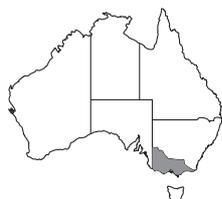


State and territory reports

In Australia, the states and territories are responsible for animal disease control within their borders. National animal health programs are developed through consultation with the Animal Health Committee and are managed by Animal Health Australia.



Victoria

Contributed by Cameron Bell, Department of Primary Industries

General surveillance

A total of 894 clinical disease events were recorded during the reporting period by the surveillance data management system of the Victorian Department of Primary Industries (DPI). Approximately 84% of these related to either cattle (459) or sheep (292), with the remainder relating to various domestic avian species, including pigeons, camelids, goats, horses, pigs, deer and rabbits. Investigations occurred over much of the state (Figure 3), and their location closely reflected the distribution of livestock in Victoria. They included DPI-subsidised investigations by private veterinary practitioners, notifications received by private veterinary practitioners and investigations by DPI field staff.

Of the 459 cattle investigations, the most common diagnoses recorded were salmonellosis (135), cryptosporidiosis (25), yersiniosis (17), internal parasitism (15), hypocalcaemia (13), paratuberculosis (12), benign theileriosis (10), hypomagnesaemia (10), pestivirus infection (10), calving paralysis (8) and mastitis (8).

Of the 292 sheep investigations, the most common diagnoses recorded were internal parasitism (75), dystocia (13), paratuberculosis (10), pregnancy toxemia (9), phalaris toxicity (9), hypocalcaemia (6), navel ill (5) and footrot (5).

Of the other 143 investigations of various other species, the most noteworthy final diagnosis was paramyxovirus 1 in pigeons (see page 3).

Cattle

Benign theileriosis caused by the Theileria orientalis group

During the reporting period, benign theileriosis caused by the *Theileria orientalis* group was confirmed by laboratory testing in 10 cattle herds located in south-west Gippsland (5), east Gippsland (2) and north-east Victoria (3). Both beef and dairy breeds were affected. A range of clinical signs were observed, with anaemia, listlessness/depression and jaundice being the most common. In affected herds, mortality and morbidity rates of up to 10% and 30%, respectively, were recorded. A total of 16 deaths and 33 sick cattle were recorded across the 10 affected herds. Diagnosis was made on examination of blood smears that showed the presence of piroplasms within erythrocytes. Further testing by PCR will be undertaken to confirm the variant of *T. orientalis* that is present. For some cases, symptomatic treatment was provided where practical, but this was generally unrewarding.

Benign theileriosis is believed to be transmitted by the bush tick *Haemophysalis longicornis*. This tick is common and widespread in Victoria, particularly in wetter areas. Other vectors may exist. Although bush ticks can infest a variety of animal species, including horses, birds, sheep, goats and native wildlife, they are only able to transmit benign theileriosis to cattle.

Although theileriosis caused by the *T. orientalis* group has been present in Australia since the early 1900s, it has seldom caused any illness and was considered a benign infection. In recent years, there has been an increase in clinical disease, particularly in New South Wales and, more recently, Victoria. DNA typing has revealed that most cases of clinical disease are due to the Ikeda variant of *T. orientalis*. Emergence of a more serious disease may be associated with the movement of cattle from interstate endemic regions and environmental conditions favouring the proliferation of the bush tick.

The epidemiology of benign theileriosis means that reducing the risk of future infections is difficult. Exposed cattle should develop immunity, but owners

