OVERVIEW
- Cattle scab diagnosed in an imported calf
- Dandy Walker malformation in small pedigree Suffolk flock
- Corynebacterium renale causing renal disease in pregnant ewes
- Atrophic rhinitis in a previously unaffected pig herd
- Infectious bronchitis diagnosed in two small poultry flocks

GENERAL INTRODUCTION
March was a generally unsettled month although the middle of the month saw some dry and bright weather. Despite the month ending with cold easterly winds the mean temperature was slightly above the 1981-2010 average. Sunshine levels were also above average while overall rainfall was 93% of the average.

SAC C VS diagnosed the first case of cattle scab confirmed in Scotland since the early 1980s (see below). Samples were submitted to St Boswells following suspect lesions being identified in a calf recently imported with its mother from outside Great Britain. The discovery of the disease on a Scottish premises prompted further calls from the National Farmer’s Union of Scotland (NFUS) for the disease to be made notifiable. NFUS President Nigel Miller, himself a vet, commented, “NFU Scotland calls upon the Scottish Government to revisit the question of making this disease notifiable. A combination of heightened vigilance and notifiable status gives us the opportunity to act now and ensure that this disease is not allowed to become established in Scotland.”

CATTLE
Skin diseases
St. Boswells diagnosed the first case of bovine psoroptic mange in Scotland in over 30 years. *Psoroptes* species mites were identified on skin scrapings submitted from a two-month-old Belgian blue calf and its mother.

Figure 1 - Psoroptes bovis mite from an imported calf with pruritus and skin lesions

A blood sample from the calf also tested positive for antibodies to a *Psoroptes* antigen in a prototype serological assay adapted for use on bovine sera by the Moredun Research Institute (MRI). The two affected animals were imported from outside Great Britain. These animals and in-contacts were treated with injectable doramectin and pour-on permethrin. The pour-on permethrin was repeated four weeks later and the injectable doramectin was also repeated in the animals that had shown clinical signs. Follow up skin scrapings were submitted post treatment and these revealed dead or degenerating mites only. Monitoring will continue on this farm. In recent years bovine psoroptic mange outbreaks have been diagnosed in Wales, South West England and Yorkshire and the disease is also present in mainland Europe and Ireland. In order to encourage submission of samples from suspect cases, SAC C VS offers free testing of skin scrapings from suspected cases through funding from the Scottish Government. Vets are also encouraged to take blood samples from suspect cases to assist MRI with development of their serological test.

Generalised and systemic conditions
Inverness diagnosed a variation of bovine neonatal pancytopenia (BNP) in a two-week-old heifer calf. At necropsy, gross pathology was consistent with BNP with signs of haemorrhage throughout the carcass. Histological examination of the sternum revealed a

### Disease alerts

The following conditions were reported by SAC C VS disease surveillance centres in June and July 2013. Given similar climatic and production conditions, they could also be important this year.

1. Pneumonia in calves at grass associated with *Mannheimia haemolytica*
2. Coccidiosis in grazing calves
3. Nematodirosis / PGE in lambs at grass
4. Post-dipping lameness due to *Erysipelothrix rhusiopathiae* infection
5. Rotavirus, spironucleosis and coccidiosis in game bird chicks / poults
reduction of total haematopoietic cell numbers to about 30 per cent of what is expected. The remaining haematopoietic cells appeared almost entirely erythroid with only very occasional eosinophils and small, densely staining megakaryocytes, indicating bilineage hypoplasia rather than the more typical trilineage hypoplasia associated with true BNP. There was a history of BNP on the farm and the dam was a homebred animal aged seven years that was previously vaccinated against bovine viral diarrhoea (BVD) virus with PregSure (Pfizer).

Respiratory tract diseases
Perth diagnosed lung damage following parasitic pneumonia in a six-month-old Limousin bull calf. The calf was one of a batch of 25 autumn-born calves housed in mid-October when the calves were aged between three and eight weeks. Two months later all of the calves in the group started coughing and two died. Lungworm infection was suspected and the whole group were treated with ivermectin. Response to treatment was good in all but two poorly thriven calves that developed further signs of respiratory distress and died despite broad spectrum antibacterial therapy. Necropsy of one of these calves revealed consolidation of the cranial and middle lung lobes with interlobular emphysema and bullae in the caudal lobes. Histological examination revealed extensive fibrinous exudation with hyaline membranes, type 2 pneumocyte proliferation and early alveolar epithelialisation; mixed alveolar infiltrates included multifocal clusters of eosinophils. The nature and distribution of the lung pathology was considered consistent with lungworm challenge; SAC C VS commented that although the ivermectin treatment was successful, the severe, secondary lung damage resulted in the deaths of these two animals.

