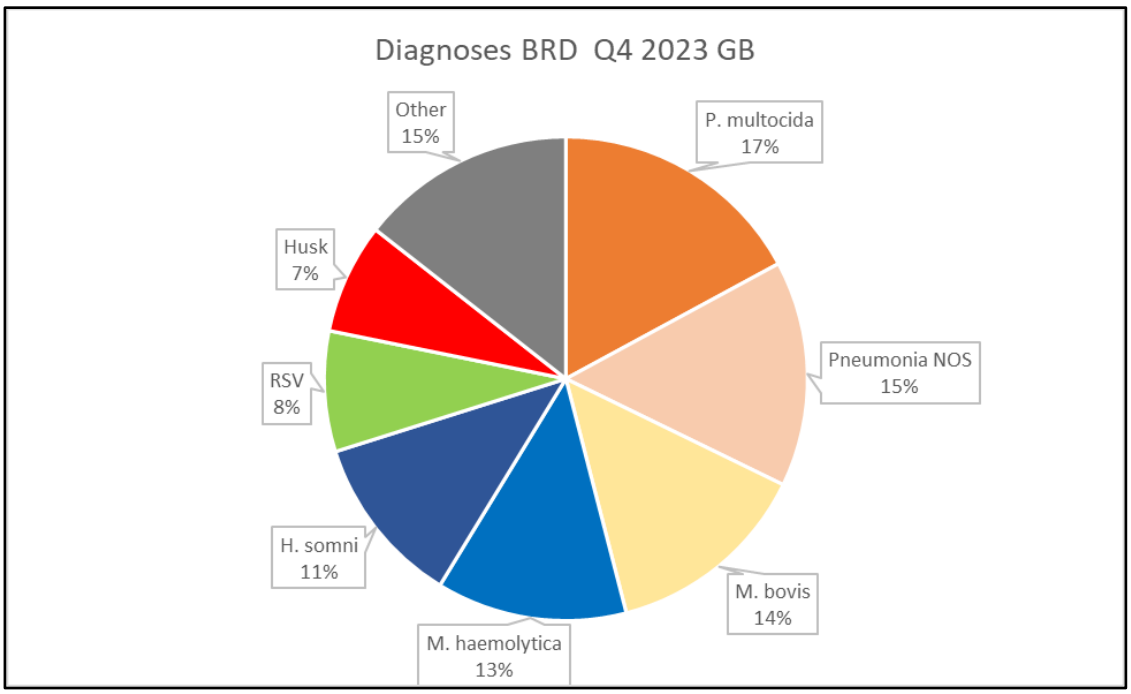


**Figure 6: Bovine respiratory disease diagnoses for GB for Quarter 4 for 2023**

The situation is slightly different when it comes to Scottish diagnoses of BRD. The biggest increases are seen for diagnoses of pneumonia due to *Mycoplasma bovis*, then *Pasteurella multocida*, and then *Histophilus somni*, as shown in Figures 7, 8, and 9.

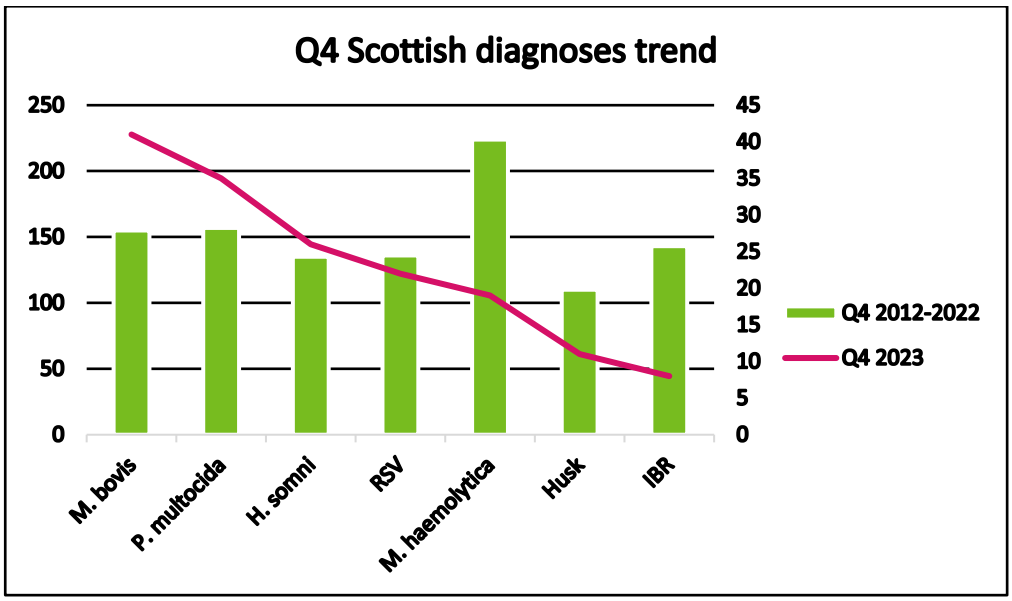


**Figure 7: The numbers of the main diagnoses for GB for respiratory disease from Q4 2012-2022 (green bars and left axis), compared to the numbers for Q4 2023 (red line and right axis)**

