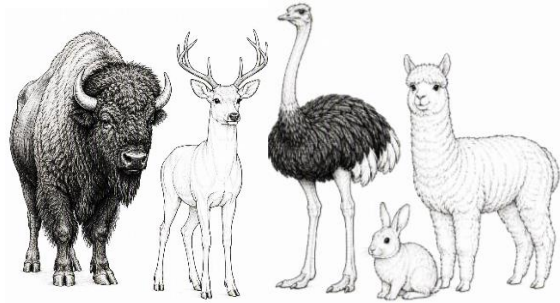




Animal &
Plant Health
Agency



Great Britain miscellaneous and exotic farmed species quarterly report

Volume 37: Quarters 3 and 4 of 2024 (July to December)

Highlights

- Acute death due to *Haemonchus contortus*
- Diagnostic investigation following negation of Bluetongue virus
- Disseminated Malignant Round Cell Tumour in a yearling alpaca
- Congenital goitre in an aborted cria
- Hepatic lipidosis in adult alpacas
- Tuberculosis in an adult alpaca
- Eosinophilic enteritis in a yearling reindeer
- Wasting in a reindeer
- Treponeme digital dermatitis and *Fusobacterium* sp. necrosis in park fallow deer

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Introduction and overview

Species considered as Miscellaneous and Exotic Farmed Species (MEFS) include farmed South American aka new world camelids (alpacas, llamas), old world camelids (camels), farmed deer, farmed rabbits, farmed exotic birds (ostrich, emu), and farmed exotic ruminants (buffalo, bison).

This quarterly report reviews disease trends and disease threats in Great Britain (England, Scotland and Wales) for the third (July to September) and fourth (October to December) quarters of 2024.

It contains analyses carried out on disease data gathered from the Animal and Plant Health Agency (APHA), Veterinary Services division of Scotland's Rural College (SRUC) and Partner Postmortem Providers and intelligence gathered through the Miscellaneous and Exotic Farmed Species Expert Group 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 [on the APHA species disease surveillance reports: data analyses page on GOV.UK](#).

APHA's Emerging and Endemic Disease Alert System (EEDAS)

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

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

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

Issues and trends

Weather

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

July: temperatures were consistently below average across the UK for the first two weeks. Low pressure across the UK led to unsettled weather, and several frontal systems brought bands of rain. However, the warm end to the month led to an overall mean temperature of 14.8°C, with an anomaly of just -0.5°C. July rainfall was average for the UK (82.4mm, or 100% of the long-term average July rainfall), but wetter than average for areas in southern England, which saw 129% of the average rainfall. Scotland, Wales and Northern Ireland were slightly drier than average.

August: overall, temperatures across the UK were slightly above average, with a provisional mean temperature of 15.4°C, 0.3°C above average. However, there was regional variation, with Scotland and Northern Ireland slightly below average (-0.1°C) and 3 England more above average (+0.6°C). Rainfall showed similar regional variation, with northwestern Scotland provisionally experiencing 162% of the average August rainfall, while southern England only recorded 50% of the average.

September: there was unsettled weather across the UK, with variable temperatures and persistent showers. Northern Ireland and Scotland experienced a relatively dry and sunny month, while central and southern parts of the UK were particularly wet and dull. Overall, September saw below average temperatures. Rainfall for the UK overall was slightly above average (provisional anomaly 125%), but there was strong regional variation, with southern England provisionally recording 233% of their average rainfall while Scotland recorded just 63%.

October: overall temperatures were above average, with the UK 0.7°C above the long-term average. There was a brief spell of below average temperatures early in the month, but October was a month of mild temperatures for most. The month was drier than average, with the UK recording 103.5mm of rainfall, 84% of the long-term average. England, and in particular southern England, were both wetter than average, recording 101% and 103% of the long-term average rainfall, respectively.

November: November began with mild temperatures, however cold spells in the latter half of the month brought the overall mean temperature to near average. The provisional UK average mean temperature for November was 6.6°C, 0.1°C above the long-term average. The first half of the month was dry, however the second half of the month saw increased rainfall, which did not quite reach the average November rainfall. Overall rainfall was below average, with the UK provisionally recording only 68% of the average month's rainfall. Storm Bert brought exceptionally wet weather to the southwest, particularly south Wales, with more than 150mm of rain falling in the wettest upland areas.

December: December was milder than average, with the UK experiencing a provisional mean temperature of 6.2°C, 2.0°C above the long-term average. Rainfall was above average for the UK, recording 139.4mm of rainfall, 110% of the long-term average. Scotland was exceptionally wet, seeing 133% of the long-term average rainfall. Meanwhile Northern Ireland saw below average rainfall levels, provisionally recording only 69% of the long-term average rainfall for December.

