

NEW SOUTH WALES ANIMAL HEALTH SURVEILLANCE

Information contributed by staff of the Rural Lands Protection Boards and the NSW Department of Primary Industries

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RLPBs renamed Livestock Health and Pest Authorities

Astute readers will note that some of the references to 'Rural Lands Protection Boards' (RLPBs), while correct for the period being reported, will no longer be appropriate after 1 January 2009. RLPBs have been renamed Livestock Health and Pest Authorities.

With the successful passage of the Rural Lands Protection Amendment Bill 2008 through the NSW Parliament, 14 new Livestock Health and Pest Authorities began operating on 1 January 2009, each amalgamating an average of three old RLPBs.

Local offices in all the previous RLPB districts will remain open, and all contact numbers and address details will remain the same.

Private veterinarians can continue to liaise with their local district veterinarians. They and landholders can continue to do business with their local offices, for example for veterinary investigations of significant flock and herd health issues, reporting and management of notifiable diseases, and investigations of suspected emergencies or exotic diseases.

For further information, visit www.rlpb.org.au or contact the State Council of Rural Lands Protection Boards on (02) 6391 3242.

Schistosomus reflexus: look out for congenitally deformed calves

Dr Laurie Denholm is seeking case reports and DNA samples in regard to a kind of foetal abnormality sometimes (and perhaps increasingly) seen by clinicians attending difficult calvings. The condition of interest is schistosomus reflexus (SR). The purpose of the study is to enhance disease surveillance with private veterinarians and to examine whether the condition is heritable.

SR inevitably causes dystocia because of the monstrous changes in the shape of the foetus. The spine is inverted, so the head and tail are in close proximity (the *flexus* part of the condition). The *schistosomus* part of the syndrome describes the failure of the closure of all or part of the ventral wall of the calf's body: the internal organs are not contained by an abdominal or thoracic wall. Calves like this are too big for natural birth. Unless fetotomy or a caesarean section is performed, the cow usually dies.



Schistosomus reflexus (SR) in a neonatal Angus calf.
Photo: Dr Jeremy Rogers, PIRSA

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The defect occurs very early in the process of foetal development at about 3 weeks post-conception, when homeobox genes are directing cell differentiation and arranging which cell-tissue types go where in the developing foetus. The defect could arise from faulty genes inherited from one or both of the parents or from genes made faulty by toxic injury early in the pregnancy (e.g. by a teratogen such as a plant toxin), or from some other mechanism, including a combination of genetic and teratogenic influences.

Unfortunately, although there are similar conditions in humans and other animals, they don't give us a clear lead as to why the calves develop like this. Interestingly, the reported incidence of congenital defects involving failure of body wall closure in humans is increasing around the world. It is believed that genetic as well as environmental factors are involved in these cases.

In cattle, if the condition does arise from a heritable recessive genetic defect, it is probable that a single bull will appear on both sides of the pedigrees of affected calves. At this stage, the condition is uncommon enough to suggest that there are complicated expressions of the gene, or that it has not yet been disseminated widely in breeding stock. A number of cases have been reported in Angus calves recently, so it will be wise to define the heritability of the condition as early as possible.

Recent advances in cattle genomics present an opportunity to determine whether there are particular mutations or genetic markers associated with SR in cattle. DNA markers for the disorder could be used, for example, to ensure that bulls carrying any mutations associated with SR do not enter commercial AI service.

Where pedigree information can be obtained, we would like veterinarians who encounter cases of SR to collect air-dried tail hair samples for DNA analysis (about 40 hairs with the hair root follicles attached) from the affected calf and both parents,

together with the pedigree data. If good quality digital images of the affected calf are available, these and the samples should be submitted to the contact person below. If the sire of the calf is a commercial AI bull it is not necessary to seek hair samples from the bull.

Pedigree data will be handled in strict confidence and without any future disclosures that would identify the breeders of affected calves. DNA samples and accompanying pedigree data will be retained until it can be determined whether there is any common ancestor in the pedigrees of these calves. If a common ancestor is identified, the DNA samples will be provided to an appropriate molecular genetics research laboratory.

We would also appreciate notification of any situation where multiple cases of SR occur in the one herd, even if pedigree information is not available for that herd.