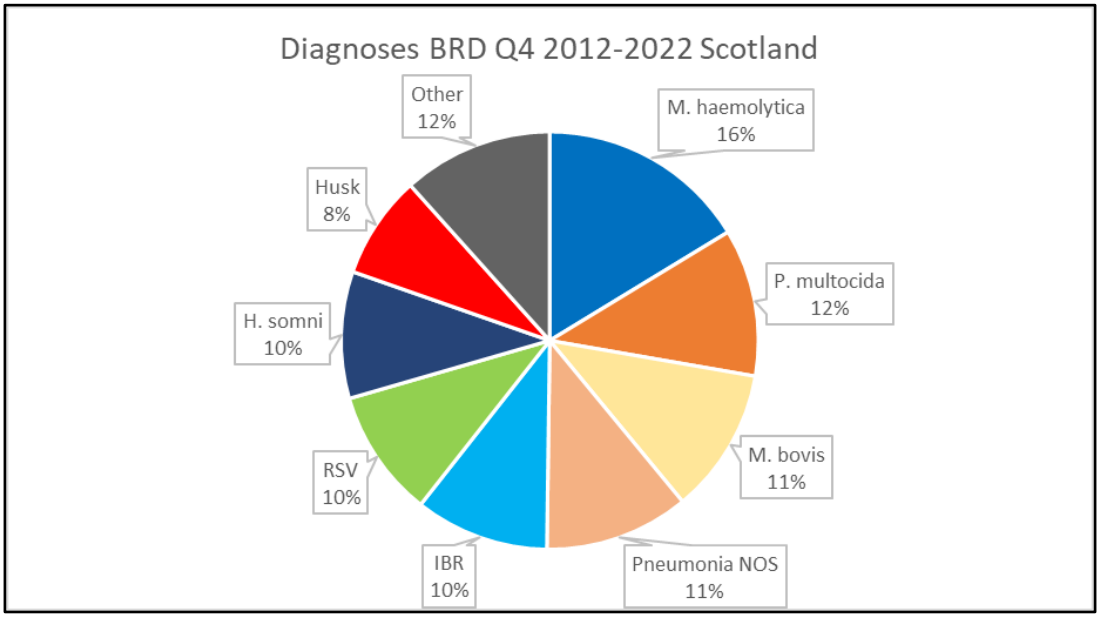


**Figure 8: Bovine respiratory disease diagnoses for Scotalnd for Quarter 4 for 2012-2022**

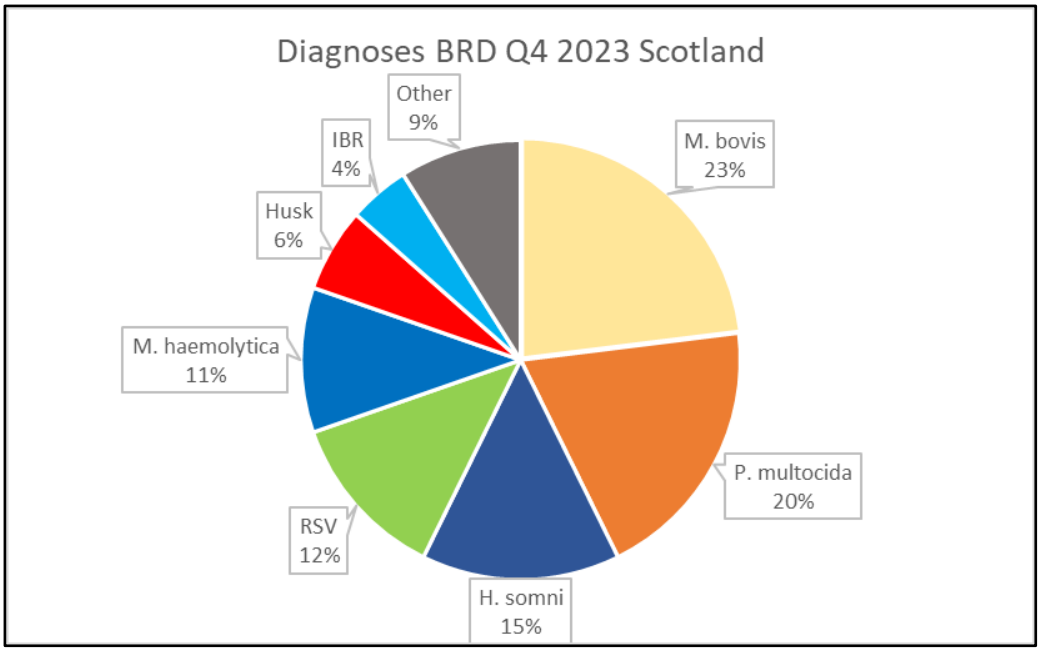


**Figure 9: Bovine respiratory disease diagnoses for Scotland for Quarter 4 for 2023**

Analysis of the percentage of diagnosable submissions for the same period suggests a similar trend, as shown in Figure 10.

For example, in Q4 of 2023 the percentage of diagnosable submissions where *Histophilus somni* was diagnosed as part of BRD was higher than in the previous four years (Figure 10). The increase is more prominent in post-weaned calves, in both dairy and suckler herds, in Northern England and Scotland.

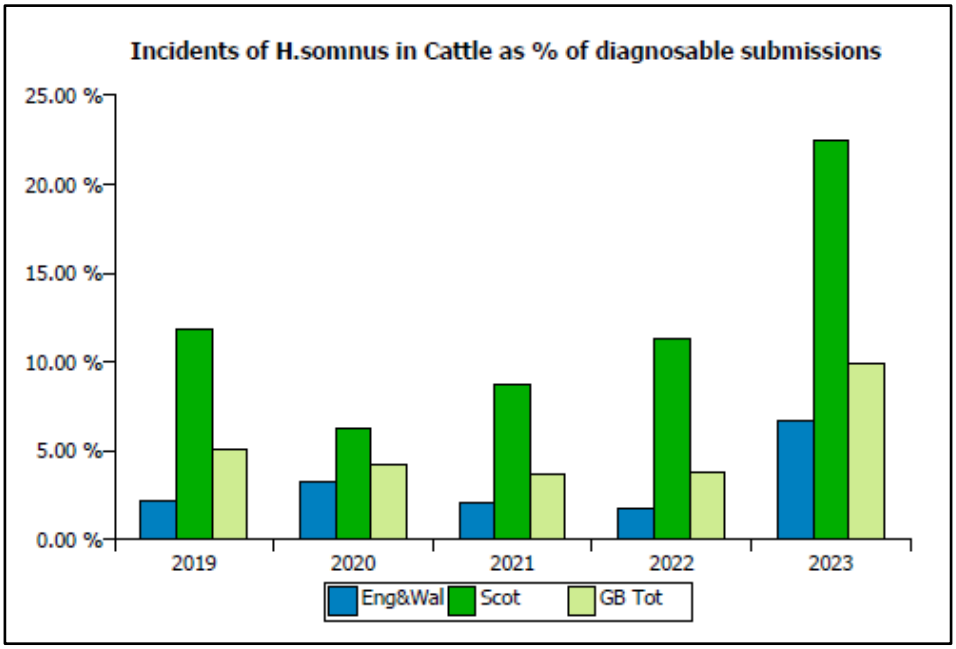


**Figure 10: Incidents of *Histophilus somni* in GB as a percentage of diagnosable submissions (2019-2023)**

When compared to the previous four years, Scotland has also seen an increase in percentage of diagnosable submissions where *Pasteurella multocida* (Figure 11), and *Mycoplasma bovis* (Figure 12) have been detected as part of respiratory disease investigations. The rise has been observed consistently across all sectors and affecting all ages of cattle.