Potential increased risk of exposure to ergot and fusarium from grain

The growing period for crops was wetter than average in the UK in 2024. AHDB issued a warning that there was an increased risk of grain contamination with ergot and fusarium as a consequence. Grain merchants and agronomists also suggested that this was the case. AHDB urged farmers to familiarise themselves with the clinical signs of ergotism and fusarium toxicity. Ergot causes vasoconstriction of the peripheral blood vessels resulting in tail-end and ear-tip loss, and lower limb and hoof tissue damage and sloughing. Lameness, weight loss, and neurological signs may also be exhibited. Fusariotoxins can cause gastrointestinal tract lesions, oedema, and general malaise. The information on the AHDB website can be found at this link: [Farmers warned of potential risk to livestock posed by fusarium and ergot in grain | AHDB](#). Information on mycotoxicosis can be found on the [WOAH information note](#).

Diagnostic Submission Data

Miscellaneous and exotic farmed species data are obtained from APHA including submissions to partner post-mortem providers (PPP), and from the Veterinary Services division of Scotland's Rural College (SRUC).

Historically, total submissions to APHA are predominantly from alpacas, followed by farmed deer, llamas, and other species (Figure 1). This trend continued for Quarters 3 and 4 of 2024. Total submissions consist of carcasses and non-carcasses. Submissions of alpacas, llamas, and farmed deer to APHA in Quarter 3 and 4 of 2024 were mainly carcasses, whereas SRUC received comparably more non-carcass submissions (Figure 2). This trend has remained consistent for the last five years across all quarters for all MEFS species; the total submissions for all quarters inclusive from 2020-2024 are summarised in Figure 3.

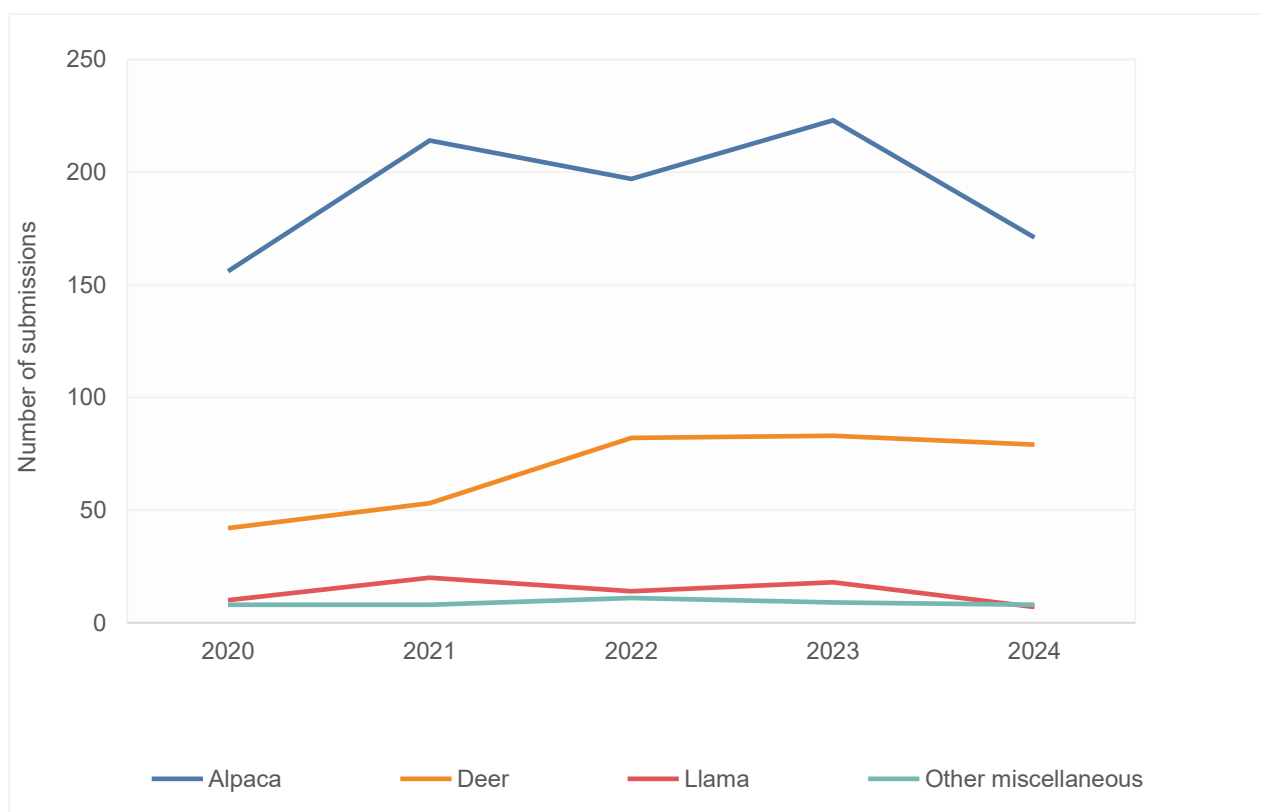


Figure 1. Total number of diagnostic miscellaneous and exotic farmed species submissions to APHA for all quarters, from 2020 to 2024

