

NEW SOUTH WALES

ANIMAL HEALTH SURVEILLANCE

January–March 2017 » Issue 2017/1

In this issue

- | | | |
|--|--|---|
| 2 Anthrax in NSW, January to March 2017 | 4 Kikuyu poisoning in cattle | 6 Humpyback affecting Merino ewes during shearing in north-west NSW |
| 2 Exotic turkey rhinotracheitis virus excluded | 4 Pigeon rotavirus excluded in free-range chickens | 7 Leptospirosis detected in Hillston |
| 3 An unusual presentation of Hendra virus infection | 5 Bluetongue virus exclusion | |
| 3 New pigeon rotavirus rapidly diagnosed at EMAI Virology Laboratory | 5 Photosensitisation in sheep due to ingestion of <i>Tribulus terrestris</i> | |



Anthrax in NSW, January to March 2017

There was one anthrax incident during the quarter. In late February 33 lambs from a mob of 88 died on a property in the Forbes district. The property is in the known anthrax endemic area, with a history of anthrax in 1985 on a nearby property under the same management and more recently on a neighbouring property. The investigating vet conducted an immunochromatographic test (ICT), which was positive. Samples were submitted to the State Veterinary Laboratory at Menangle and confirmed as anthrax by polymerase chain reaction testing. The case was managed according to NSW Anthrax procedure: all at-risk animals were vaccinated, all carcasses burned, and the property

subjected to movement restrictions. The NLIS (National Livestock Identification System) database showed that there had been no movements on or off the property in the previous 20 days.

During the quarter there were 48 mortality investigations in which anthrax was excluded as the cause of death. Eighteen of these involved sheep, in which the alternative diagnoses included lactic acidosis; clostridial infection; toxicities due to copper, *Panicum* species or phomopsin; pneumonia; and intestinal parasites. Twenty-seven investigations involved cattle, in which the alternative diagnoses included lactic acidosis; clostridial infection;

bloat; cryptosporidiosis; and toxicities due to nitrate/nitrite or lead. One investigation in a horse and one in goats yielded no alternative diagnosis for the horse but salmonellosis and intestinal parasitism in the goats.

The ICT was used in 24 of the mortality investigations, with negative results. In the other 24, anthrax was excluded by laboratory testing or on clinical grounds based on alternative diagnoses.

**For further information contact
Barbara Moloney, Technical Specialist
Disease Surveillance, NSW DPI Orange
on 02 6391 3687.**

Exotic turkey rhinotracheitis virus excluded

In March, a poultry vet excluded a range of exotic diseases on a four-shed turkey farm containing 8000 seventeen-week-old broiler turkeys.

Neurological signs were seen in one shed containing the oldest toms and a mild cough was present in all the sheds. The shed with oldest toms had a death rate of 0.3% per day for 2 consecutive days, and about 40 of the turkeys showed neurological

signs, including imbalance, star gazing, opisthotonus (muscle spasm causing backward arching) and torticollis (twisting of the neck).

Swabs and blood samples submitted to the State Veterinary Diagnostic Laboratory (SVDL) were negative for avian influenza and Newcastle disease. Swab samples submitted to the Australian Animal Health Laboratory (AAHL) at Geelong for

exclusion of turkey rhinotracheitis virus were also negative. However, the serology results were inconclusive, and further investigations on the turkey farm were conducted by government vets located nearby.

After the fresh samples had been sent to AAHL, the vets prepared for a response in the unlikely event that the results were positive for turkey rhinotracheitis virus. They quarantined the farm, collected all relevant epidemiological information (including feed and chick truck movements), established the farm's relationships to other farms in the area and examined the potential sources of disease entry.

Both AAHL and SVDL confirmed that the samples were negative for turkey rhinotracheitis virus. However, bacterial culture confirmed a mixed bacterial infection that included *Pseudomonas aeruginosa*, *Staphylococcus aureus* and *Proteus* spp. The poultry vet treated the turkeys with antibiotics and the flock recovered.

**For further information contact
Aziz Chowdhury, District Veterinarian,
Greater Sydney Local Land Services,
Penrith on 0472 421 136.**



Blood sampling to exclude turkey rhinotracheitis virus. Photo A. Chowdhury

An unusual presentation of Hendra virus infection

Editor's note: This case occurred in the previous quarter but was not finalised before the publication deadline for last year's last AHS newsletter.