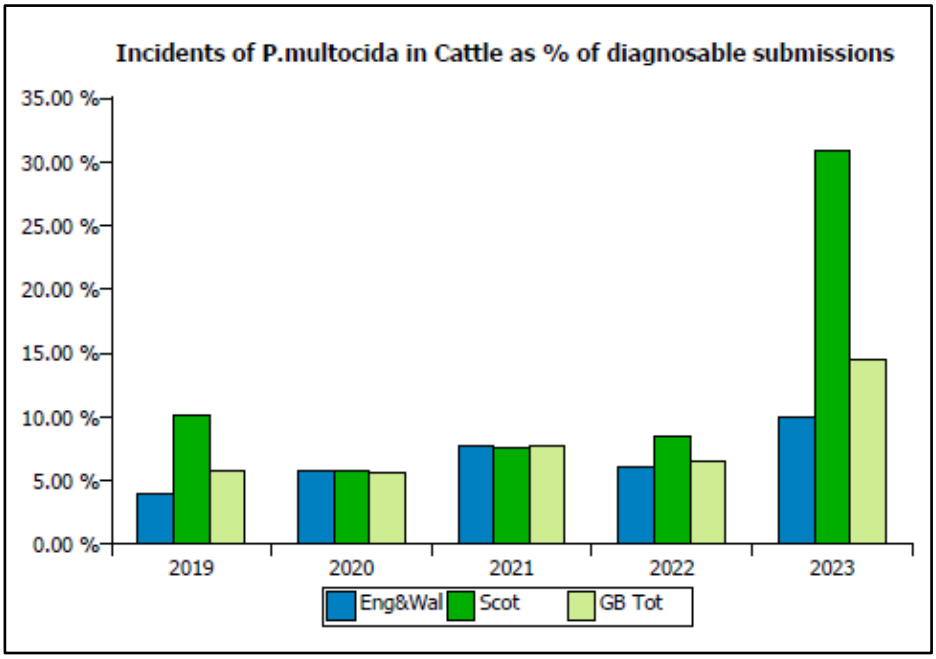


**Figure 11: Incidents of *Pasteurella multocida* in GB as a percentage of diagnosable submissions (2019-2023)**

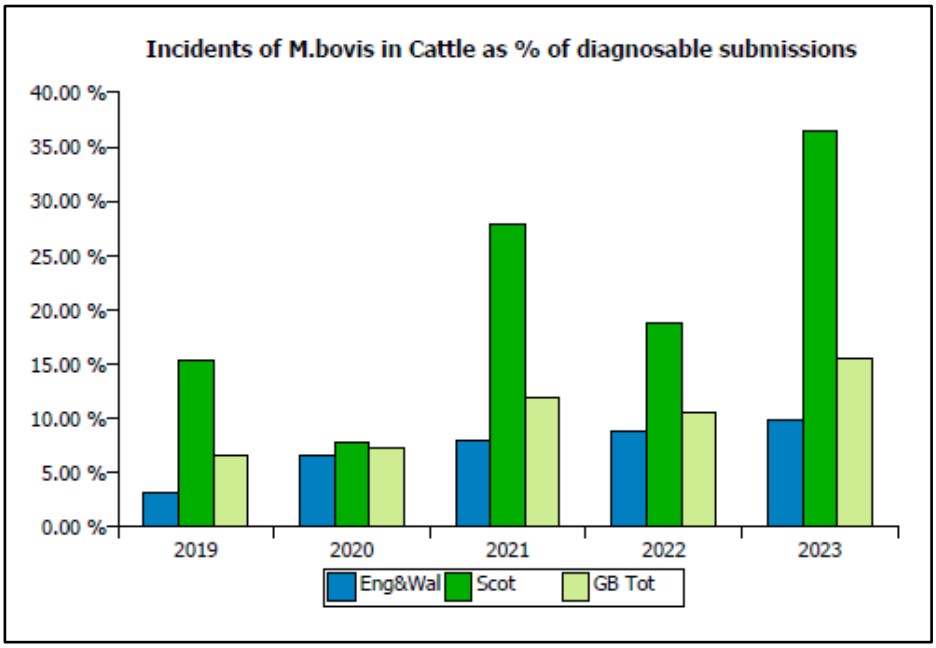


**Figure 12: Incidents of *Mycoplasma* in GB as a percentage of diagnosable submissions (2019-2023)**

## Interesting respiratory disease cases

In November and December 2023, there were increased reports of *Mannheimia haemolytic*a pneumonia, with three of the cases having gross pathology where contagious bovine pleuropneumonia (CBPP) should be considered as a differential diagnosis. CBPP is a notifiable disease caused by *Mycoplasma mycoides* subsp. *mycoides (Mmm)*. In these cases, it was ruled out on clinical history, the pathology, and on laboratory testing (by confirmation of *M. haemolytica* and, having had a negative mycoplasma testing result).

CBPP was eradicated from the country in 1898. It is a highly infectious pneumonia, and the disease is still present in Africa and parts of Asia, with minor outbreaks occurring in the Middle East. Clinical signs include fever, anorexia, and signs related to pneumonia and pleuritis, with painful and laboured breathing. The pathology is largely unilateral, with one lung being affected in many cases. The thoracic cavity usually contains clear yellow or turbid fluid mixed with fibrin flakes, and the organs in the thorax are often covered by thick deposits of fibrin. On cut surface of the lung, the typical marbled appearance of pleuropneumonia is evident, because of the widened interlobular septa and subpleural tissue that encloses grey, yellow, or red consolidated lung lobules. In a naïve herd, an acute outbreak would be expected rather than chronic presentations (for which sequestrum would be a red flag). It is reported that in some outbreaks the pathology can be more severe in adults than in youngstock. Most bovine respiratory disease cases investigated by APHA would have the Mycoplasma culture/DGGE/PCR testing undertaken, which helps to increase our knowledge of mycoplasmas and helps us to maintain our CBPP free status.

Two such cases were investigated by APHA Penrith. In the first one, a heifer, the second to be found dead over the course of three days, was submitted to investigate the cause of death. The lung lobes were markedly consolidated, with 80% of the capacity compromised. There was severe, widespread interlobular oedema with the spaces dilated by fibrin-rich fluid (Figure 13). The heart had a rounded appearance with the right ventricle being larger than normal and subendocardial blood splashes, throughout.

**Figure 13: Consolidation of the lung parenchyma and interlobular oedema in a heifer with *Mannheimia haemolytica* pneumonia**

*Mannheimia haemolytica* was the predominant bacterium cultured from the lung tissue, alongside *Pasteurella multocida*, and histological examination confirmed marked, multifocal, acute, necrohaemorrhagic, fibrinosuppurative bronchopneumonia, with oat cells and coccoid bacteria, typical of *Mannheimia haemolytica* infection. Testing for *Mycoplasma* species was negative.

In the second case, severe, bilateral pneumonia caused by *Mannheimia haemolytica* was diagnosed in two two-year-old cows, which had been euthanised following severe acute respiratory signs. The cows were from a closed 300-cow housed dairy herd, and were two of four to have been euthanised, with two other cows having died following similar signs of acute dyspnoea and tachypnoea. Postmortem examination revealed dark purple, heavy, and consolidated lungs in a cranio-ventral distribution bilaterally, in both cows. Bilaterally, the lungs of one cow were covered in diffuse, yellow gelatinous fibrin deposits. The cranial lung lobes in both had severe interlobular oedema with widening of the septa by pale yellow fibrin (Figure 14), and the lungs were emphysematous caudo-dorsally. *Mannheimia haemolytica* was the only bacterium cultured from the lungs. Despite further testing, including testing for mycoplasmas, no underlying predisposing factors were identified.