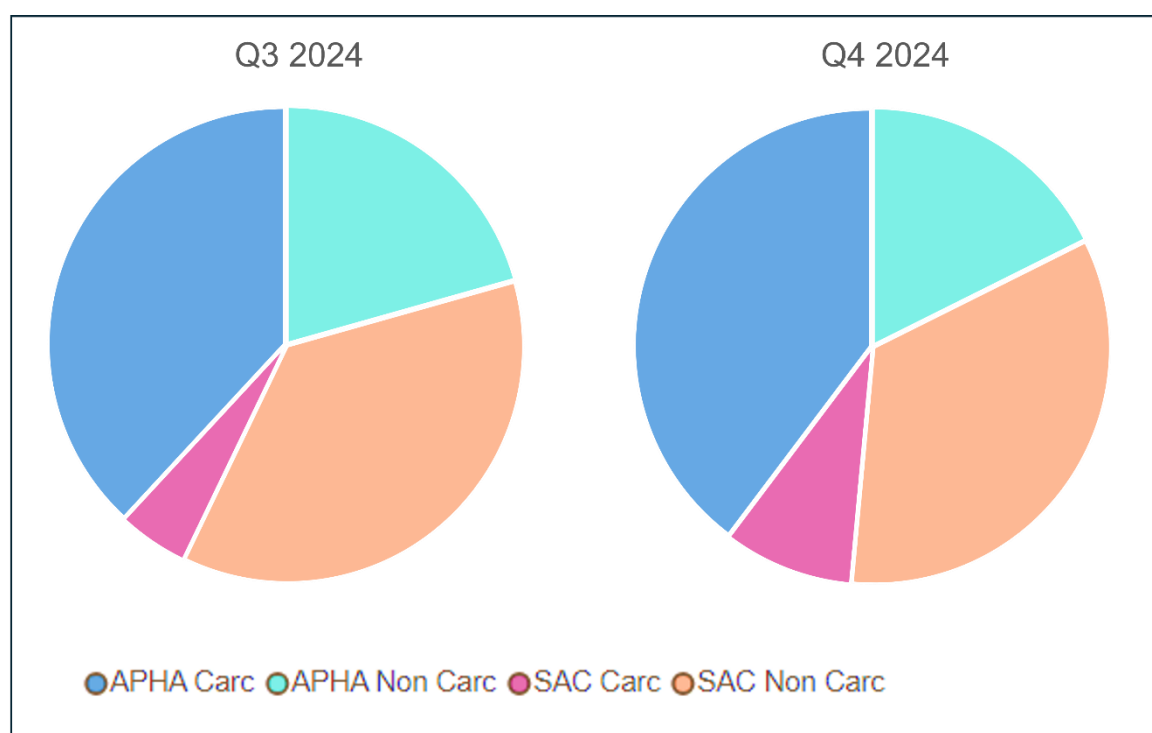


Figure 2. Carcase and non-carcase submissions from alpacas, llamas, and farmed deer to APHA and SRUC in Quarters 3 (left; July to September) and 4 (right; October to December) of 2024

