

OVERVIEW

- **Ragwort toxicity in beef cattle at grass**
- **Botulism causing multiple deaths in housed beef cattle**
- **Hepatitis due to *Listeria ivanovii* in a lamb**
- **Disseminated yeast infection in ducklings**

GENERAL INTRODUCTION

The mean temperature for August was 0.6 °C above the long-term average with maximum temperatures 2 °C above normal in parts of the West Highlands. Many areas were drier than average, especially in the west, with Scotland as a whole having 71 per cent of average rainfall. Sunshine was above average in parts of the west, but slightly below average in many other places, with an overall figure of 95 per cent of average.

DISEASE ALERTS

The following conditions were reported by SRUC VS disease surveillance centres in November 2020. Given similar climatic and production conditions, they could also be important this year.

- **Closantel toxicity**
Blindness as a consequence of closantel toxicity is reported in both cattle and sheep and is a result of myelin vacuolation, optic neuropathy and retinal degeneration. The withdrawal of nitroxylnil injection (Trodat[®]) may increase the use of pour on treatments to treat *Fasciola hepatica* in cattle this autumn/winter. This could lead to a rise in adverse reactions to closantel due to cattle licking the product off their pen mates. There is no effective treatment for affected animals.
- **Dosing gun injuries and injection site reactions**
Infection following perforation of the pharyngeal wall by dosing guns, or unhygienic administration of injectable products, can be responsible for losses in groups of sheep at this time of year. Presenting signs may include submandibular swelling, lameness, neurological signs and sudden death. Good technique, animal restraint and well-maintained equipment are key in preventing issues.

CATTLE

Toxic conditions

Three yearling bullocks were found dead over a ten-day period three weeks post turn out at the end of May. Seven of the remaining nine animals then developed signs of weakness with an unsteady gait, anorexia and diarrhoea and three went on to die. A fourth animal was euthanased and an on farm postmortem examination was carried out assisted by SRUC Vet Services over a video call. Significant findings included photosensitisation, rectal prolapse, ventral subcutaneous oedema, ascites and marked oedema of the abomasal mucosa. Bacteriology failed to identify any infectious agents. Histopathology detected a subacute to chronic hepatopathy characterised by megalocytosis, bile duct hyperplasia and portal and perivenous fibrosis consistent with pyrrolizidine alkaloid toxicity. Further history confirmed that silage fed over the housing period had contained ragwort and this was considered to be the likely cause.

Generalised and systemic conditions

A three-year-old British blue cross suckler cow was euthanased and submitted for postmortem examination. It had calved a week previously and then developed mastitis, bilateral corneal opacity and a mucopurulent nasal discharge. Areas of dermatitis were noted bilaterally between the udder and the legs, and the skin of the udder was peeling. Fine lengthways linear erosions were found in the mid to distal oesophagus. Small numbers of lungworm were found in the distal airways. Spleen tested PCR positive for ovine herpes virus 2 confirming malignant catarrhal fever as the cause of death.

Nervous system disorders

Ten adult beef cattle developed hind limb weakness progressing to recumbency over a 24-to-48-hour period. Clinical examination revealed flaccid paralysis of the tail, loss of anal sphincter tone, generalised muscle weakness, tongue protrusion and mild ruminal atony. Botulism was suspected despite there being no history of exposure to poultry litter and all clinically affected animals died. Two animals were examined postmortem with no significant abnormalities found. While no botulinum toxin was detected in the small intestinal contents this did not exclude the diagnosis in the face of such well-defined clinical signs. Wet, four-year-old red clover clamp silage was being fed and considered the most likely source of toxin. Baled silage was substituted and the problem resolved with the last known case occurring three weeks after the initial onset. This is similar to the incubation time of up to 18 days reported in an outbreak of botulism associated with grass silage.¹

Investigations are ongoing into a problem with congenital cataracts in a 135-cow dairy herd. Three calves were euthanased for postmortem examination with no significant findings other than cataract (Fig 1). At the time of presentation 15 affected calves had been born over an eight-month period and both Holstein and beef cross calves were represented. Only calves born to cows were affected which is typical of outbreaks of idiopathic congenital cataract in dairy herds.² Histopathology confirmed extensive liquefaction of lens fibres with Morgagnian globule and bladder cell formation and a central to posterior location. The aetiology of idiopathic congenital cataract in dairy herds can be difficult to determine but is likely to be multi-factorial with nutritional, genetic and environmental factors playing a role.