Reproductive tract conditions
Dumfries diagnosed thyroid hyperplasia by histopathology in three aborted foetuses of approximately seven months gestation. The affected foetuses were from a beef suckler herd that reported a series of abortions and stillborn calves in the preceding few weeks. All the thyroid iodine values were within reference range despite the histological changes. This was attributed to the administration of iodine boluses to the cows four weeks prior to the abortions starting. SAC C VS commented that iodine levels in thyroid tissue reflect the current iodine status of the dams whereas histopathological changes are more historic. The low iodine levels earlier in gestation had probably affected the viability of the calves.

Nutritional and metabolic disorders
Selenium deficiency was implicated in cardiac changes seen in two animals, both Luings, from the same farm. The first was a 12-month-old heifer that died following a nine-day period of illness. Despite continuing to eat the heifer lost weight and developed submandibular oedema prior to death. Necropsy identified generalised ventral oedema; excess straw-coloured pleural fluid was present in the right thorax and the right lung lobes were collapsed. The right side of the heart appeared dilated and the liver was distorted and fibrosed. Histological examination of the lung and liver confirmed congestive cardiac failure and hepatic fibrosis consistent with previous fasciolosis. The myocardium was oedematous with thin, split fibres but no true myofibre degeneration was seen. Liver selenium and vitamin E values were below the reference range but the significance of this finding was unclear in the absence of myofibre degeneration. Two weeks later an 18-month-old bullock was examined with a history of death following an episode of pneumonia that was non-responsive to treatment. Necropsy confirmed suppurative pneumonia. Again the right ventricle of the heart was dilated and the liver in addition to being shrunken and fibrosed had an obvious nutmeg pattern on section. Histological examination of the myocardium from this case revealed the same oedema and thin split fibres as were seen in the heifer but this time acute myofibre degeneration was present; similar changes were present in the diaphragm. Liver selenium was below the reference range but vitamin E value was within reference range. SAC C VS considered that in bullock the right ventricular dilation may have been associated with selenium deficiency and sampling of the cohort was advised.

SMALL RUMINANTS
Nervous system disorders
Dandy-Walker malformation was diagnosed by Edinburgh following submission of the third Suffolk lamb born with a large domed head in a flock of 25 ewes.
The flock was vaccinated against Schmallenberg virus prior to tupping and the dam of the submitted lamb was sero-negative for antibodies to Border Disease. In each case the affected lambs had a normal twin. Necropsy revealed thin and soft cranial bones and the cerebral hemispheres consisted of thin walled, fluid-filled sacs. Neuropathology confirmed severe hydrocephalus as well as absence of the septum pellucidum and hypoplasia of the corpus callosum and cerebellar vermis. SAC C VS considered these changes to be consistent with Dandy-Walker malformation of Suffolk lambs which is believed to have a genetic aetiology. Further investigation revealed that a closely related tup was used on the ewes for the first time.

Ayr suspected delayed swayback following postmortem examination of a three-month-old Suffolk lamb that was euthanased after a two week history of walking on its elbows and subsequent deterioration of hindlimb function. Gross examination was unremarkable however neuro-histopathology identified neuronal chromatolysis in the midbrain and a reduced number of cerebellar Purkinje cells. A single chromatolytic neurone was identified in the grey matter of the spinal cord. Chromatolytic neurones are frequently associated with swayback however in this case liver copper content was above the reference range. Liver copper levels within the reference range have been reported in cases of congenital swayback where copper deficiency in mid gestation is responsible for the pathology but is then corrected by supplementary feeding pre lambing. This does not fully explain the delayed onset of clinical signs in this case which would usually be associated with contemporaneous copper deficiency. The dam of the affected lambs was purchased in a farm with a known copper deficiency adding weight to the argument that a mid gestation deficiency was the underlying issue.