**Figure 14: Pleuropneumonia in a cow with *Mannheimia haemolytica* pneumonia**

## Infectious bovine rhinotracheitis

A bull was submitted to Penrith VIC for postmortem examination (PME). It had been bought through an auction mart ten days previously, and since purchase it had been with a group of heifers and had been seen serving them. Within a few days of arrival, it developed malaise and respiratory distress, and died despite attempted antimicrobial and anti-inflammatory treatment. PME revealed mild subcutaneous emphysema over the thorax and upper front legs, reddened conjunctivae, mucopurulent nasal exudate, lung consolidation, and a severe necrotic and haemorrhagic laryngotracheitis (Figure 15). Polymerase chain reaction (PCR) testing detected bovine herpesvirus-1 (BoHV1),

confirming infectious bovine rhinotracheitis (IBR). *Trueperella pyogenes,* a common secondary opportunist, was isolated from the lungs. A PCR ruled out pestivirus infection as a possible contributory factor (being a recognised cause of immunosuppression).

Further investigation confirmed that the bull had been bought from a herd which was seronegative for IBR, and was unvaccinated, and it had been introduced into a ‘flying’ herd. BoHV1 infection had been suspected in this herd based on previous bulk milk testing, but vaccination had not been used. Possible sources of infection for the bull were the heifers, with which he had been mixed, or other animals at the market. IBR is more common during the housed period when animals are closer together and can spread rapidly with a high case fatality. Disease most often occurs in animals six months of age or older, including adults, and is rare in young calves. The use of vaccination, particularly in dairy herds, has reduced the prevalence of disease in recent years. As it is caused by a herpesvirus, latently infected animals can introduce the infection, and good biosecurity is necessary to prevent entry of BoHV1 into naïve herds. Alternatively, as in this case, susceptible stock can be infected when purchased, and knowing the infection status of both herds is desirable when considering introducing new animals.

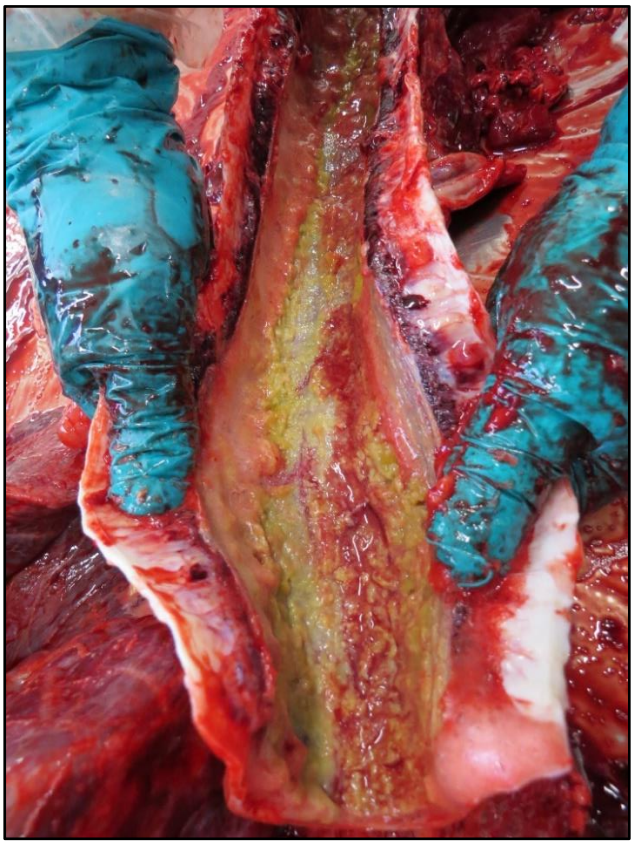

**Figure 15: Necrotising tracheitis in a bull with infectious bovine rhinotracheitis**

# Musculoskeletal System

## Metabolic bone disease

Two recent postmortem examinations (PMEs) at Shrewsbury Veterinary Investigation Centre identified metabolic bone disease or ‘nutritional osteodystrophy’. Both were housed fattening bull calves, the type of animal in which this condition is usually seen, although it has in the past also been diagnosed in replacement dairy heifers. The affected animals were between five and 12 months of age. One dead animal was submitted from each of the herds. In the first, 10 of a group of 40 animals were affected and died or were euthanased, while in the second, six calves were affected over a period of two weeks in a group of 90. The affected animals sometimes exhibited hind limb paresis or lameness before developing recumbency; some made failed attempts to rise. One farmer said he had heard ‘bone cracking’. The PMEs confirmed that both calves had bilateral femoral fractures (Figure 16), with associated haemorrhage and muscle damage. The ribs were soft and easily bent, and the cortical bone of the femurs was thinner than expected.

In one herd the calves received a diet comprising *ad lib* barley and oats, fodder beet, bale silage, and straw, with added minerals and vitamins. In the second herd they received wheat, barley, and distiller’s grains, with *ad lib* straw, and some also had access to hay; general purpose mineral and vitamin supplements had also been fed but were no longer available from 10 days prior to the problem developing. In both cases a lack or imbalance of vitamins and minerals was suspected, and urgent modification of the diets, seeking expert advice from nutritionists, was advised.

Once a diagnosis of metabolic bone disease is reached, careful handling of affected animals in well-bedded pens, and prompt dietary supplementation of the cohort animals, should be undertaken. Severe cases warrant euthanasia on welfare grounds. Advice on the feeding of young fattening animals can be found at https://projectblue.blob.core.windows.net/media/Default/Beef%20&%20Lamb/BR_FeedingGrowingFinishingCattle-WEB.pdf

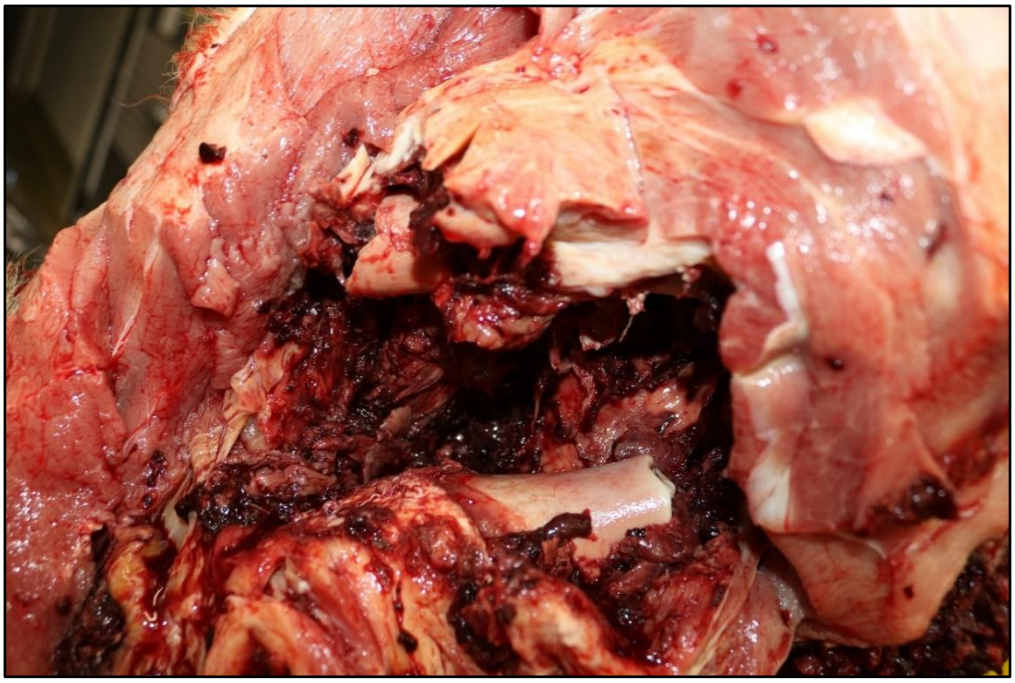

**Figure 16: A fracture of the femur in a calf with metabolic bone disease**

## Urinary System

No significant trends this quarter.

