Animal & Plant Health Agency

SRUC

GB miscellaneous & exotic farmed species quarterly report

Disease surveillance and emerging threats

Volume 25: Q2 –April-June 2020

Highlights

- **Range of enteric conditions in camelids**

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Introduction and overview

This quarterly report reviews disease trends and disease threats for the second quarter, April-June 2020. It contains analyses carried out on disease data gathered from APHA, SRUC Veterinary Services division of Scotland's Rural College (SRUC) and partner post mortem providers and intelligence gathered through the Small Ruminant Species Expert networks. In addition, links to other sources of information including reports from other parts of the APHA and 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

Diagnostic submissions in Quarter 2 (April-June) 2020, for alpacas, llamas and farmed deer (Table 1) – the APHA figures include submissions to partner post mortem providers (PPP) . Other miscellaneous and exotic species may also be received in small numbers.

Apr - Jun	Non-carcase submissions APHA	Non-carcase submissions SAC	Total non-carcase submissions	Carcase submissions APHA	Carcase submissions SAC	Total carcase submissions	Grand total
2016	64	9	**73**	13	4	**17**	**90**
2017	31	22	**53**	33	9	**42**	**95**
2018	12	11	**23**	23	5	**28**	**51**
2019	8	6	**14**	27	8	**35**	**49**
2020	14	2	**16**	13	2	**15**	**31**

Table 1 – Diagnostic submissions in Quarter 2 (April-June) 2020, for alpacas, llamas and farmed deer

There was a significant fall in total carcase submissions in this Quarter **(Figure 1)** whilst an increase in non-carcase submissions to APHA Regional Laboratories boosted the non-carcase total figures. Interestingly, both carcase and non-carcase submission totals were exactly 50% less than in Q1, 2020.

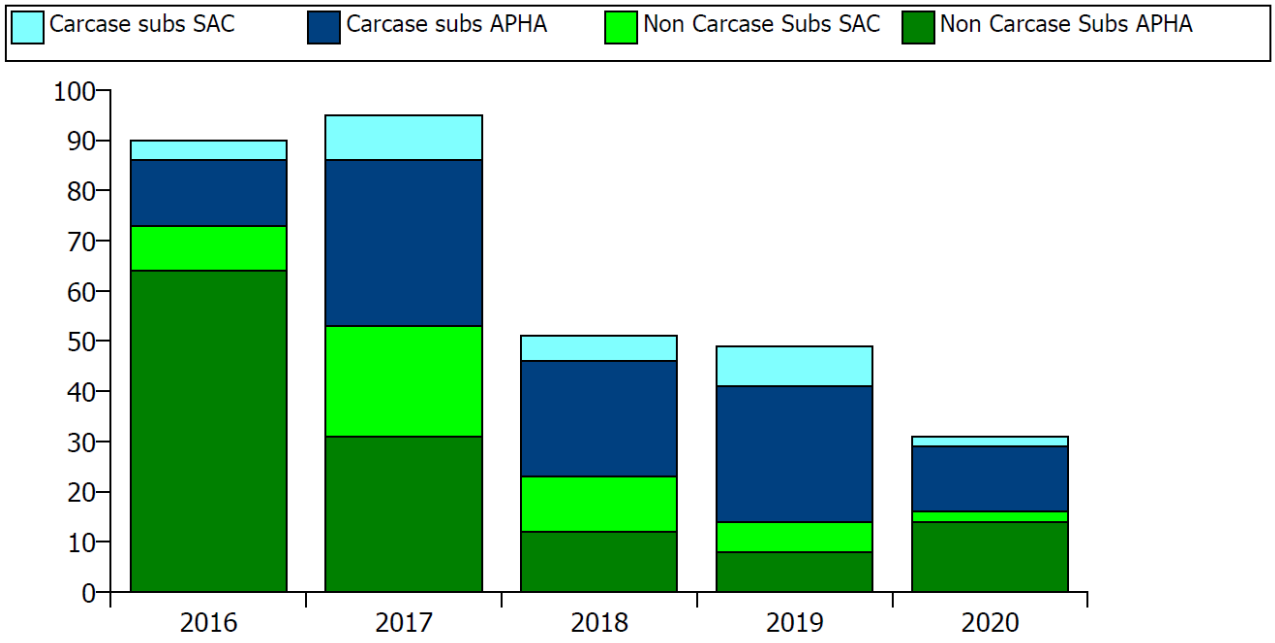

Figure 1 - Carcase and non-carcase submissions,Q2, 2016-2020

Total diagnostic submissions for Quarter 2 for all years (2016-2020) for each main species covered by this report and also for each main geographical area (Table 2)