In late November 2016 a horse was provisionally diagnosed as not affected by Hendra virus, but this diagnosis was changed in late December.

The quiet 22-year-old stockhorse gelding developed depression and a runny nose over a 4-week period. When examined by a private vet in late November 2016, as well as the nasal discharge it had weight loss, oral discomfort, some ataxia and mild disorientation. It had had no known contact with flying foxes. Oral antibiotic treatment was started and, as a precaution, samples were taken for Hendra virus exclusion. The results of polymerase chain reaction tests on oral and nasal swabs were negative but the horse was antibody positive. A sample was forwarded to the Australian Animal Health Laboratory in Geelong for further serological tests to determine whether the antibody response was due to natural infection.

The horse died before the results became available. When the test established that the horse had



Burial of the horse with Hendra virus. Photo L Bolin

been naturally infected, rather than vaccinated, the district vet collected more nasal and rectal swabs from the horse's decomposing carcass. This time, small amounts of degraded Hendra virus were detected in the nasal swabs and the death was confirmed as having been caused by Hendra virus. Viral RNA was most probably released from the cells after post mortem decomposition.

The property was placed in quarantine and three in-contact horses were tested for the disease and found to be negative.

This was the first case of 'chronic' Hendra virus infection detected in NSW in which the disease took a course of 4 to 6 weeks. The fact that the antibody response prevented the detection of virus in the original nasal swabs made the case a low public health risk. The horse probably received only a low infective dose when it was first exposed.

For further information contact
Liz Bolin, District Veterinarian, North Coast Local Land Services, Casino on 0412 303 907.

New pigeon rotavirus rapidly diagnosed at EMAI Virology Laboratory

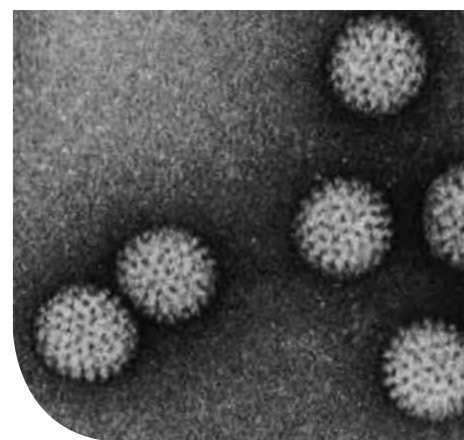
Through collaboration between scientists at the Australian Animal Health Laboratory and the Virology Laboratory at Elizabeth Macarthur Agricultural Institute (EMAI), a new 'real-time' PCR test has been developed to detect a novel rotavirus in pigeons. The test has resulted in the confirmation of infection in pigeon lofts in NSW on 23 occasions since it was introduced in February 2017. The disease may have occurred first in Western Australia but spread rapidly through South Australia, Victoria and New South Wales between December 2016 and January 2017 and has now reached Queensland. The origin of this new virus is unknown.

Typical clinical signs have been a sudden onset of vomiting, green diarrhoea and death of affected birds within 48 hours. Up to 50% of birds in a loft may be affected, and mortalities

of up to 20% have been reported. An unusual finding for a rotavirus is that infected birds have soft, 'friable' livers. Histologically, the lesions have been reported as severe multifocal-coalescing subacute necrotising and non-suppurative hepatitis. Disease has been observed once in feral pigeons in WA but not, so far, in NSW.

Pigeon rotavirus has been excluded as a cause of a high death rate and sickness on a free-range poultry farm where the clinical and post-mortem signs resembled those seen in pigeons (see article on page 4). As rotaviruses tend to be highly species specific, the possibility of pigeon rotavirus infection of chickens seems unlikely.

The preferred specimens for diagnosis include tracheal and cloacal swabs and both swabs and pieces of fresh liver.



Pigeon rotavirus under the electron microscope. Photo USDA CDC archives

For further information contact
Tiffany O'Connor and Peter Kirkland, NSW DPI Virology Laboratory, Elizabeth Macarthur Agricultural Institute, Menangle on (02) 4640 6336.