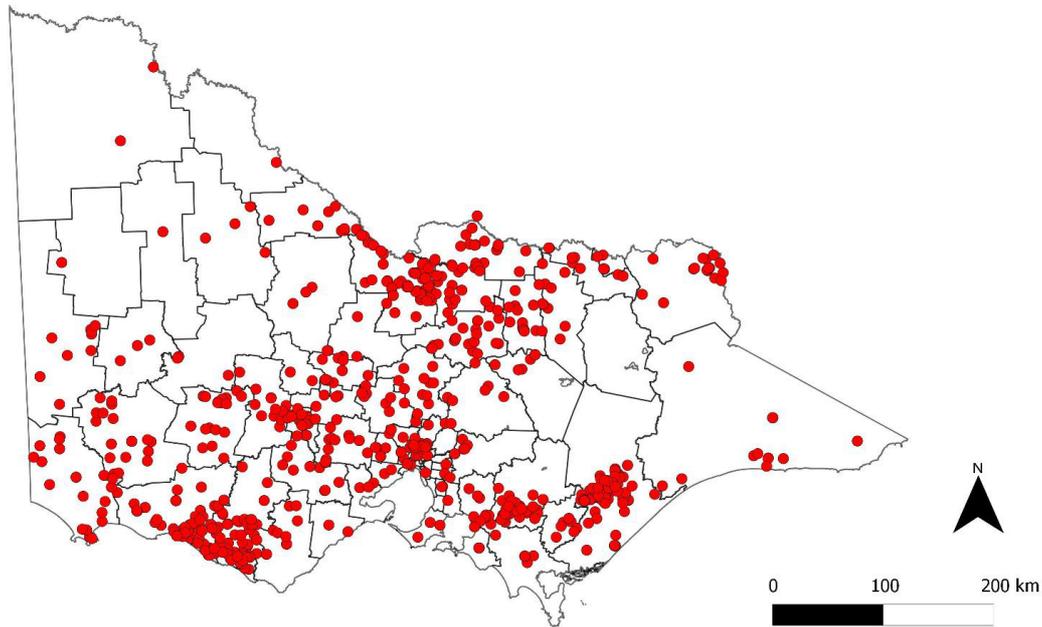


Figure 3 Locations in Victoria of 894 clinical disease events recorded in livestock and domestic avian species between 1 July and 30 September 2011. Large areas where no investigations were recorded are public land or areas with a low density of livestock populations. Municipal boundaries are shown.

are advised to monitor cattle closely for the development of clinical signs. Since there is still much to be learnt about the disease, and the role that bush ticks and other possible vectors play, it is unknown if benign theileriosis will persist or spread within Victoria.

Australia is free from the World Organisation for Animal Health (OIE)-listed *Theileria* species *T. parva* and *T. annulata*.

Pigs

Swine dysentery in pigs

An outbreak of diarrhoea and reduced appetite affecting most age groups of pigs (commercial Large White × Landrace) on a farrow-to-finish farm in south-west Victoria was reported to the DPI in early September 2011. Approximately 80% of finisher pigs (over 20 weeks of age) had diarrhoea containing fresh flecks of blood. Five pigs (2% of the finisher population) had died over a four-day period. Grower pigs (10–20 weeks of age), dry sows and gilts were reported to have concurrent reduced feed intakes. Four newly farrowed (four days earlier) sows were off

their feed, with hypogalactia and vulval discharges. Two sows had a fever, and another lactating sow had died. Weaners were apparently unaffected.

A variety of fixed and fresh tissues from a dead finisher and a sacrificed sow were presented to the DPI Pig Health and Research Unit in Bendigo, along with two faecal samples from diarrhoeic finishers and a feed sample from the affected finishers' pen. Examination of the faecal samples revealed spirochaetes. The bacterium was subsequently identified on culture as *Brachyspira hyodysenteriae*, the aetiological agent of swine dysentery. *Salmonella*, later confirmed as *Salmonella* Livingston, was isolated from finisher faeces and from finisher feed. *Klebsiella pneumoniae* was isolated from the uterus of the sow. *Klebsiella* spp. are commonly reported from urogenital infections of pigs; however, in the sows, this bacterium was considered incidental to the diarrhoea and reduced feed intake in other age groups of pigs.

The onset of the disease outbreak coincided with the arrival of a fresh batch of ice-cream on the farm, which formed part of the liquid feed provided to all pigs other

than the weaners. *Salmonella* Livingston is not a known pathogen of pigs, usually being isolated from poultry. The herd was not previously known to have *B. hyodysenteriae*, but infection must have been subclinical because no biosecurity breaches had occurred and there had been no recent introductions of pigs preceding this disease event. Pigs recovered after tilmicosin medication was added to the feed. Since infection results in significant growth penalties, requiring ongoing medication, eradication of *B. hyodysenteriae* may be considered in the future.