For further information or to report schistosomus reflexus cases, please contact Dr Laurence Denholm, DPI Orange, on (02) 6391 3634 or 0418 641 957 (laurie.denholm@dpi.nsw.gov.au).

Surveillance continues in ongoing infectious laryngotracheitis outbreak

George Arzey reports that outbreaks of infectious laryngotracheitis (ILT) affecting tens of thousands of chickens started in NSW in May 2008 and are ongoing. The outbreaks are mainly in the Sydney area, with one recent outbreak in commercial broilers also reported at Mangrove Mountain.

Outbreaks have also been reported in backyard and show poultry flocks in other areas of NSW. The total number of outbreaks reported in NSW since May 2008 is approaching 50. Numerous outbreaks of ILT have also been reported in Victoria since early 2007.

Supply of mild ILT vaccines suitable for use on broilers is limited. Therefore, broilers

are not currently vaccinated against ILT or are vaccinated with more virulent vaccines that have the potential to inflict significant losses.

There has been an emerging concern that the ILT vaccines are not protecting against the type of ILT virus that is most prevalent in NSW. This concern stems from the fact that there have been a number of outbreaks of ILT of type 8 virus in vaccinated layer and broiler flocks (molecular typing gives no indication of pathogenicity). However, NSW DPI has concluded a protection trial that demonstrated that the current vaccines are protective against the new ILT strain-type 8.

ILT outbreaks have occurred sporadically in NSW in previous years. However, they have normally been of shorter duration. ILT virus can spread from farm to farm through biosecurity breaches or via airborne vicinity spread. The majority of outbreaks since May 2008 have been associated with windborne spread.

For further information contact George Arzey, NSW DPI Menangle, on (02) 4640 6402.

Anthrax: three cases, many exclusions

Three cases of anthrax occurred in the Bourke, Nyngan and Hay RLPBs. All were treated according to policy by quarantine, effective disposal of carcasses and vaccination.

Anthrax was excluded as the cause of sudden deaths of 28 out of 100 crossbred lambs in Murray RLPB. It was also excluded as the cause of sudden death in lambs on another property. Toxicity from enterotoxaemia is suspected to be the cause of death.

It was also excluded as the cause of sudden death of three out of 34 Angus steers in Hume RLPB. Enterotoxaemia was suspected to be the cause of death, as the steers did not have adequate vaccine protection and were grazing lucerne. No further losses occurred after vaccination and improved grazing management.

Anthrax was excluded as the cause of sudden death in a sheep flock in the Narrabri RLPB. Cyanogenic glycosides from *Eremophila maculata* (spotted fuchsia bush) regrowth are strongly suspected to be the cause of the deaths.

The mob of 400 ewes and their 2- to 3-month-old lambs had been grazing in a paddock of black soil with red ridges for several months. The paddock had no previous history of problems.

The owner found three dead ewes and five dead lambs and contacted the RLPB office with anthrax concerns.

A lamb was autopsied 24 hours after death, having been held on ice packs. Although the degree of autolysis was consistent with the time since death and no gross pathology was observed, anthrax could not be excluded. Anthrax was finally excluded by a negative anthrax PCR test on spleen smears.

A paddock inspection revealed a large 50- by 100-metre stand of *Eremophila maculata*. All sheep had died within or near this thicket. As a result of drought conditions over autumn and winter the bushes had dropped almost all their leaves. Following substantial spring rains and warmer weather, the branches had become covered with short green shoots. These were collected, frozen and submitted to the laboratory; they were strongly positive for cyanide.



New shoots and a flower from spotted fuchsia bush.
Photo: S Slattery

For further information contact Gabe Morrice, DV Narrandera RLPB, on (02) 6959 2322 and Shaun Slattery, DV Narrabri RLPB, on (02) 6792 2533.

Lambs going down—again

Hypocalcaemia was suspected of causing sudden ataxia in lambs in the Burren Junction area in the Narrabri RLPB.

The mob of 235 unweaned, 7-month-old Border-Merino crossbred lambs and their ewes had been walked 2.5 km the previous afternoon and yarded overnight. When released from the yards the following morning, some of the lambs became recumbent within 30 metres of travel, with more than 25 down before the mob could be turned back into the yards. No ewes were affected.