Kikuyu poisoning in cattle

Kikuyu poisoning is suspected of causing the deaths of about 60 head of beef and dairy cattle on more than 12 properties in the Illawarra and Shoalhaven region of NSW in March.

Deaths occurred during a brief 3- to 4-week period. Losses varied from a single animal on some farms to 20 heifers on the most severely affected property; the animals' ages ranged from 15 months to mature cows.

In some incidents animals had died suddenly without any prior opportunity to observe clinical signs, but in those cases where affected animals were observed, clinical signs were variable and not specific.

Collectively, clinical signs included lethargy and isolation, staggering gait and incoordination, hindlimb weakness and difficulty rising. Some animals had mildly elevated temperatures, were drooling saliva, had weak tongues and abdominal distension and lay down after 1 or 2 days.

Some of the affected animals lying on their sternums looked as though they might have had hypocalcaemia (low blood calcium), but their calcium levels were normal and the animals

were not responsive to routine metabolic treatments. Most affected cattle rapidly progressed to lying on their sides and died a day later.

Autopsies generally did not reveal any abnormalities. However, occasional findings included a distended rumen with very watery content, an empty small intestine, a dry large intestine and epicardial haemorrhage (haemorrhage around the heart).

However, histopathology in a number of cases showed changes consistent with kikuyu (*Pennisetum clandestinum*) toxicity. The State Veterinary Diagnostic Laboratory reported severe, acute, multifocal and coalescing necrotising, suppurative and erosive rumenitis, reticulitis and omasitis.

Kikuyu poisoning is not well understood and is often difficult to confirm, but typically the recent outbreak was acute and sudden in onset, restricted in distribution, and short in duration.

Again, characteristically, these incidents occurred during a very wet autumn that was preceded by a very dry summer.

The identity of the causative toxin is unknown. However, previous research has consistently isolated a fungus (*Fusarium torulosum*) from kikuyu pastures where affected cattle have grazed. This fungus is known to produce two separate toxins, both of which are can produce signs and pathological changes that are similar to those seen with kikuyu poisoning.

At the time of the deaths some of the affected pastures were also heavily infested with army worms, and these infestations have previously been suspected of being implicated in the deaths. However, the presence of army worms was not a consistent finding and their presence is more likely to be casual rather than causal.

For further information contact Steve Whittaker, District Veterinarian, South East Local Land Services, Berry on (02) 4464 6000.

Pigeon rotavirus excluded in free-range chickens

An experienced poultry vet notified government vets in March of high death rates on a small, free-range layer farm. The vet advised that preliminary bacterial culture results didn't suggest any of the common bacterial infections of chickens and that emergency diseases needed to be excluded.

The 10,000-hen, free-range layer chicken farm consisted of one big shed separated into four sections by mesh fences. Each

section had birds of different ages ranging from 6 to 24 months. However, only the oldest birds were showing signs of tremor, high temperature, closed eyes, whitish diarrhoea, recumbency and death within 12 to 24 hours. The death rate had been 100 to 200 hens a day for 3 consecutive days.

At post mortem the vet reported that the livers of the affected birds were 'soft, friable and blotchy'. This was similar to

livers he had recently seen in pigeons with rotavirus infection. Furthermore, the three adjacent younger flocks housed in the same shed and separated only by mesh remained well. This was consistent with the pattern of delayed spread to separated groups that has been seen in infected pigeon lofts. As a result, the vet asked for help to exclude pigeon rotavirus infection as well.

A government vet investigated the disease incident, collected appropriate samples and completed the surveillance forms needed for an emergency response, should it be required.

All samples were negative for Newcastle disease, avian influenza and pigeon rotavirus. Histopathology of the liver and other organs showed that septicaemia was present, but bacteriology did not clearly identify the culprit.

For further information contact Aziz Chowdhury, District Veterinarian, Greater Sydney Local Land Services, Penrith on 0472 421 136.



Free-range hens. Photo A Chowdhury

Bluetongue virus exclusion

In March 2017, a district vet was called to investigate a Merino ewe hogget that had developed a swollen head and was off its feed. The ewe was from a mob of 900 sheep that had been yarded earlier that day and was the only sheep noted to be affected. The mob had been grazing lush, green, improved pasture.