Sheep

Ill-thrift and diarrhoea in weaner lambs

Nearly all of 3000 crossbred weaner lambs were affected by ill-thrift and diarrhoea on a property near Springhurst in north-east Victoria in early spring 2011. The lambs had been affected to varying degrees for more than two months without any mortalities. Little clinical improvement was seen following anthelmintic treatment with ivermectin, in spite of an initial average faecal egg count of more than 800 eggs per gram, which decreased to 20 eggs per gram following treatment. Necropsy of two clinically affected lambs showed enlarged mesenteric lymph nodes and a thickened jejunum. Culture of intestinal contents was positive for *Campylobacter* spp. Histology revealed blunting of the intestinal villi, large numbers of coccidia in the jejunum and ileum, coccidial schizonts in the mesenteric lymph nodes, and moderate numbers of nematodes in the abomasum and intestinal tract. The owner was advised that, although clinical signs had improved following administration of sulfadimidine and ivermectin, a portion of the flock could continue to suffer from ill-thrift as a result of residual intestinal damage. To prevent future similar outbreaks following high faecal egg counts, the owner was advised to treat lambs appropriately and put them onto clean paddocks.

Selenium deficiency in lambs

Selenium deficiency led to the death of 6 lambs out of 70, with another 8 showing similar symptoms, on a property near Seymour in north-east Victoria in August 2011. The age of affected lambs ranged from one to three weeks. The lambs were born to maiden crossbred ewes run on a predominantly clover (*Trifolium* spp.) pasture. The available level of pasture was more than required. A typical history of the affected animals was a progressive hindlimb ataxia, with a bunny-hop gait and eventual recumbency and

death. Two lambs were presented for necropsy at the DPI Biosciences Research Division laboratory. On gross examination, there was cream-coloured streaking and chalky mottling to the muscle groups on all limbs. In one lamb, there was also patchy white mottling on the endocardium of the right ventricle. These gross findings are typical of a severe nutritional myopathy associated with low selenium levels. Biochemical analysis of liver and blood samples demonstrated the severity of the selenium deficiency, with the liver levels of glutathione peroxidase being 0.5 and 0.3 U/g wet weight, respectively, in the two lambs. (The normal range is 2.0–25.0 U/g wet weight.)

The property has a history of selenium deficiency. The usual management practice is to provide the ewes and lambs with selenium via a drench. In this case, however, because of increased worm burdens, the ewes were given a long-acting anthelmintic capsule in June that did not contain selenium. Coupled with the dominant clover pasture, this probably contributed to the deficiency occurring in the lambs. The remaining lambs and ewes were given a vaccine that included selenium or an additional selenium-containing drench at marking.

Acute keratoconjunctivitis and pregnancy toxæmia in ewes

An outbreak of acute keratoconjunctivitis (pink eye) occurred in approximately 45% of a mob of 110 heavily pregnant Merino ewes, on a property near Omeo in eastern Victoria, in mid-August 2011. A mob of 200 wethers and 260 crossbred ewes, and the rams on the farm remained unaffected. The clinical signs in affected sheep included unilateral or bilateral inflammation of the conjunctivae and corneae, with corneal opacity and erosion, marked vascularisation of the cornea in many cases and hypopyon in a few. The worst-affected ewes were blind. Several ewes developed signs consistent with pregnancy toxæmia. Twelve ewes were treated with intramuscular penicillin and oxytetracycline eye spray. Four severely affected ewes were euthanased. Necropsy of one of these ewes showed diffuse fatty changes to the liver consistent with pregnancy toxæmia (twin lamb disease). Affected ewes recovered slowly over a period of about two weeks.

This outbreak was assumed to be the result of a microbial pathogen (e.g. *Mycoplasma* spp. or *Chlamydia* spp.), but no pathogen was isolated or

identified from conjunctival swabs subjected to chlamydial immunofluorescence and to examination of Gimenez-stained smears. Failure to identify a pathogen may have been because affected ewes had been treated with ocular and intramuscular antibiotics. Mycoplasmal culture was not conducted because there was no culture medium available at short notice.

The outbreak was unusual because it occurred in mature ewes in mid-winter and in the near absence of bush flies (*Musca vetustissima*). There was no explanation of why the wether and crossbred ewe mobs were unaffected. In the event of a future outbreak of keratoconjunctivitis in sheep, the owner was advised to seek early veterinary advice.