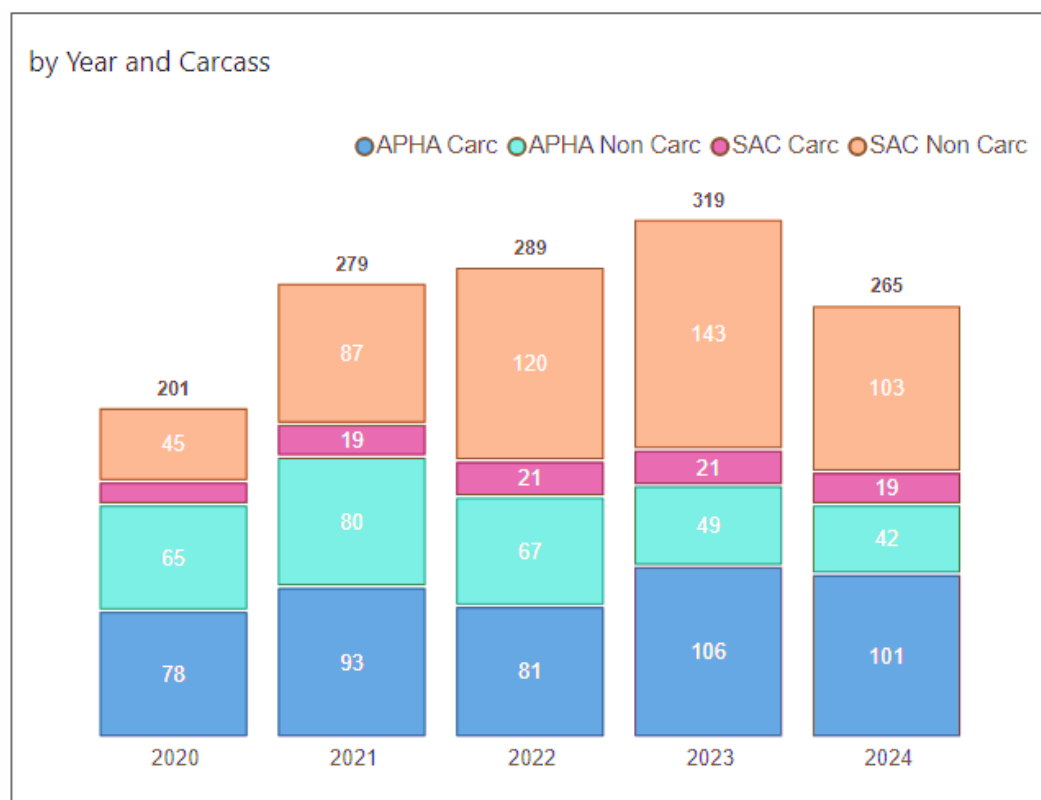


Figure 3. Total carcass and non-carcass submissions from MEFS during all quarters from 2020 to 2024

The three most frequent diagnoses in camelids (alpacas and llamas) made during quarter 3 and 4 of 2024 are shown in Table 1. Submission numbers were low, limiting statistical significance, but were consistent with the top two diagnoses for these quarters for the last five years of data inclusive. Parasitic gastroenteritis and haemonchosis were consistent diagnoses for both quarters.

Table 1. Great Britain scanning surveillance, three most frequent South American camelid diagnoses in Quarters 3 and 4 of 2024, and Quarters 3 and 4 inclusive from 2015 to 2024

Q3 2024		Q3 2015-2024
1	PGE due to haemonchosis	Parasitic gastroenteritis*
2	Parasitic gastroenteritis*	PGE due to haemonchosis
3	Gastric ulceration	Diagnosis not listed - digestive
Q4 2024		Q4 2015-2024
1	Parasitic gastroenteritis*	Parasitic gastroenteritis*
2	Acetonaemia	Coccidiosis
3	PGE due to haemonchosis	PGE due to haemonchosis

*Parasitic gastroenteritis (PGE) excludes PGE due to *Haemonchus* and PGE due to *Nematodirus*.

New and re-emerging diseases and threats

Bluetongue serotype 3 (BTV-3)

The first case of the 2024 BTV season was confirmed in a ram in Norfolk on 26 August 2024. The affected animal presented with inappetence, ulceration in the mouth, mild crusting around the nostrils, and lameness in one leg. The total number of confirmed cases by the end of September for the season, was 108 in England plus one in Wales. The most common clinical signs from confirmed cases, at the time of reporting and investigation, are listed in Table 2. Images of BTV-3 clinical signs can be found at: [Pictures of clinical cases confirmed with bluetongue serotype 3 infection.](#)

Little data is available for camelids in the most recent outbreaks of BTV-3 in the Netherlands and England. **No cases have been confirmed to date in British camelids.** Clinical signs may be mild or inapparent, like goats, however cases of acute, fatal disease have also been described. Absent clinical signs were described [in llamas infected with BTV-1 in France](#) in 2008, then fatal infection was later described within the same month only 40km away. Death following [natural infection of alpacas with BTV-3](#) was described in South Africa in 2016, in addition to cases from [Germany \(2007\)](#) and [California \(2008\)](#) in alpacas where the serotype was not specified.

Acute onset respiratory distress and progressive weakness prior to death were described in all cases, sometimes with ‘hiccup-like’ **stertorous breathing**. Consistent postmortem findings of **hydrothorax** and **severe pulmonary oedema** were typically seen. Ulcerative and hyperaemic mucosal lesions described in sheep were a less common feature, only described in the German case.

Bluetongue virus is a notifiable disease. Suspicion of Bluetongue virus in animals must be reported to the Animal and Plant Health Agency on 03000 200 301 in England, on 03003 038 268 in Wales, and to the [local Field Services Office](#) in Scotland.

The government published their [Bluetongue disease control framework set out on GOV.UK](#) on 23 May 2024.

Further guidance and information are available on the [Ruminant Health & Welfare site](#), [Bluetongue: information and guidance for livestock keepers \(GOV.UK\)](#) and on [Bluetongue: how to spot and report it \(GOV.UK\)](#).

Table 2. Most common clinical signs in cattle and sheep, from confirmed bluetongue serotype 3 cases, in descending order

	Cattle	Sheep
1 (most common)	malaise	nasal discharge
2	lameness	malaise
3	ulceration	swollen face
4	red membranes	crusting
5	conjunctivitis	hypersalivation
6	crusting	red membranes
7	coronitis	lameness
8	pyrexia	inappetence
9	nasal discharge	ulceration
10	hypersalivation	pyrexia
11 (least common)	reluctance to move	reluctance to move

Epizootic Haemorrhagic Disease (EHD)

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

EHD is notifiable. It is present on all continents except Antarctica, with the first incursion into Europe in October 2022 when it spread North across the Mediterranean basin. In September 2023, EHD spread into France and by the 28th of November, 3527 outbreaks had been reported in Southern France. Models predict it will spread further North into Scandinavia.