The ewe had a swollen head with thickened ears and muzzle. The bridge of the nose was crusted and the tongue was dark pink, with a red, ulcerated tip. The ewe was reluctant to walk, and the coronary bands on two of her feet showing a marked bluish-purple line. The temperature of the ewe was mildly elevated at 40.5 °C. There was no evidence of jaundice.

The sheep was euthanased and a post mortem conducted. No abnormalities were detected.



Inflammation around the coronet. Photo S Eastwood

A presumptive diagnosis of primary photosensitization was made, but there was enough concern with the property location and case history to warrant the exclusion of bluetongue virus infection.

Blood and tissue samples were sent to Elizabeth Macarthur



Facial oedema. Photo S Eastwood

Agricultural Institute and bluetongue virus infection was excluded by polymerase chain reaction testing.

For further information contact Steve Eastwood, Team Leader, Northern Tablelands Local Land Services, Armidale on 0427 007186.

Photosensitisation in sheep due to ingestion of *Tribulus terrestris*

At the end of February the district vet at Deniliquin investigated the deaths of about 30 sheep, as well as severe illness in a large number of sheep, near Wakool.

The sheep had been recently introduced to control the weeds in a paddock of cereal stubble and to reduce the amount of herbicide needed to clean up the paddock before resewing.

The cereal stubble was strewn with patches of green heliotrope (*Heliotropium europaeum*), cathead (*Tribulus terrestris*) and other weeds near the irrigation channel and in the drains of the paddock. Although the heliotrope was the most abundant weed in the paddock it was apparently not being grazed; however, there was evidence that the sheep were selectively grazing the cathead.

The district vet noted severely thickened skin around the affected sheep's eyes and noses, as well as inflammation and swelling of the ears.

Two of the dying sheep were euthanased; a post mortem revealed severe jaundice, a pale and swollen liver, and mottling of the kidneys.

Pathologists identified crystal-associated damage in the liver and kidneys and no signs of megalocytosis (large numbers

of macrocyte white cells in the blood), which is a feature of heliotrope toxins. The diagnosis was photosensitisation caused by cathead ingestion.

The sheep were removed from the stubble and placed in a sheltered area on the owner's property and fed hay. Those that were severely affected were euthanased. The owner lost about 63 animals out of the 718 that he had originally put into the paddock.

For further information contact Linda Searle, District Veterinarian, Murray Local Land Services, Deniliquin on (03) 5881 1055.



Jaundiced sheep carcass. Photo L Searle



Cathead. Photo L Searle

Humpyback affecting Merino ewes during shearing in north-west NSW

A producer from the Lightning Ridge region of north-west NSW reported that 4- to 5-year-old ewes were going down when mustered for shearing in late January.

They were in good body condition with just under 12 months' wool. Their lambs had been weaned off them 2 weeks before they had been brought in for shearing, and there had been no problems when the ewes were moved and handled at that time.

The daily temperatures during both musterings were hot (above 40 °C). However, when the mob had been moved from their paddock for shearing it was more humid. The region had experienced 6 consecutive weeks of temperatures above 35 °C.

The first affected ewes started to show signs of slowing gait, humped backs followed by staggering, and going down, before they left their home paddock. Progressively more ewes showed humpyback signs and went down during the muster. About 70 ewes (2% of the mob) were left in the paddocks and laneways where they went down, to be collected later with a trailer and brought into the holding paddock with shade and water. Some ewes would get up when approached, run off, and then go down again, whereas others didn't even rise.

Shearing of this group started 2 days after the initial muster. The ewes were still showing signs and going down up until the time they were

brought into the shed; some died on the board, and some died after shearing, although the ewes that were brought in and shorn soon after showing signs tended to survive. Fewer ewes showed signs after the ambient temperatures dropped following rain on the second day of shearing. Thirty-five ewes (1%) were reported to have died over the week since they were first mustered for shearing.

The following week the district vet examined some ewes that had been affected with humpyback signs and left to recover in the holding paddock. Most of the ewes were in full wool, but some had been shorn and had collapsed on the way out after shearing. The ewes would move along; some had arched backs and others ran with their necks outstretched and would start short-stepping or bunny hopping; this was followed by hindlimb ataxia before dropping down, usually with the neck outstretched. Other ewes knuckled forward in the forelimbs before going down. Some ewes would get up and move on when approached, whereas others stayed down. All the affected ewes were panting; heart rates were rapid and could be easily felt through the chest wall. Muscle tremors were observed when the ewes collapsed. The ewes tended to urinate on going down.