Figure 1 – Congenital cataract in a Holstein calf

SMALL RUMINANTS

Parasitic diseases

Seventy Texel cross Shetland purchased store lambs arrived from a local farm in Aberdeenshire in poor condition and four were noted to be ill and faecal stained. Three died over the next few days and were submitted for postmortem examination. The carcasses were pale and emaciated weighing only 5.5, 10 and 13 kg. Parasitic gastroenteritis was diagnosed in all three with significant burdens of *Haemonchus contortus* recovered from the abomasum. *Teladorsagia circumcincta* were also detected and these were a mixed infection of *Nematodirus battus* and *Trichostrongyle* sp. in the small intestines. Although an extreme example, this case illustrates the importance of good quarantine treatment protocols for added animals. (S518816)

Generalised and systemic conditions

A thin, three-year-old Suffolk tup was presented for postmortem examination following a three-week period of respiratory disease and lameness. Findings included pleural abscesses and septic arthritis affecting multiple joints including bilateral shoulders, stifles and elbows. Extensive endocarditis of the left atrio-ventricular valve was also detected. *Streptococcus dysgalactiae* was isolated in pure growth from the liver and lung and in mixed growth along with *Bacteroides pyogenes* and *Fusobacterium necrophorum* from a joint. The lesions were all well established and the origin of the bacteraemia could not be proved.

Alimentary tract disorders

Ten cross lambs from a group of 270 died over a three-week period with severe diarrhoea observed in some cases. A thin, moribund, faecal stained lamb weighing only 16 kg was euthanased for investigation of the problem. No evidence of a significant worm burden was detected but fine pinpoint spots were found throughout the liver parenchyma. *Yersinia enterocolitica* and *Listeria ivanovii* were cultured from the liver with *Y. enterocolitica* also isolated from the ileum. Both were considered potentially significant in relation to the clinical signs. Histopathology revealed a necrotising, leucocytoclastic and neutrophilic acinar hepatitis with occasional intralobular clusters of fine Gram positive bacilli, some of which were intracellular, consistent with *Listeria* sp. No evidence of yersiniosis was detected in the ileum indicating that this isolate was an incidental finding at both sites. *L. ivanovii* is an occasional cause of ovine abortion, but *L. monocytogenes* is a more common isolate from cases of systemic disease.

Renal diseases

A 91 kg Charolais lamb was found dead and suspected to have died of pneumonia. Several losses were reported from the group of 50 lambs that were at grass with access to lamb finisher pellets. Postmortem examination revealed a moderately distended bladder with a very haemorrhagic wall (Fig 2) plus bruising of the penis and surrounding tissues. Evidence of a secondary acute pneumonia was also noted and *Mannheimia haemolytica* was isolated from the lung and urine. Urine microscopy confirmed haematuria and the presence of struvite crystals. Analysis of vitreous humour confirmed uraemia which was considered to be associated with partial obstruction of the urethra. A review of feeding management was advised.

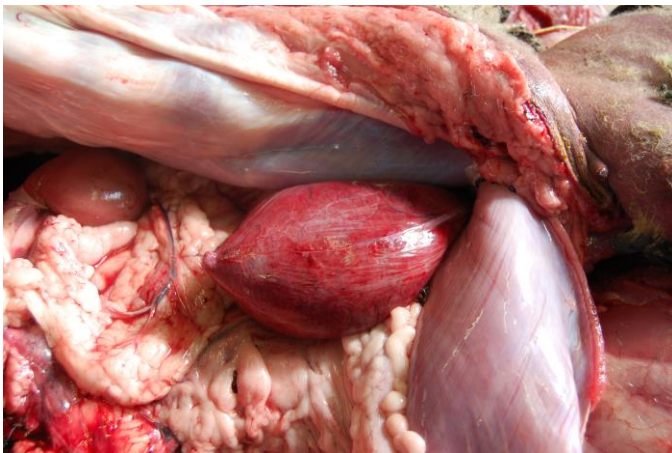


Figure 2 – Haemorrhagic bladder wall in a lamb with struvite urolithiasis

Skin diseases

Two, four-month-old Scottish blackface lambs were euthanased for investigation of severe orf lesions. 1500 lambs had been vaccinated with a live orf virus vaccine and at least ten had died after developing large reactions at the vaccine site (Fig 3) and head with lesions on the ventral abdomen and legs in some cases. Lymph nodes were not detectable on postmortem examination. Parapox virus was detected by PCR from lesions on the lips and sequencing showed it to be vaccinal strain in one lamb and wild type in the other. A farm visit was carried out and investigations are ongoing. The possibility of a hereditary immunodeficiency was suggested.