Clinical signs in farmed ruminants include pyrexia, conjunctivitis, ocular and nasal discharge, erythema and ulceration of the muzzle and lips, tongue oedema, dysphagia, respiratory distress, lameness and congestion of the coronary bands, and erythema and ulcers on the udder. Wild ruminants may also demonstrate weakness, incoordination and recumbency as well as hypersalivation. There may be ulceration of the oral mucous membranes, bloody diarrhoea or haematuria.

EHD, BTV, FMD (Foot and Mouth Disease) and vesicular stomatitis must be considered as differential diagnoses when non-notifiable disease differentials such as MCF (malignant catarrhal fever), mucosal disease and photosensitisation cannot be ruled out. It is important to report the suspicion of disease in wild deer as well as farmed deer and other ruminants. Wildlife are important sentinels for exotic diseases that affect our farmed species. Note that Anthrax is a differential diagnosis for EHD in wild deer that are found dead with haemorrhagic discharges.

Suspicion of EHD in animals must be reported to the Animal and Plant Health Agency on 03000 200 301 in England, on 03003 038 268 in Wales, and to the [local Field Services Office](#) in Scotland.

Further information on EHD is available at the following links:

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

[14 August 2024: epizootic haemorrhagic disease in Europe](#)

[Epizootic haemorrhagic disease \(europa.eu\)](#)

[Epizootic haemorrhagic disease: how to prevent, spot and report it - GOV.UK \(www.gov.uk\)](#):

Diagnoses from the Great Britain scanning surveillance network

Camelids

Acute death due to *Haemonchus contortus*

A yearling alpaca was found dead with no premonitory signs. The alpaca was treated for worms eight weeks previously, based on a faecal worm egg count (WEC) of 200 eggs per gram (epg) of faeces. Significant findings at postmortem examination were thin blood, pale mucous membranes and increased pleural, pericardial, and peritoneal fluid. Parasitology testing detected a very high burden of 30,750 epg *Trichostrongyle*-type eggs. The

Trichostrongyle-type egg count includes several species that cannot be differentiated based on egg morphology alone including *Camelostrongylus*, *Haemonchus*, *Ostertagia*, *Teladorsagia*, *Trichostrongylus*, *Cooperia*, *Oesophagostomum*, *Chabertia* and *Bunostomum*.

Considering the high egg count and fecundity of *Haemonchus contortus*, fluorescent differential staining was progressed to quantify the percentage of *Haemonchus* eggs within the sample. Nearly three quarters of the egg burden, equivalent to 22,755 epg, exhibited positive fluorescence. The total worm count (TWC) was lower than expected considering the very high WEC, which was most likely due to postmortem degradation since the carcass was examined more than 24 hours after death (Table 3).

H. contortus is a blood sucking worm usually found in the abomasum of sheep and goats; however, the parasite can also infest camelids, with worms found within C3. Individual worms can remove 0.05ml of blood per day causing a rapid anaemia. Camelids may not present with clinical signs until blood PCV is almost fatally low, given their remarkable adaptation to high altitude, low oxygen environments. The short pre-patent period of *H. contortus* means significant pasture burdens can accumulate very quickly. Ingestion of many infective larvae in a short period of time can result in acute disease and death, as seen in this case. Urgent examination and treatment of the remaining animals was recommended with an appropriate anthelmintic. No medications are licensed in camelids in GB and must be prescribed by a veterinary surgeon under the cascade. More information on this is available from the [British Veterinary Camelid Society](#).

Table 3. Summary of parasitology testing in a yearling alpaca that died suddenly

Test	Faeces	GI tract
Abo/C3 <i>Haemonchus</i> spp. twc		100
Abo/C3 Immature/L4 twc		300
SI Immature/L4 twc		200
<i>Haemonchus</i> spp egg percentage	74	
<i>Trichostrongyle</i>-type eggs (per g)	30,750	

Diagnostic investigation following negation of Bluetongue virus

An alpaca which suddenly died was reported as a suspected Bluetongue virus (BTV) case. The carcass was transported to APHA Weybridge for postmortem sampling. Diagnostic samples were collected in tandem for processing under the Differential Diagnosis of Negated Report Cases (DDNRC) scheme and were processed once BTV had been negated.

The carcass was severely autolysed which impeded gross and microscopic examination. Multifocal calcified granulomatous nodules in the mesenteric lymph nodes were seen, likely indicative of chronic parasite migration (Figure 4). Parasitic gastroenteritis (PGE) was suspected with 940 epg of *Trichostrongyle*-type eggs detected in faeces. Differential staining confirmed presence of *Haemonchus contortus*, with a small proportion of fluorescing eggs.

Camelids may have significant disease due to PGE even in the absence of diarrhoea, as they are specially adapted to extract as much water as possible from their long spiral colon. In this case, the clinical significance of the worm burden was uncertain due to advanced gut tissue autolysis, an unknown weight history and the animal being in good bodily condition. Tissues were too autolysed to conduct other tests, including a total worm count and bacterial cultures, therefore no definitive cause of death was determined.