All Years	Alpaca	Deer	Llama	Summary
Eastern England	50	13	3	66
Northern England	25	13	3	41
Scotland	24	27	4	55
Wales	10			10
Western England	87	15	3	105
Unknown	31	3	5	39
Summary	**227**	**71**	**18**	**316**

Table 2 - Total diagnostic submissions for Quarter 2 for all years (2016-2020)

Total diagnostic submissions were lower in this Quarter (316) compared to Q2,2019 (393) largely due to fewer submissions across the species range from Eastern England.

New and re-emerging diseases and threats

Nothing to report this Quarter.

Diagnoses from the Regional Laboratories/ Partner post mortem Providers including unusual diagnoses

Adult alpacas with coccidiosis

The carcase of a nine-year-old female alpaca was submitted to investigate malaise, recumbency and death. Three adult alpacas had died in a group of 40 over a few days. This alpaca had been dull and inappetant for two days, and then became recumbent and died despite intensive treatment. The alpacas had access to both indoor and outdoor areas, and received pelleted feed as well as grass pasture. The remainder of the group of seemed to be doing well. On post mortem examination there were extensive areas of petechiation and haemorrhage in the sub-cutis, heart and thorax. The gross pathology also indicated hepatopathy and enteropathy. The coccidial oocyst count was very high at 299,400 oocysts per gram, identified as 66% *Eimeria lamae* and 34% *Eimeria alpacae*. These are both small coccidia types which cause haemorrhagic and watery diarrhoea, weight loss and dehydration. Typically this affects younger camelids, but in this case it has affected older, adult alpacas. This may have been a result of high environmental contamination, immunosuppression of the alpaca, lack of previous exposure to this type of coccidian, or a combination of all of these. No significant bacterial pathogens were detected. Histological examination revealed **hepatic lipidosis** and confirmed **coccidial enteropathy**.

Parasitic gastroenteritis in an adult alpaca

In a separate submission, a nine-year-old male alpaca was submitted to investigate sudden death. This was the third submission from this herd, the other two submissions were of female alpacas from a different group. This alpaca was in a field with other stud males and was reported to be one of the poorer condition males in the group but had not received any recent treatment. The gross pathology was suggestive of septicaemia/toxaemia, with inflammation of C3 stomach compartment, hepatic lipidosis and excess pericardial fluid suggestive of hypoalbuminaemia. There was a **high Trichostrongyle-type faecal egg count**, and the histopathological examination of C3 tissue was consistent with **chronic endoparasitism.**

In a further separate submission, post mortem samples were submitted from a ten-month-old alpaca that had been found dead. Faecal parasitology revealed 30 ***Nematodirus battus*** eggs per gram and 170 ***Eimeria macusaniensis*** oocysts per gram. Both gastrointestinal worms and coccidiosis were thought to be significant contributory factors to the death of this animal. *Eimeria macusaniensis* is a large coccidia with a relatively long prepatent period of 32-45 days. Clinical signs of disease and death often occur during this prepatent period and therefore diagnosing infection in live animals can be difficult. Due to the large oocyst size, *E. macusaniensis* is not identifiable on routine ruminant salt flotation worm egg counts, rather high specific gravity methods should be used.

Outbreak of diarrhoea in alpaca cria due to cryptosporidiosis

All of a group of ten alpaca cria aged two to six weeks presented with diarrhoea and anorexia. Five of the cria died despite treatment with anti-inflammatory and antibiotics. *Cryptosporidium* was the only enteric pathogen detected in the watery faeces. The pasture had been flooded several months earlier but it was not clear if this was a predisposing factor.(see link attached to information note on flooding: http://apha.dfra.gov.uk/documents/surveillance/apha-flood-guidance-post-flooding.pdf Advice to avoid zoonotic transmission was provided.