Figure 3 – Severe orf infection in a Scottish blackface lamb

PIGS

Alimentary tract disorders

Six sows that had been housed for a year were turned out on a very warm day and two were found dead the next morning. Heat stroke was suspected, but further investigation was not carried out. At this time a third sow showed evidence of dyspnoea, trembling and anorexia but appeared to improve. This pig, a four-year-old Tamworth sow, was found dead two weeks later and submitted for postmortem examination. Multiple white to yellow foci were present in the adipose tissue adjacent to the pancreas (Fig 4) and histopathology confirmed pancreatic and fat necrosis. This was considered to be the cause of death and it was suggested that hypoperfusion secondary to hyperthermia may have been the primary cause although this could not be proved.



Figure 4 – Fat necrosis in the anterior abdomen of a Tamworth sow

BIRDS

Poultry

Approximately 15 of 25 six-week-old ducklings died following non-specific signs of dullness and lethargy over a three-week period. Fifteen adult ducks and 20 geese were present on the pond. Three ducklings were submitted but there were no significant findings on postmortem examination and bacteriology was unrewarding. Histopathology revealed severe diffuse interstitial pneumonia, splenitis and hepatitis with multiple yeast-like bodies within swollen endothelial cells in a range of tissues. These findings were consistent with a disseminated yeast infection as described by Ravi *et al.*³ It is postulated that disease in ducklings is a result of contamination of aquatic environments with faeces from adult and/or wild birds. There is no known effective treatment for this condition. Keeping young ducks away from bodies of water to which older ducks have access was suggested as a possible preventative measure.

Eleven, one-week-old turkey chicks from a batch of 300 died and two were submitted for postmortem examination. The carcasses weighed 63 g and were significantly autolysed. The livers were pale, there was no food in the crops and the yolk sacs measured 0.5 and 1 cm in diameter. *Escherichia coli* was isolated from the yolk sacs and heart blood, but no evidence of septicaemia was detected on histopathology suggesting that the isolates were postmortem invaders. The average weight of turkey poults at one week-of-age has been reported to be 156.3 +/- 0.61g⁴ therefore both chicks were markedly underweight. In combination with the pale livers and empty crops starve-out was considered the most likely cause of mortality. Checking access to food and water and for evidence of heat stress or chilling was advised.

Two different presentations of Marek's disease were seen during August. In the first case the carcass of a 29-week-old Faverolles pullet was examined after it became the second bird to die from a group of eight purchased 11 weeks earlier. A firm 3 cm diameter mass was found in the neck causing deviation of the crop and oesophagus. Neoplasia was suspected and histopathology confirmed that the mass was a lymphomatous tumour consistent with Marek's disease. In the second case a Sussex bantam was euthanased as part of an investigation into ongoing deaths in a flock of 100 birds. The carcass was thin and multiple areas of erosion/ulceration were noted on the mucosa of the crop. Multiple 1 to 2 mm pale foci were present throughout the spleen and there was a necrotic enteritis most severe in the proximal to mid jejunum (Fig 5). Histopathology confirmed Marek's disease and established that the crop lesions were a result of lymphomatous infiltration of the lamina propria with secondary yeast infection and focal necrosis and ulceration of the overlying epithelium.



Figure 5 – Crop ulceration and enteritis secondary to Marek's disease

WILDLIFE

A hedgehog (*Erinaceus europaeus*) was spotted in a garden during daylight hours and noted to be slightly ataxic but eating a small amount. It was found dead 10 hours later and submitted for postmortem examination. There was no subcutaneous or internal body fat and minimal content in the digestive tract. *Salmonella enterica* serotype *enteritidis* ST183 was isolated from the liver and is known to be associated with disease in hedgehogs and people.⁵ Histopathology confirmed a bacterial meningitis and septicaemia.

References:

- 1 Relun A, Dorso L, Douart C *et al.* A large outbreak of bovine botulism possibly linked to a massive contamination of grass silage by type D/C *Clostridium botulinum* spores on a farm with dairy and poultry operations. *Epidem and Infect* 2017; 145(16):3477-85
- 2 Osinchuk S, Petrie L, Leis M *et al.* Congenital nuclear cataracts in a Holstein dairy herd. *Can Vet J* 2017; 58:488-92
- 3 Ravi M, Hill JE, Fernando C, Wobeser G. Disseminated yeast (Order *Sccharomycetales*) infection in a Muscovy duckling (*Cairina moschata*) *Can Vet J* 2016; 57(11):1176-9
- 4 Roehrig C, Torrey S. Mortality and early feeding behaviour of female turkey poults during the first week of life. *Front Vet Sci* 2019;6:129 doi:10:3389/fvets.2019.00129
- 5 Lawson B, Fanklinos LHV, Fernandez JR *et al.* *Salmonella enteritidis* ST183: emerging and endemic biotypes affecting western European hedgehogs (*Erinaceus europaeus*) and people in Great Britain. *Scientific Reports* 2018;8:2449 doi:10.1038/s41598-017-18667-2

Laryngeal Chondritis in Sheep

Laryngeal chondritis is characterised by respiratory stridor with associated hyperpnoea and dyspnoea. Death occurs when severe laryngeal stenosis leads to fatal hypoxia.