APHA Species Expert Groups, including MEFS, are keen to investigate cases where notifiable disease has been negated by APHA Field Services. This may be offered free of charge. Vets should contact their [nearest surveillance pathology provider](#) or email siu@apha.gov.uk.



Figure 4. Spherical, calcified granulomas within the mesenteric lymph nodes indicative of prior larval parasitic migration in camelids

Disseminated malignant round cell tumour in a yearling alpaca

The carcase of a yearling male alpaca was submitted to the University of Liverpool for postmortem examination. The animal had been introduced to the farm at nine months old. Over a two-week period, the yearling isolated itself in the corner of the field and mostly remained in sternal recumbency, although it was still mobile and eating. Treatment with antibiotics, NSAIDs and anthelmintic were unrewarding and the animal subsequently died.

Grossly, the animal was small for its age and in very poor body condition with serous atrophy of the visceral fat. There was marked generalised lymphadenopathy, splenomegaly, and ascites. There was multifocal, irregular, pale thickening of the mucosa in all three stomach compartments and affecting the small and large intestinal walls (Figure 5).

Histopathological examination revealed sheets of neoplastic round cells effacing lymph nodes, sometimes with necrosis and small foci of mineralisation. The splenic and adrenal architecture had largely been replaced by similar neoplastic round cells and further neoplastic cells were seen in the kidney, liver, lung, C3 stomach, small intestine and large intestine. The bone marrow showed a good distribution of all cell lines but there were also collections of neoplastic round cells. These findings confirmed a diagnosis of disseminated malignant round cell tumour (MRCT). Lymphoma is the most common MRCT of camelids, occurring most frequently in young animals, with rapid disease progression and a poor prognosis.



Figure 5. Irregular, pale thickening of the small intestinal wall (Photo Courtesy of University of Liverpool)

Congenital goitre in an aborted cria

An aborted cria was submitted to the University of Liverpool for investigation. The herd comprised around 50 females. At the time of submission, four of 24 cria had been stillborn, with no other stillbirths recorded in the preceding eight years. The stillborn cria were generally a few days overdue and were oversized.

On examination, the paired thyroid glands appeared enlarged (Figure 6); one weighed 3g and the other weighed 2g (combined weight of 5g = 0.047% of the bodyweight in grams). Laboratory screening tests did not detect *Brucella*, *Chlamydia* nor *Coxiella*. Bacterial cultures of foetal stomach contents were sterile, including *Campylobacter* enrichment cultures. PCR tests for *Toxoplasma*, *Neospora*, BVD, equine herpesvirus-1 and Schmallenberg virus were negative. Histopathology of the thyroid gland revealed moderate hyperplasia (goitre). Congenital goitre in other species, which can result in stillbirth and/or contribute to other neonatal disease, is associated with deficiency of iodine in the gestational diet of the dam and/or ingestion of goitrogenic plants that increase the dietary requirements. A review of the diet of pregnant animals in this herd was advised, with consideration of supplementation under the guidance of a nutritionist.

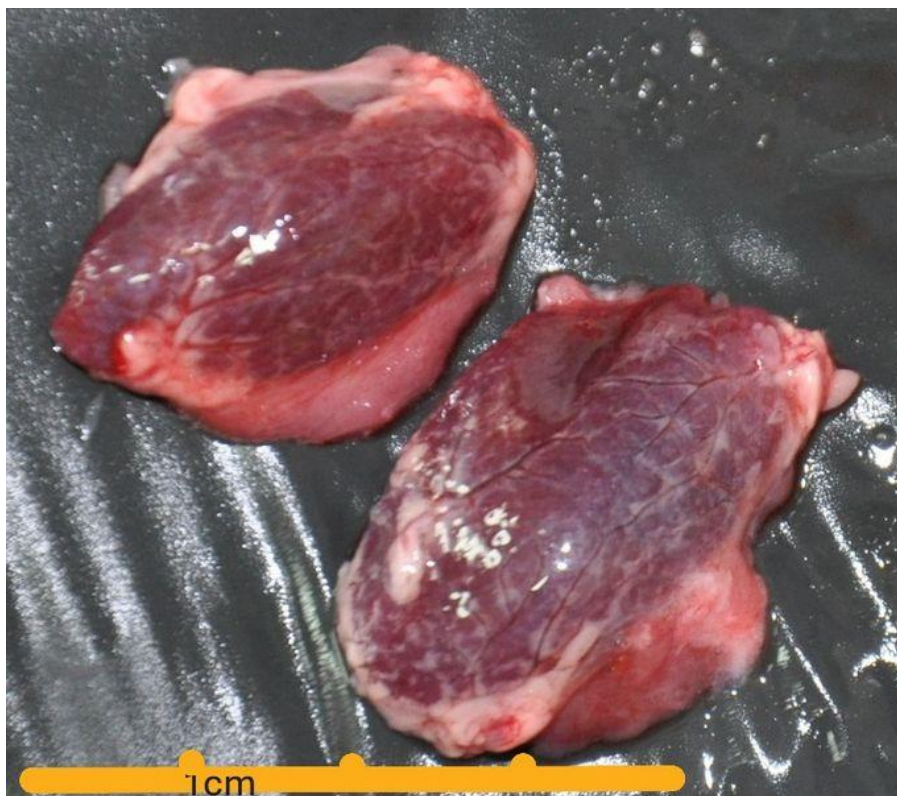


Figure 6. Enlarged thyroid glands in a stillborn cria (Photo courtesy of University of Liverpool)

Hepatic lipidosis in adult alpacas

Deaths of three hembra following a period of sickness and recumbency with prolonged blood clotting times were described on a breeding farm. The group consisted of females of mixed age that did not have a cria the previous year. They were fed more than other groups on farm and were moved to new pasture one week before presenting signs.