**Parasitic diseases**

Parasitic gastroenteritis associated with multiple nematode species was diagnosed in a two-year-old texel tup submitted to Dumfries. The animal was housed in mid-November after tupping 20 ewes. It was fed hay and concentrates but rapid loss of condition to the point of emaciation was reported in March. Three other tups in the group were unaffected. At necropsy an increased volume of pericardial fluid suggested hypoalbuminaemia and lungworm were found in the bronchial tree. 7,000 *Teladorsagia* sp worms were recovered from the abomasum and 17,800 *Trichostrongyloides* sp. were recovered from the small intestine. *Trichuris* sp. worms were visible in the caecum along with small numbers of *Chabertia* sp. Very large numbers of *Chabertia* sp. were found in the colon with 99 worms counted on an 18cm length of mucosa. Excess mucus was present and feeding sites were evident as blood spots. Despite the parasite burden the carcase did not appear anaemic and the faeces were pelleted. No cause was identified to explain the ill thrift other than parasitism and screening for Johnes disease and MV proved negative. SAC C VS commented that tups can have poorer immune control of worms than ewes. The findings suggested that the tup had access to pasture that was heavily contaminated with infectious larvae prior to housing.

![Figure 3 - Chabertia species worms on the colonic mucosa of a Texel tup](image)

St. Boswells diagnosed chronic parasitism in a two year old easycare gimmer that was found dead after a period of inappetance and ill thrift. It was the second death in a group of gimmers that were poor body condition since tupping. The cranial lung lobes were consolidated and a large number of *Dictyocaulus filaria* was present in the lower airways. Intestinal contents were liquid and the mesenteric lymph nodes were enlarged. Around 9,400 *Nematodirus battus* worms were found in the small intestine and a further 3,150 worms of mixed species were recovered from the abomasum. SACCVS suspected that the gimmer was immunosuppressed as this would help to explain the presence of large numbers of *N. battus* in an adult sheep. Screening for other chronic diseases failed to identify any contributory factors. The temperatures in March were not high enough to facilitate hatching of nematodirus eggs therefore infection was suspected to have occurred in autumn/winter 2013.

**Nutritional and metabolic disorders**

Dumfries diagnosed hypocalcaemia as the cause of death of ewes from three flocks with different presenting signs. One ewe was recumbent prior to death, the second showed respiratory signs while the third was ataxic and recumbent following vaccination against clostridial...
Part-funded by the Scottish Government as part of its Public Good Veterinary Advice Services

diseases. In each case aqueous humour calcium levels were 0.5mmol/l (reference range >1mmol/l).

Reproductive tract conditions
Abortions due to EAE, Toxoplasmosis and Campylobacter sp. were diagnosed on 51, 14 and 11 occasions respectively during March. The corresponding figures for March 2013 were 24, 29 and 35 reversing the order of frequency.

Abortion due to yeast infection was diagnosed by Aberdeen following identification of thick white plaques on the skin of an aborted lamb and isolation of a yeast species from the foetal stomach contents. Yeasts are an uncommon cause of abortion in sheep usually occurring as the result of spoiled feeds. In this case the ewes were at grass and being fed a protein supplement, turnips and kale so no source of the yeast was apparent.

Toxoplasma gondii was identified as the cause of stillbirths and weak lambs in a flock of 120 ewes in the first week of lambing. All affected lambs died despite supportive treatment and two were submitted to Edinburgh for examination along with a stillborn lamb. Toxoplasmosis was confirmed in the stillborn lamb while neuropathology of one of the weak lambs revealed changes typical of Toxoplasma gondii infection confirming this as the cause of the problem. SAC C VS observed that late infections with abortion agents can present as stillbirth and/or non-viable lambs rather than foetopathies.

Thurso diagnosed abortion due to Salmonella Montevideo in two sets of twins that were aborted two to three weeks prior to lambing was due start. This infection is most often reported in south east Scotland.

Review of Ovine Abortion Outbreaks in Sheep in 2014
Previous years have brought extensive coverage in the farming press of fasciolosis and Schmallenberg virus as potential causes of problems at lambing. SAC C VS considers that the more common and less novel causes of abortion still contribute to significant losses during the lambing season.