SRUC Veterinary Services data for the last ten years shows that the condition is diagnosed most frequently in Texel sheep (Fig A), particularly younger rams, with males age up to two years old accounting for 57 per cent of cases presented. There appears to be no seasonal distribution of cases. The overall prevalence in Scotland is unknown however, 81.5 per cent of respondents to a survey of pedigree Texel flocks in Ireland reported problems with harsh breathing.¹

The aetiology of the condition is not fully understood, however recent work suggests that the Texel breed has a small larynx with a narrow, funnel shaped airway and disproportionately large epiglottis and arytenoid cartilages.² When combined with their muscular conformation and resultant metabolic demand the anatomy of the Texel larynx may predispose to mucosal damage. This is supported by study findings which have shown that laryngeal oedema is commonly found at slaughter of healthy Texel sheep¹ and, in a survey of fallen stock, the incidence and severity of laryngeal lesions was higher in Texels than bluefaced Leicesters.²

It is thought that these laryngeal lesions predispose to infection with opportunistic bacteria leading to oedema, ulceration and necrosis of the mucosa, and inflammation and necrosis of the cartilage (Fig B). *Trueperella pyogenes*, *Streptococcus* spp, *Fusobacterium* spp and *Bacteroides* spp are isolated most often.^{3,4,5} The resulting narrowing of the rima glottidis gives rise to the characteristic laryngeal stridor, and progression to abscessation with the formation of discharging sinuses^{3,4,5} may explain poor treatment success and the need for a guarded prognosis.

A recent study identified degenerative lesions within the diaphragms of Texel sheep, leading to fatal diaphragmatic haemorrhage and/or rupture in some cases.⁶ Laryngeal chondritis was also present in four of 12 cases and a fifth animal had narrowing of the lumen. It was proposed that increased intrathoracic pressure associated with dyspnoea could have damaged the diaphragm⁶ however, further work is required to prove a causal relationship between abnormal laryngeal anatomy/laryngeal chondritis and diaphragmatic degeneration.

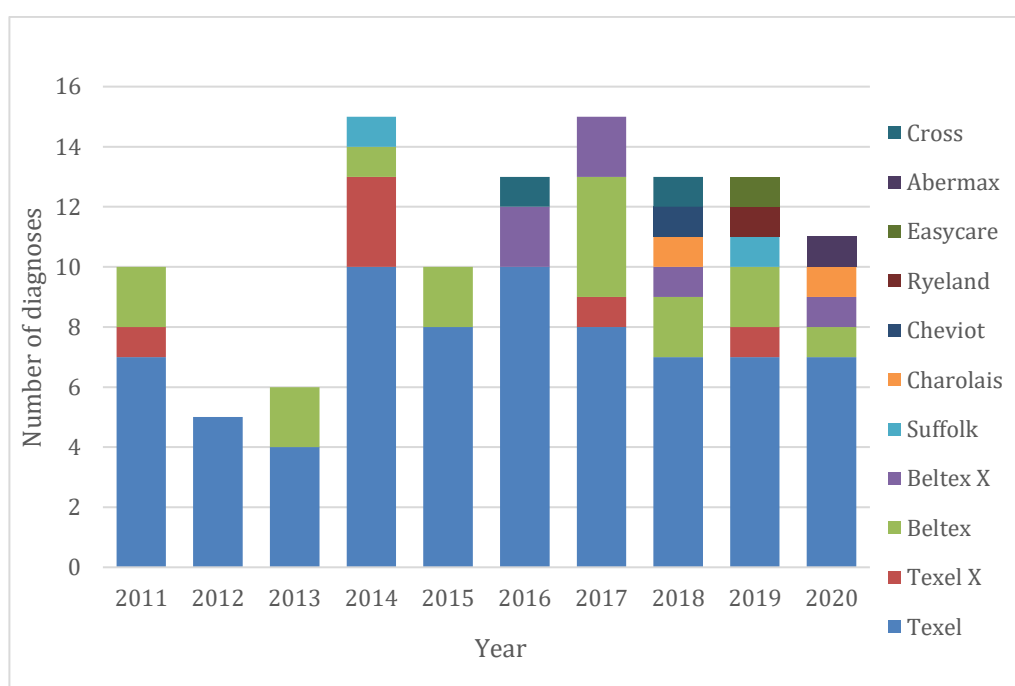


Figure A: SRUC Veterinary Services Diagnoses of Laryngeal Chondritis 2011 to 2020 by breed



Figure B: Laryngeal Chondritis