Two ewes (one shorn and one unshorn) were examined clinically and euthanased for post-mortem examination. Both of these ewes stayed

down or tended to drop readily when approached. Their rectal temperatures were elevated at 41.5 °C. Both ewes appeared alert, and there appeared to be no neurological deficits around the head and face. Examination of the spinal reflexes revealed upper motor neuron deficits with consistent proprioceptive (positioning of the body in space) deficits, as well as variable patellar and withdrawal reflexes. On post mortem examination the gastrointestinal tract was relatively empty. There was abdominal fat necrosis and the liver was pale, with fatty degeneration, indicating that the ewes had not been eating adequately during the time they were recovering.

As the ewes showed signs consistent with neurological disease, samples from both were examined at the State Veterinary Diagnostic Laboratory under the national Transmissible Spongiform Encephalopathy Freedom Assurance Program (TSEFAP). Scrapie was ruled out on histological examination.

The histological findings were consistent with the humpyback findings from other cases. Wallerian degeneration was found in the spinal cords of both ewes. The full-wool ewe had significant lesions at all levels of the spinal cord, but they were more severe in the thoracic and lumbar regions. Histopathology of her hindlimb muscles revealed lesions consistent with a myopathy not attributable to traumatic injury. The shorn ewe had muscle pathology consistent with traumatic injury, quite possibly associated with shearing and going down. The Wallerian degeneration was milder in this ewe and affected only the lumbar spinal cord.

The next mob of younger ewes was also affected with humpyback signs when mustered for shearing; however, there were fewer cases and deaths. Although daily temperatures were high, the humidity was not as high as experienced in the 4 days when the 4- to 5-year-old mob was being moved and shorn.

For further information contact Judy Ellem and Megan Davies, District Veterinarians, North West Local Land Services, Narrabri/Gunnedah on (02) 6790 7600.



Ewe with humpyback. Photo J Ellem

Leptospirosis detected in Hillston

Editor's note: This case occurred in the previous quarter but was not published because of an oversight. It's included in this issue because it illustrates a serious and uncommon leptospirosis incident and the opportunistic exclusion of foot-and-mouth disease.

A producer in the extensive grazing region of south-western NSW near Hillston reported to the district government vet in Broken Hill that 14 juvenile calves in a large beef cattle herd had lethargy, some jaundice and exercise intolerance. Affected calves had lost weight over the previous 2 weeks. The remaining 186 calves in the herd were unaffected.

The cows and calves were grazing a floodplain paddock of clover, ryegrass and barley grass. About 30% of the paddock had been flooded after recent rainfall events, and many pools of stagnant water remained. The cows had been vaccinated against clostridial and leptospiral infections.

The district vet arranged with a private vet to do a post mortem on a recently dead 2.5-month-old calf. The calf's liver was markedly congested and enlarged. The State Veterinary Diagnostic Laboratory reported that the liver showed acute, severe periacinar necrosis and chronic, marked fibrosis of the portal triads, with moderate bile duct proliferation. Kidney samples showed haemoglobinuric nephrosis.

A jugular blood sample taken from another affected calf revealed a marked regenerative anaemia. Bacterial culture and polymerase chain reaction (PCR) of fresh liver, lung and kidney were negative for *Leptospira* sp. and *Salmonella*. A PCR test for *Theileria* was negative.

On suspicion of leptospirosis, the calves were treated with antibiotics, and the owner moved the cows and calves into another paddock.