## Nervous system and organs of special sense

No significant trends this quarter.

## Skin disease

### Udder Cleft Dermatitis in a dairy cow

Udder cleft dermatitis (UCD) leading to embolic pneumonia was diagnosed in a five-year-old cow that was euthanised and submitted for postmortem examination. Four similar cases had occurred over a 12-month period. At postmortem examination, there was a large area of dermatitis cranial to the udder and fibrino-necrotic emboli in the mammary veins. Both hind feet had digital dermatitis lesions. A 6-8 cm fibrinopurulent abscess was found in the right cranial lung lobe and multiple smaller abscesses in the left cranial lobe. The cranial lung lobes were adhered to the adjacent pleura. *Fusobacterium necrophorum* and *Trueperella pyogenes* were cultured from the lung. The causes of UCD are not well understood, but individual risk factors include breed, increasing milk yield, increasing days in milk, udder forequarter size, udder conformation, and increasing parity. There was also serological evidence of exposure to *Mycoplasma bovis* in this cow.

**Call for farms with a high prevalence of Udder Cleft Dermatitis**

The APHA Cattle Expert Group are on the lookout for dairy farms that have issues with UCD, for a collaborative project investigating the aetiology and pathogenesis of this condition. Farms with a high prevalence of UCD, and which can identify cases early, would be suitable for the study. These lesions are regularly observed in carcasses received through the postmortem provider network. Please contact Vanessa Swinson (contact details as above on the first page), or your local PME provider. An example of UCD is shown in Figure 17.

**Figure 17: A superficial skin lesion in a cow with udder cleft dermatitis**

### Cutaneous lymphoma in a cow

Cutaneous lymphoma was diagnosed histologically by SRUC from skin biopsies collected on farm from a three-year-old Holstein cow that had developed multiple, raised hairless lesions over a 3–4-day period (Figure 18). The lesions were mainly concentrated around the head and neck area. There did not appear to be any other associated clinical signs and there had been no milk drop. Only a single animal was affected. APHA were notified, and notifiable disease (Cutaneous Enzootic Bovine Leukosis and Lumpy Skin Disease) was ruled out from the history, clinical signs, and histopathology findings.

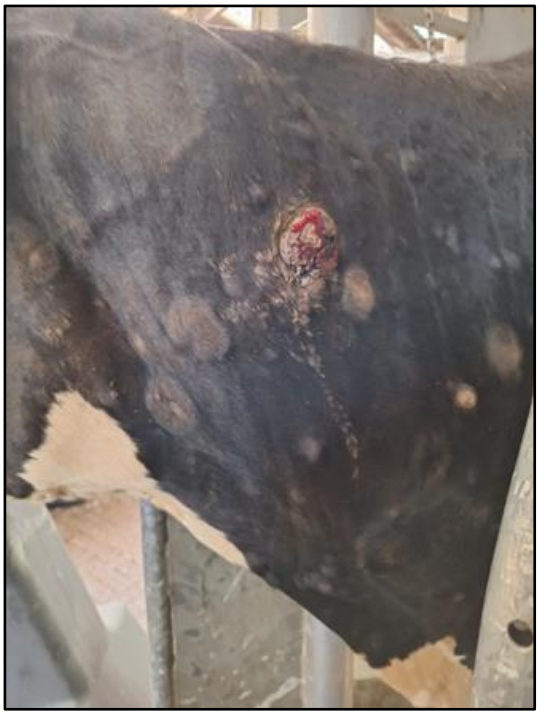

**Figure 18: Multiple raised and hairless skin nodules in a cow with cutaneous lymphoma**

# Circulatory Disease

## Vascular rupture in a dairy cow

An adult dairy cow from a herd of 500 cows was submitted for PME. It had been reported to have developed milk drop before it died. There was one other recent death in the herd. The carcase was pale and there was a large volume of bloody liquid and many large blood clots within the abdomen. The origin of the blood loss appeared to be in the region of the posterior vena cava and mesenteric veins near the omasum and abomasum, although a specific site of rupture was not identified. Spontaneous rupture of major vessels is a recognised cause of death in adult cattle, especially dairy cows, most frequently originating from the mesenteric and uterine arteries; a report on findings in a series of dairy cows examined postmortem was published by Crawshaw and others (2011).

### Reference

Crawshaw T, Wessels M, Howie F, McElroy M, Patterson T, Peperkamp K, Lamm C. ‘Idiopathic arterial aneurysm/rupture causing sudden death in dairy cattle’ Veterinary Record 2011;169:261 https://doi.org/10.1136/vr.d5547

# Reproductive system – Abortion, Stillbirth, and Congenital Deformities

Figure 19 featured in the Q3 2023 report. It shows the abortion diagnoses by year for 2018 to 2022. In 2021 and 2022 there were a few diagnoses of abortion due to Schmallenberg virus (SBV). It is likely that more SBV cases will be seen during 2024, given that many cases have been reported in sheep during the 2023-2024 lambing season. We would like to encourage discussion of abortion cases with veterinary investigations officers, and free of charge testing for SBV is available, if appropriate, following this discussion.