Gastric adenocarcinoma in an alpaca

A six-year-old male alpaca was submitted from a large breeding herd after displaying a history of weight loss before death. At post mortem examination, a large cream/white granular/caseous mass was located in compartment one **(Figure 2)**. Adhesions existed between this lesion and the diaphragm, with seeded masses of similar appearance noted scattered over the diaphragmatic surface and in the liver. Marked lymph node enlargement was noted in the thoracic cavity. Due to the appearance of lesions, suspicion of bovine TB was raised and reported to APHA field services for investigation and tissues were submitted for bTB culture which is ongoing. Histopathology carried out on the gastric and liver lesions identified a **primary gastric adenocarcinoma** with subsequent metastasis. This type of tumour has previously been reported in camelids.

Figure 2 - Neoplastic lesion affecting the wall of compartment one.

Impaction of C3 stomach compartment in an aged llama

A diagnosis of chronic C3 impaction was recorded in a 17 year old llama presented for post mortem. The animal had died the previous evening following a short episode of recumbency with a history of poor appetite and losing weight over a period of months. At post mortem there were no fat reserves in the carcase and approximately 5 litres of free fluid in the abdomen. The liver was enlarged. A large volume of fibrous ingesta was present in C1 and C2 whilst C3 was impacted with grossly normal appearing ingesta. At the pyloric region of C3 a marked division was noted, with the last 6-8 inches flaccid and empty. The wall of C3 was thickened at this area and the lumen markedly narrowed but histology found no evidence of neoplasia to account for the thickening of the wall. The cause of death was considered to be terminal debilitation and liver failure due to the C3 changes and impaction.

Intestinal torsion in an alpaca

Intestinal torsion, found following gross post mortem examination, was the cause of death in an adult male alpaca found dead in a barn **(Figure 3)**. Although this condition is usually sporadic, predisposing factors can include enteritis and parasitism. In this case parasitology revealed a small worm egg count of 50 *Trichostrongyle* type eggs per gram. Faecal worm egg counts can be difficult to interpret in camelids, and even seemingly low burdens can be significant, therefore faecal analysis of the remaining five alpacas was recommended.

Figure 3 - Dark red area of small intestine strangulated by a mesenteric torsion

Deer SRUC Veterinary Services (for awareness)

The plucks from two fallow deer (*Dama dama*) that had been shot wild, but which were suspected to have escaped from a farm, were submitted for examination.

Firm grey masses were found in the right cranial and caudal lobes of one lung, with a very firm core to one of the lesions. In the other set of lungs, the caudal half of both caudal lobes had been almost completely replaced by firm grey masses, with large areas of hard, mineralised tissue.

Histopathology on lung tissue from both animals detected some similarities to equine multinodular pulmonary fibrosis (EMPF), including the presence of intralesional intranuclear inclusion bodies.

EMPF is linked to a rhadinovirus, equine herpesvirus 5, which can also be isolated from clinically normal horses. It was noted that there were some differences between the pathology seen in the deer and that observed in horses, such as the presence of numerous multinucleated cells, mineralisation/woven bone formation and a relative lack of preservation of alveolar structures.

Herpesvirus DNA was detected in the lung tissue by pan-herpesvirus PCR, and PCR product sequencing showed 100 per cent sequence homology with a rhadinovirus, fallow deer lymphotropic herpesvirus (grouped with viruses such as MCF). It was noted that a direct link between the presence of the virus and the lung lesions has not been proven.

(Originally reported in GB Wildlife Disease Surveillance Partnership Quarterly Report, Volume 28, Q1, Jan-Mar 2020)

Horizon scanning

As mentioned in the Quarter 1, 2020 Report, the current Covid-19 crisis has indeed had a significant impact on the number of camelid and farmed deer carcase submissions to APHA Regional Laboratories and SRUC Laboratories during this Quarter and likely beyond for an unknown period. This will potentially have an impacton our ability to monitor endemic disease trends as well as new and re-emerging diseases through our surveillance network. Interestingly, the other livestock species submission numbers have not been as adversely affected by the current pandemic crisis.

Publications

Davidson RK; Mørk T; Holmgren KE; Oksanen A (2020)

Infection with brainworm (Elaphostrongylus rangiferi) in reindeer (Rangifer tarandus ssp.) in Fennoscandia.

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Statement regarding use of this material

This publication is available at https://www.gov.uk/government/collections/animal-disease-surveillance-reports

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

The Animal and Plant Health Agency (APHA) is an executive agency of the Department for Environment, Food & Rural Affairs, and also works on behalf of the Scottish Government and Welsh Government.