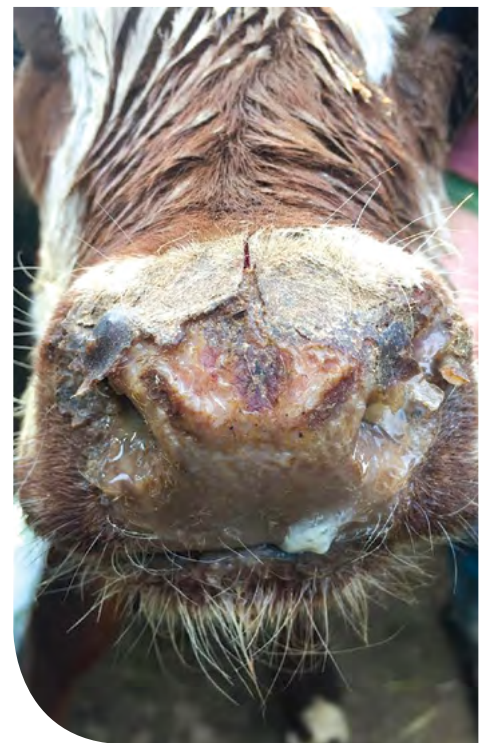
Two weeks after the initial treatment the calves had not made any improvement so the district government vet examined the herd, and nine calves in particular. The calves' temperatures were normal, although they had rapid heart rates and poor body condition. There was only mild jaundice in the sclera of the eyes of some of the calves. One

of the calves also had a marked clear eye discharge, a mild mucopurulent nasal discharge, and marked, diffuse erosions over the nose, with crusting. There were two, circular erosive lesions on the tongue and mild delamination of the right front medial claw. Samples were taken to exclude foot-and-mouth disease and confirm leptospirosis.

Foot-and-mouth disease testing of the tongue lesion was negative. PCR tests for *Leptospira* sp. in urine samples from the two most severely affected calves were positive. Serology revealed antibody titres of 800 to *Leptospira pomona*.

The producer was advised to start calf vaccination protocol with 7-in-1 and was given NSW Health recommendations about the potential of leptospirosis to infect humans.

For further information contact Sophie Hemley, District Veterinarian, Western Local Lands Services, Broken Hill on 0417 248 135.



Crusting and erosions on the muzzle of a calf.
Photo S Hemley



Oral lesions in a calf tested for foot-and-mouth disease. Photo S Hemley

Getting information on animal diseases

This surveillance report can convey only a very limited amount of information about the occurrence and distribution of livestock diseases in New South Wales.

For statewide information, contact the Department of Primary Industries Animal and Plant Biosecurity Branch in Orange on (02) 6391 3237 or fax (02) 6361 9976.

If you would like more specific information about diseases occurring in your part of the state, contact your Local Land Services District Veterinarian or the Department of Primary Industries Senior Veterinary Officer for your region, or go to: www.lls.nsw.gov.au

For more information on national disease status, check the National Animal Health Information System (NAHIS) via the internet at: www.animalhealthaustralia.com.au/status/nahis.cfm

This is a report under the Animal Disease Surveillance Operational Plan, Project 8, 'Reporting for Animal Disease Status in NSW'.

Content Co-ordinator:

Rory Arthur, Animal and Plant Biosecurity Branch, Department of Primary Industries, Kite Street, Orange 2800.
T: (02) 6391 3608
E: rory.arthur@dpi.nsw.gov.au

Copies of NSW Animal Health Surveillance reports are available on the internet at:

www.dpi.nsw.gov.au/newsletters/animal-health-surveillance

© State of NSW through NSW Department of Industry, Skills and Regional Development 2017

Published by NSW Department of Primary Industries, a part of NSW Department of Industry, Skills and Regional Development

You may copy, distribute, display, download and otherwise freely deal with this publication for any purpose, provided that you attribute NSW Department of Industry, Skills and Regional Development as the owner. However, you must obtain permission if you wish to charge others for access to the publication (other than at cost); include the publication advertising or a product for sale; modify the publication; or republish the publication on a website. You may freely link to the publication on a departmental website.

Information contributed by staff of NSW Department of Primary Industries and Local Land Services

www.dpi.nsw.gov.au
www.lls.nsw.gov.au

Disclaimer

The information contained in this publication is based on knowledge and understanding at the time of writing (May 2017). However, because of advances in knowledge, users are reminded of the need to ensure that the information upon which they rely is up to date and to check the currency of the information with the appropriate officer of NSW Department of Industry, Skills and Regional Development or the user's independent adviser.

The product trade names in this publication are supplied on the understanding that no preference between equivalent products is intended and that the inclusion of a product name does not imply endorsement by the Department of Primary Industries over any equivalent product from another manufacturer.