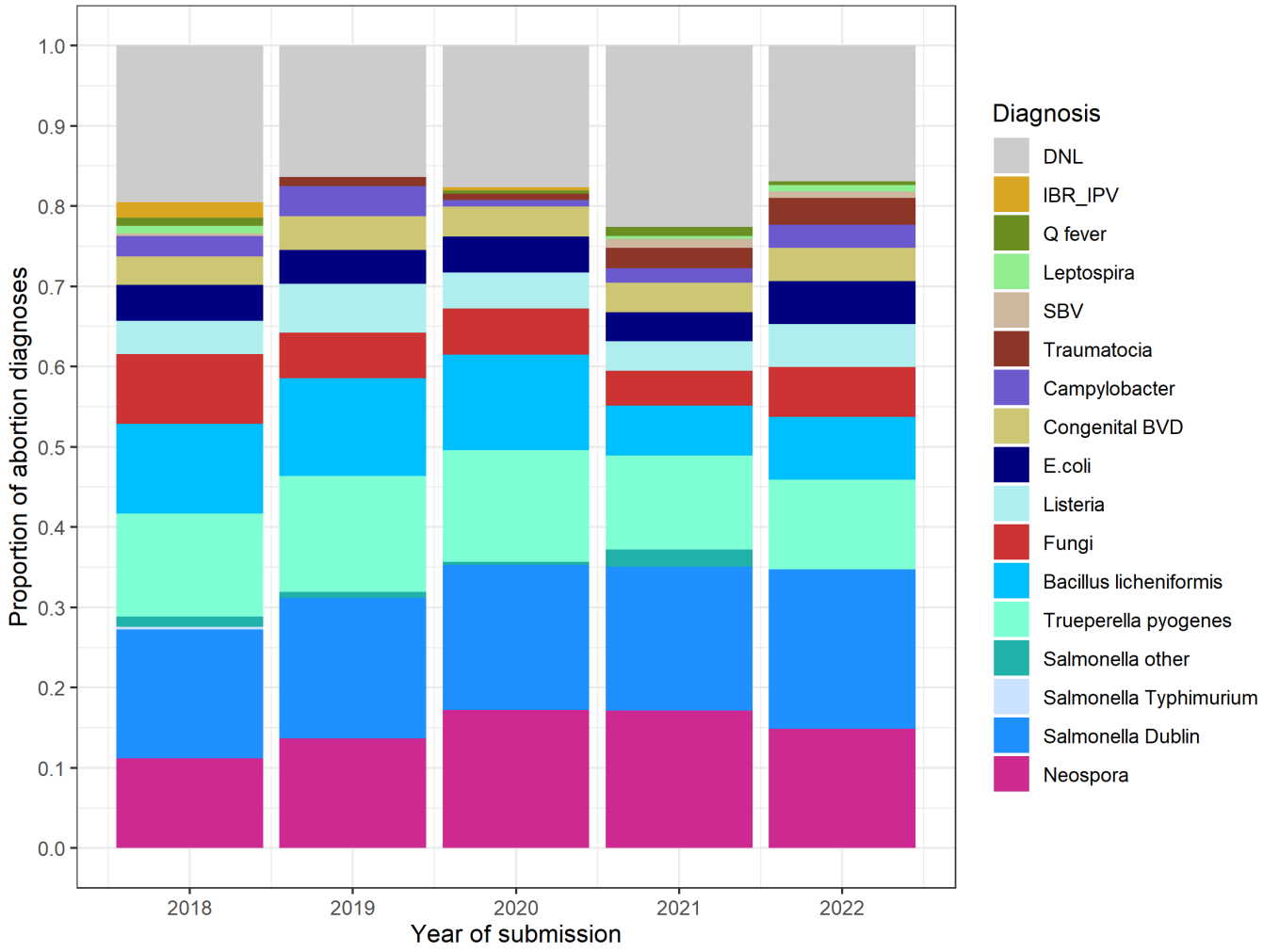


**Figure 19: Bovine abortion diagnoses by year for 2018-2022 (from foetus submissions only)**

## Fungal abortion in a milking herd

Fungal abortion, tentatively identified as *Aspergillus terreus,* was diagnosed from the stomach contents of a second trimester foetus. There had been 10 abortions over 2-3 months in this 260-cow milking herd. Fungal hyphae were observed on wet preparation of fetal stomach contents, and the organism was subsequently cultured. No placenta was available to confirm the diagnosis and there was no evidence of inflammation in the foetal

tissues on histopathological examination. *Aspergillus terreus* has not been reported as a cause of abortion in the UK, but it has been reported in Ireland and other countries.

## Congenital malformation (squinty jaw / floppy tongue syndrome, cleft palate, arthrogryposis)

A single calf, delivered by caesarian section, was submitted from a 200-cow herd. A 'squinty jaw', large floppy tongue (Figure 20), cleft palate (Figure 21), and arthrogryposis were noted on gross examination. Cleft palate and arthrogryposis are conditions that are often seen simultaneously, and etiologies include genetic, teratogenic, and nutritional causes. Mutation of the MYH3 gene has been reported to cause recessive cleft palate in Limousin cattle; and autosomal recessive inheritance patterns are evident in Angus cattle with congenital multiple arthrogryposis, and in Charolais cattle with cleft palate and arthrogryposis. Teratogens and nutritional causes of cleft palate include high concentrations of vitamin A in the diet, administration of griseofulvin (antifungals), folic acid deficiency, and ingestion of toxic plants during pregnancy. In cattle, ingestion of lupin products during days 40-100 of gestation can result in arthrogryposis and cleft palate due to the foetal neuromuscular blocking effects of anagyrine (found in *Lupinus sericeus* and *Lupinus cau*datus). Ingestion of poison hemlock and corn Lily (*Veratrum californicum*) can also cause cleft palate and arthogryposis. No causal agents were identified in this case, and SRUC-VS hope to investigate any further cases on this farm and requested EDTA blood samples from the dam and sire.

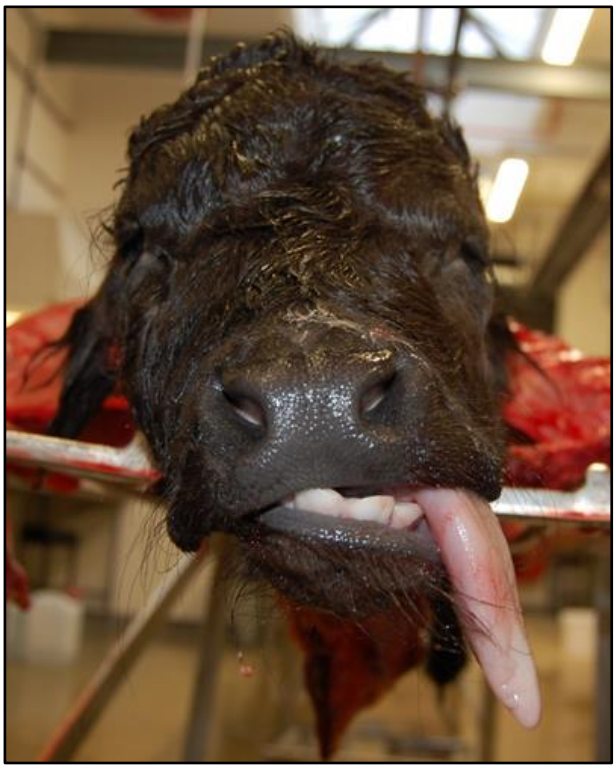

**Figure 20: A 'squinty' jaw and floppy tongue in a calf with congenital malformations**

**Figure 21: Cleft palate in the same calf as Figure 20**

## Syndactyly and arthrogryposis associated with cerebellar dysplasia in a Limousin herd

A calf was submitted to SRUC-VS from a 130-cow, predominantly Limousin cross suckler cow herd, which were kept in stable groups, and generally put to the same bull annually. Four abnormal calves were born during 2023, two in spring and two in the autumn. One by caesarean section, and one by vaginal delivery in each group. All had the same sire and, presented with similarly deformed (shortened and arthrogryposed) legs and single digits (syndactyly) affecting all 4 feet. The bull was 8 years old and had bred the same groups of cows (approximately 55 cows per year) for 4 years previously without any issues. The gross pathology is shown in Figure 22. Cerebellar dysplasia was found on neuropathological examination and likely contributed to the development of arthrogryposis. Pestivirus PCR testing was negative.