The first 13-year-old alpaca showed malaise, recumbency, absence of faeces and hypothermia, and died approximately six hours later despite antimicrobial and fluid therapy. Biochemical analyses indicated significant increases in liver enzymes, bile acids, creatine kinase, and white blood cells with a predominant neutrophilia. This animal, and a second with similar presentation and acute death, were submitted for postmortem examination on consecutive days. Gross findings were consistent in both, with pale, slightly swollen, mildly 'greasy' livers which did not float in water (Figure 7), mild ascites, and congested lungs. Lack of blood clotting and widespread haemorrhages were also noted throughout both carcasses. The second alpaca examined was in early pregnancy. Bluetongue virus could not be excluded and was later negated on sampling.

Biochemical tests conducted on the rest of the group identified additional alpacas with raised liver enzymes and bile acids, some of which had prolonged blood clotting observed following venepuncture. A two-year-old with similar clinical signs subsequently deteriorated acutely and died. An on-farm postmortem examination by the private vet identified findings consistent with the alpacas examined at Bury VIC. Histopathology identified severe, diffuse, hepatic lipidosis (HL) in both alpacas submitted to APHA and external histopathology on the third found dead, confirming the group problem of hepatic lipidosis.

HL is a non-specific degenerative change. It can occur with several toxic and metabolic insults that interfere with hepatocellular metabolism and can have secondary effects such as defective blood clotting. Inciting factors vary between animal species, and the exact pathogenesis is poorly understood in camelids.



Figure 7. Pale, greasy liver of an alpaca with hepatic lipidosis

The condition is often fatal without treatment. Animals with an increased energy demand, e.g., late gestation or lactation, are most affected, however, males and non-pregnant or lactating females also contribute to a significant proportion of cases. The most common history factor is recent weight loss or a period of anorexia. Resulting inadequate energy intake drives mobilisation of fat and accumulation in the liver. Other potential mechanisms for lipid accumulation include decreased fat oxidation or export from the liver, which may be secondary to hepatic injury.

In this case, there was no history of significant weight loss in the group, and no animals were in late pregnancy or lactation. Other stressors such as changes in social or environmental conditions and concurrent disease have also been implicated in HL. Given their apparent susceptibility to developing this condition, it is often difficult to discern if HL is the primary problem or secondary to another disease process in camelids.

Tuberculosis in an adult alpaca

An eight-year-old female alpaca from a group of five animals was submitted for examination in Southwest England. There was a short history of treatment for apparent ear sensitivity, following which the animal went off her food, developed pale mucous membranes, passed haemorrhagic diarrhoea and died shortly after. At postmortem examination, the right aural canal was occluded by a small quantity of brown caseous material close to its opening. However, the more significant finding was that the cranial halves of both lungs were very hard, and the cut surface revealed homogenous firm, white material, affecting approximately 60% of the lung volume (Figure 8). The aerated lung tissue had a seeding of miliary white lesions throughout. The mediastinal lymph node was enlarged and very hard, with circumscribed pale abscess-like lesions present over the surface. Hard, miliary lesions were also present in the liver and mesentery. Findings were reported as suspected tuberculosis. Subsequent TB PCR testing detected *M. bovis* and histopathology confirmed the presence of acid-fast bacilli within granulomatous lesions in the lung and liver.



Figure 8. Extensive caseation of the lungs due to *Mycobacterium bovis* infection

Deer

Eosinophilic enteritis in a yearling reindeer

A yearling reindeer was found dead unexpectedly and submitted to the University of Nottingham for postmortem examination. There had been historic issues with non-specific enteritis in the group and a diagnosis of yersiniosis confirmed in a juvenile.

Gross findings included skeletal muscle atrophy and adipose tissue depletion, enlarged mesenteric lymph nodes, diffuse enteritis, and embolic pneumonia. There was also evidence of historic navel ill, intestinal adhesions and a peritoneal abscess. The peritoneal abscess was thought secondary to navel ill, with onward subsequent spreading resulting in the embolic pneumonia. Bacteriology identified pure growths of a multidrug resistant *E. coli* from multiple abscesses, which likely suggested a terminal bacteraemia.