Data from 2014 shows that Chlamydophila abortus, or enzootic abortion of ewes (EAE), was the most commonly diagnosed cause of abortion in sheep, as it was in eight out of the previous ten years. The breakdown of ovine abortion diagnoses in 2014, expressed as a percentage of diagnosed ovine abortion submissions received, is shown in Figure 4. VIDA data for Scotland demonstrates that EAE and the next most commonly diagnosed cause of abortion, toxoplasmosis, have consistently accounted for between 19 per cent and 37 per cent of all diagnosable abortion submissions each year in the past decade.

SAC C VS advises that animal keepers should continue to pay attention to forage quality as listeriosis still accounts for between one and four per cent of all diagnosable ovine abortions each year.

Skin diseases
Aberdeen confirmed ongoing infection with sheep scab in a flock of texel cross ewes that was treated with doramectin four weeks previously. There was a clinical improvement following treatment but symptoms of pruritis and crusty skin lesions had recurred. Psoroptes ovis mites were identified in skin scrapes. A single dose of doramectin at the increased dose rate is effective for the treatment of sheep scab but limited persistence means that adequate biosecurity measures must be adopted to prevent re-infestation from untreated sheep or mites in the environment.

Renal diseases
St. Boswells investigated an incident where five pregnant ewes died over a three week period. Affected animals were inappetant and failed to respond to treatment for suspected pregnancy toxaemia. A carcase was submitted and found to be in poor body condition. Both kidneys were enlarged and the renal pelvices were distended with brown purulent fluid from which Corynebacterium renale was isolated. C. renale is a common cause of pyelonephritis in cattle and although it has been reported in sheep it is considered uncommon (Higgins, RJ and Weaver CR, Veterinary Record, 1981, 109, 256. Corynebacterium renale pyelonephritis and cystitis in a sheep.) Unusually there was no evidence of concurrent cystitis. A second carcase showed evidence of Mannheimia haemolytica pneumonia and a vitreous humour BOHB result of 7.9mmol/l (reference range <2.5
mmol/l. SACCVS suggested that the pyelonephritis was an isolated case with pregnancy toxaemia being the main issue in the flock.

In the second incident interstitial nephritis was confirmed in two leghorns from a group of 10 in which four had died following a twenty four hour history of looking hangy and puffed up, with a purple comb. On gross pathology there were urates present on the heart and in the rectum. The kidneys were pale and swollen with many urates in the tubules. The histopathology confirmed interstitial nephritis, with the most likely cause being a viral infection, such as the QX variant of infectious bronchitis virus.

**Pigeons**

Ornithosis (chlamydiosis) was confirmed in a euthanased racing pigeon submitted for postmortem examination. There had been three other deaths in a loft of 50 pigeons. Prior to death the birds appeared listless and stopped eating, with some retaining water in their crop. On postmortem examination there was much food in the crop but only sparse food present in the gizzard. The thoracic and abdominal airsacs were thickened and infected. The contents of the duodenum and intestine were yellow and fluid and the bursa of Fabricius was smaller than expected.

**Wild birds**

Edinburgh confirmed paramyxovirus infection as the cause of deaths of feral pigeons on a farm. Up to four birds a day were found dead each day for a period of two weeks. Poultry were kept on the farm and AHVLA were informed of the incident. There was no evidence of disease in the poultry.

**MISCELLANEOUS**

**Deer**

Clostridium perfringens type D enterotoxaemia was diagnosed in a pair of adult Muntjac deer from a wildlife collection that were found dead with no premonitory signs. Necropsy of the male revealed pulmonary congestion, numerous pale hepatic lesions and very fluid intestinal contents. Similar findings were present in the female. *Cl. perfringens* epsilon toxin was detected separately in testing of the intestinal contents of both deer.

**Wild animals**

Intra-species aggression was the presumed cause for malaise and pica in a ten-year-old female wolf from a wildlife collection. The affected wolf was euthanased on welfare grounds. It was the alpha female in a family
group comprising a breeding pair with their nine offspring. The bitch had displayed signs of oestrous about one week previously but rejected the alpha male prompting an aggressive response. Subsequently the bitch became lethargic with green ocular discharge and a stiff gait. Necropsy revealed multiple skin wounds around the ears, lower back and rear legs. Paired puncture wounds approximately five centimetres apart penetrated the skin and the subcutaneous tissues of the lower back and back legs were necrotic. The stomach contained large hair balls and plant matter.