Syndactyly in cattle, also known as 'mulefoot', is inherited as an autosomal recessive trait with variable penetrance in different cattle breeds. Responsible genes have been identified in the Holstein Freisian and Simmental cattle, however it has also been reported in Angus, Chianina, Hereford, German Red Pied, Indian Hariana, and Japanese native cattle. The presence of the condition in both the spring and autumn calvers, and restricted to the calves of one bull with the cows despite a shared winter ration makes the possibility of a toxic or teratogenic plant much less likely than a genetic cause. The identity of only two of the affected cows was provided by the farmer, one cow was bred to her father, however this wasn’t the case for the other cow. Both the cows shared a grand-sire and a common sire was present in the breeding of both cows and the bull. The bull was culled prior to submission of this calf. Genetic material from this calf has been stored, should further cases arise.

**Figure 22: Syndactyly and arthrogryposis in a Limousin cross calf**

## Mastitis

There were no significant trends for this quarter.

## Centre of Expertise for Extensively Managed Livestock

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.

## Antimicrobial use and resistance

The Veterinary Antibiotic Resistance Sales and Surveillance (UK-VARRS) Report 2022 has been published by the Veterinary Medicines Directorate (VMD): Veterinary Antimicrobial Resistance and Sales Surveillance 2022 - GOV.UK (www.gov.uk)

This latest UK-VARSS report continues to document downward trends in sales of veterinary antibiotics in the UK. In addition, the latest RUMA Targets Task Force report can be found at: RUMA-TTF-Report-2023-FINAL.pdf

The Medicine Hub, a voluntary industry initiative, developed and managed by AHDB, was launched in 2021 and provides a central location for the collection of medicine data, including antibiotic use: Medicine Hub for dairy, beef and sheep farmers | AHDB

## Chemical food safety

The latest Chemical Food Safety Reports can be found at: APHA chemical food safety reports (livestock) - GOV.UK (www.gov.uk)

## Toxic conditions

No significant trends for this quarter.

## Horizon scanning

International Disease Monitoring (IDM) horizon-scanning activities monitor for major, notifiable, or new and re-emerging animal disease outbreaks worldwide. This is done to provide an early warning and to assess the risks they may pose to the United Kingdom (UK), particularly for those diseases which impact on animal health and welfare, international trade, public health, or wider society. IDM also assess the risk that animal diseases might come into the UK through the trade in aimals or animal products (legal or illegal), through movements of wildlife, or through the movement of fomites and vectors such as insects which may carry infectious disease. These outbreak assessments are used to guide decisions how to manage or reduce the risks and are published on the web: Animal diseases: international and UK monitoring - GOV.UK (www.gov.uk)

**Bluetongue virus (BTV) in Europe:** updated outbreak assessment and maps from England and Europe can be found at: 29 November 2023: updated outbreak assessment for Bluetongue virus in Europe - GOV.UK (www.gov.uk)

**Epizootic Haemorrhagic Disease (EHD**): following initial confirmation of EHD in France on 21st September, 1,194 outbreaks have been recorded on cattle farms in southern France.

As we anticipate the 2024 Culicoides season, it is important to be vigilant for epizootic haemorrhagic disease (EHD), as well as bluetongue and Schmallenberg diseases. EHD is notifiable. It is present on all continents except Antartica, but its first incursion into Europe was only in October 2022 when it spread north across the Mediterranean basin. In September 2023 it spread into France and by 28th November, 3527 outbreaks had been reported in Southern France (Figure 23). Models predict it will spread further North into Scandinavia.

EHD is caused by EHD virus, which is an Orbivirus very closely related to BTV. Like BTV it is spread by *Culicoides* spp. and potentially germplasm, and causes a vascular disease resulting in haemorrhages, mucosal ulceration (Figure 24), and pulmonary oedema. As a result, it is clinically indistinguishable from BTV. Unlike BTV, EHD has a predilection for deer, causing a high mortality rate in particularly susceptible species, but it can also cause fatal disease in cattle. Small ruminants and camelids tend to be subclinically infected, and probably act as a reservoir for infection.

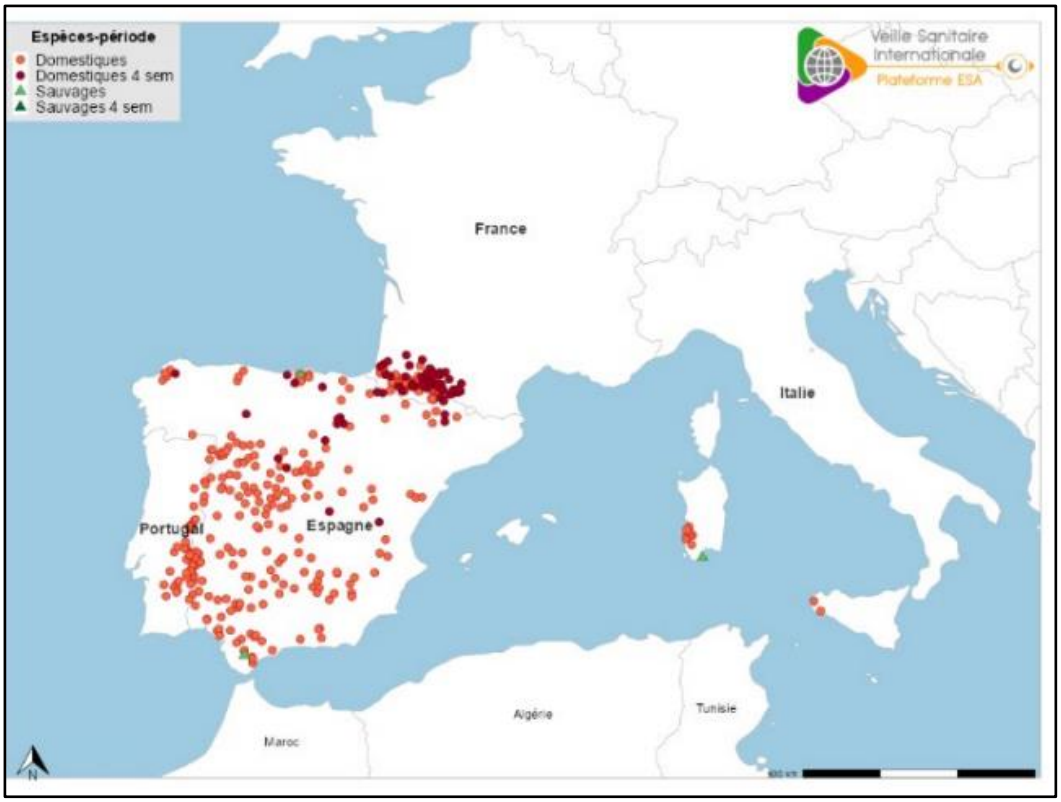


**Figure 23: Map showing historic EHD outbreaks detected since 25 October 2022 (orange dots) and outbreaks that have occurred between 26 September and 24 October 2023 (red dots) in Europe, reported by the EU Animal Diseases Information System (ADIS)**