Microscopic examination of the small intestine identified an eosinophilic enteritis and evidence of historic parasitism. Eosinophilic enteritis is usually secondary to parasitic antigenic stimulation. In this case the parasitology results were not supportive, possibly due to intermittent shedding of eggs or prior anthelmintic treatment. Other aetiologies include dietary hypersensitivity and idiopathic causes. Infectious causes of enteritis including malignant catarrhal fever, *Clostridium perfringens* enteritis, and salmonellosis were ruled out on testing. It is worth noting that enteropathy of unknown aetiology is relatively common in reindeer.

Wasting in a reindeer

A four-year-old reindeer was submitted with a two-week history of going off feed, weight loss, malaise, and death. The reindeer was part of a group of eight in a shed, all of which were vaccinated against clostridial disease and recently treated for lungworm. The affected animal had received treatment with antibiotics and anti-inflammatories. Gross postmortem findings were consistent with a chronic peritonitis affecting the cranial abdomen, involving the reticulum, liver and diaphragm, with fibrous thickening of the liver capsule and a large hepatic abscess (Figure 9). The findings resembled the pathology seen in cases of traumatic reticuloperitonitis in cattle. Bacterial cultures isolated *E. coli* in purity from the lungs, which could reflect postmortem contamination, or a tracking infection from a penetrating injury. Although this was likely an isolated case, advice was given to review the feeding management of this group and ensure that any feeding equipment was well maintained alongside other aspects of the animals' environment.

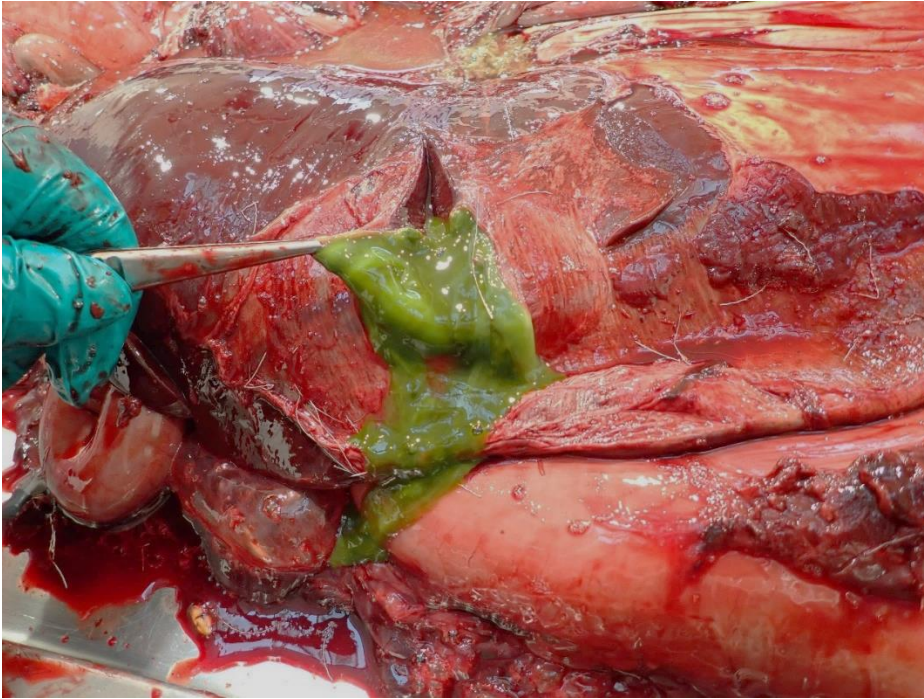


Figure 9. Liver abscess in a deer with pathology consistent with traumatic reticuloperitonitis

Treponeme digital dermatitis and *Fusobacterium* sp. necrosis in park fallow deer

A mature male fallow deer was submitted to investigate the cause of lameness and lower limb skin ulcers. Five deer had previously been shot as they had developed lameness and another four were lame at the time of submission. All affected deer were mature males, aged as Sorrels (in third year) and above, in a herd which had a total of 110 male deer. No lameness was observed in the does or fawns, which grazed separate parkland from the males. Acute infection with Bluetongue virus was ruled out as cases occurred during the low vector period. Skin ulcers were present around the coronary band of the right fore foot, on both the medial and lateral aspects of the skin of the lower limb, and at the heel adjacent to the interdigital cleft. The left fore foot had a single ulcer at the heel. There was also hard swelling of both right fore foot digits, with several areas of tissue necrosis and abscessation deep within the digits, resembling those found in severe penetrating digital dermatitis in cattle. A mixed bacterial flora containing a very heavy growth of *Fusobacterium* spp. was isolated from the abscessed tissues. Three species of Treponemes were detected using PCR testing. *Treponema phagedenis*, *Treponema medium* and *Treponema pedis* are associated with digital dermatitis in cattle and contagious ovine digital dermatitis (CODD) in sheep. Most significantly, these Treponemes were identified within both the necrosed lesions of the foot and the ulcerated skin areas. The underlying cause of disease was uncertain.

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2. Further reading links:
[Recognizing Hepatic Lipidosis in Llamas and Alpacas](#)
[Therapy and Prevention of Hepatic Lipidosis in Llamas and Alpacas](#)



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