**Figure 24: Nasal discharge and crusting in a cow with EHD**

[Epizootic Hemorrhagic Disease Virus: Current Knowledge and Emerging Perspectives - PubMed (nih.gov)]

[28 November 2023: epizootic haemorrhagic disease in Europe - GOV.UK (www.gov.uk)]

**Foot and Mouth Disease (FMD):** Nothing to report in November.

[Foot and mouth disease in North Africa and the Middle East - GOV.UK (www.gov.uk)]

The incidents of FMD from February 2023 to January 2024 are shown in Figure 25.

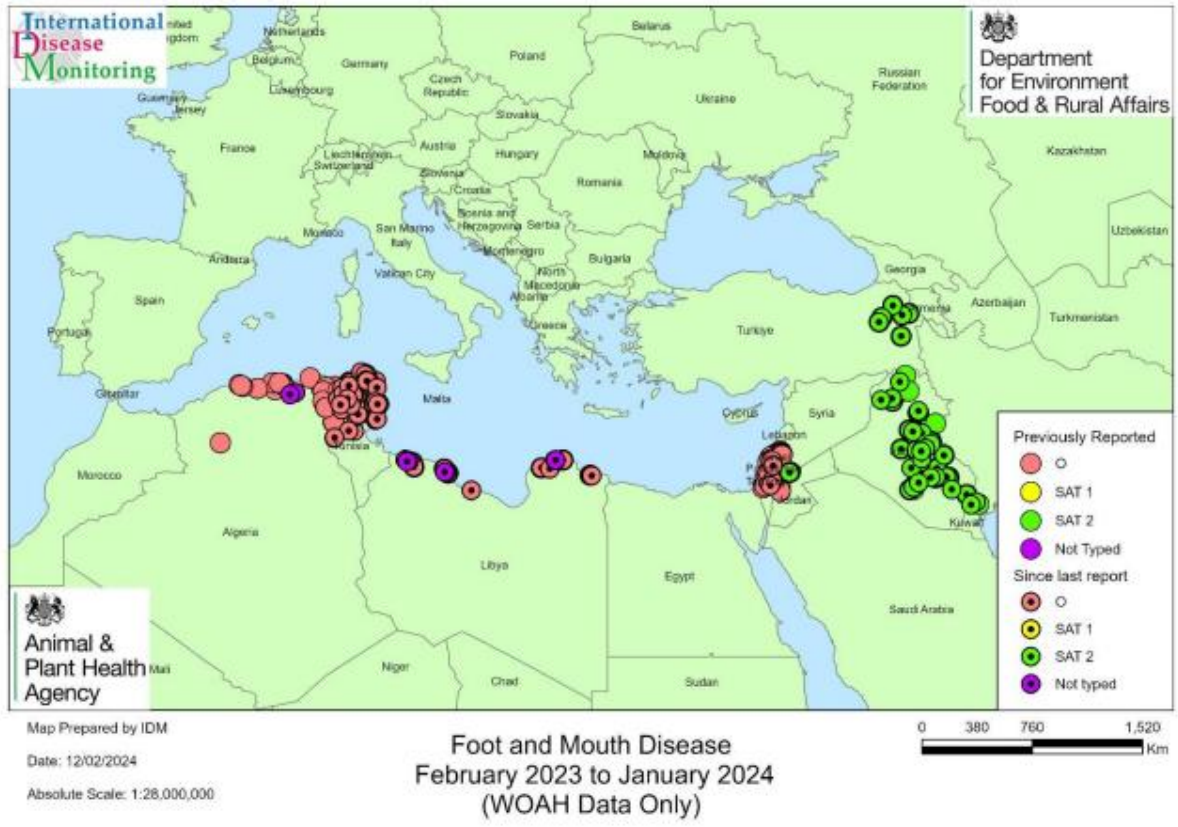


**Figure 25: Incidents of FMD between February 2023 and January 2024**

**Lumpy Skin Disease (LSD):** In November, there were reports of LSD in Russia (5), South Korea (55), Thailand (3) and Libya (3) (WOAH data only).

# Publications of interest

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

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

Holder T; Coad M; Allan G; Hogarth PJ; Vordermeier HM; Jones GJ (2023). Vaccination of calves with Bacillus Calmette-Guerin Danish strain 1331 results in a duration of immunity of at least 52 weeks.

Duncan D; Avigad R; De La Rua-Domenech R; Mccormack J; Lyons N (2023). New TB breakdowns fall in England. Veterinary Record 193 (10) 414

MASTIN A; Gubbins S; Ashby M; PAPADOPOULOU C; WADE C; Batten C (2023) BTV and EHDV – what's new and what do I need to know? Veterinary Practice: InFocus 4th October 2023. BTV and EHDV – what's new and what do I need to know? - Veterinary Practice (veterinary-practice.com)

OTTER A; SCHOCK A; PAYNE J (2023) A form of hepatogenous copper poisoning in fattening cattle associated with the ingestion of mouldy straw. Vet Record Case Reports 11 (2) 2592. A form of hepatogenous copper poisoning in fattening cattle associated with the ingestion of mouldy straw - Otter - 2023 - Veterinary Record Case Reports - Wiley Online Library

JEWELL N; SWINSON V; HAYMAN C; MARTINDALE L; BRZOZOWSKA A; Mitchell S (2023) Laboratory diagnosis of gastrointestinal nematodes in first-grazing season cattle. Veterinary Record 192 (9) 364-36 Laboratory diagnosis of gastrointestinal nematodes in first-grazing-season cattle - Jewell - 2023 - Veterinary Record - Wiley Online Library

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)

The 2022 edition of the *Salmonella* in animals and feed in Great Britain (previously called *Salmonella* in Livestock Production in GB) has been published and is now available here: Salmonella in animals and feed in Great Britain - GOV.UK (www.gov.uk)

**Statement regarding use of this material**



This publication is available at:

https://www.gov.uk/government/collections/animal-disease-surveillance-reports

Any enquiries regarding this publication should be sent to us at SIU@apha.gov.uk

http://apha.defra.gov.uk/vet-gateway/surveillance/index.htm

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