On examination mid-morning, affected lambs showed a slowing of pace after being driven at walking pace for 30 to 50 metres. This was followed by a notable horizontal twitching of the tail, then recumbency. If hurried, they showed several kangaroo hopping steps before recumbency. The lambs would then rest for a few minutes, before quickly rising and running normally to join the mob.

The history and clinical signs were consistent with hypocalcaemia, a not uncommon problem in rapidly growing crossbred lambs deprived of feed for 12 hours or more. Four affected lambs were sampled: one had a serum calcium value below the normal range. Serum magnesium values were normal and all four lambs tested negative to a *Mycoplasma ovis* PCR test.

The remainder of the mob was left undisturbed in a paddock adjacent to the yards for a day. On the next day, the ataxia was no longer present.

Before mustering, the mob had been grazing a sparse lucerne paddock for 3 months; the paddock had been reduced to butts. The paddock also contained a short growth of wild turnip (*Rapistrum rugosum*), a member of the Brassica family. A paddock inspection suggested that the mob was eating only the lucerne. For the 10 days before mustering, the mob had

been supplemented with a cereal grain and legume mix provided in self-feeders.

The route from the paddock to the yards lay along a formed road. Recent rains and the presence of wide table drains meant that the roadside feed consisted of abundant green grasses. Sheep in the mob grazed heavily on this feed as they were walked to the yards, but the yards themselves were bare.

A number of other mobs were subsequently mustered that week. Problems were not experienced with any of these mobs. The affected mob was the only one that had been grazing lucerne. It is possible that the prolonged ingestion of a calcium-rich feed such as lucerne made this group of lambs less able to mobilise calcium during a subsequent short period of stress.

For further information contact Shaun Slattery, DV Narrabri RLPB, on (02) 6792 2533.

Sporadic bovine encephalomyelitis in young dairy cattle

Seven dairy heifers were affected by sporadic bovine encephalomyelitis (SBE), with two dying, on a property in Hume RLPB. The cattle had been grazing short lucerne and barley grass since February, with access to a creep feed supplement. One steer died and a second steer was found recumbent and moribund 1 week later. This steer displayed rapid respiration and had a temperature of 41.8 °C. The steer was euthanased and a post mortem examination revealed polyserositis; approximately 2 litres of yellow abdominal fluid, containing fibrin, throughout the abdominal cavity; pleural and pericardial effusion with fibrin; and multiple small haemorrhages in the spleen. Five other animals were affected, displaying a stiff gait and reluctance to move. They appeared to have ascites and had an elevated temperature (41 °C). One heifer recovered after early treatment with oxytetracycline. Blood samples were collected from three of the affected animals. All three had positive chlamydial titres.



An example of fibrinous serositis caused by Chlamydotheca sp. in cattle Photo: University of Sydney OLIVER™ Image library, courtesy W Hartley & P Windsor

For further information contact Steve Whittaker or Brigit Pitman, Hume RLPB, on (02) 6040 4210.

Metabolic disease causes large losses near Cooma

On a property in Cooma RLPB 20 out of 50 Murray Grey cows in late pregnancy died. One fresh carcass was available for post mortem examination. It had a bloody discharge from the vulva and eyes. There was evidence of kicking in lateral recumbency before death. The cows were in a paddock with minimal green pasture and access to bracken fern. Small amounts of sheep nuts had been used as a supplementary feed. Bracken fern toxicity was excluded by histopathology. Hypocalcaemia and hypomagnesaemia were diagnosed on analysis of pleural fluid and were suspected as the causes of the herd mortalities, but a spindle cell tumour of the heart was found to be the most likely cause of death in the cow that was subjected to post mortem.

For further information contact Chris Haylock, DV Cooma RLPB, on (02) 6452 1122.

Malignant catarrhal fever

In Hume RLPB malignant catarrhal fever (MCF) was confirmed in two animals. The first was a yearling steer that displayed apparent blindness, bilateral copious nasal discharge, and elevated temperature, respiratory rate and heart rate. The second case of MCF was confirmed in a 5-year-old febrile cow with conjunctivitis, dyspnoea, mucopurulent nasal discharge and corneal ulceration.



Malignant catarrhal fever showing bilateral ocular discharge. Photo: University of Sydney OLIVER™ Image library, courtesy Shaun Slattery

For further information contact Steve Whittaker or Brigit Pitman, Hume RLPB, on (02) 6040 4210.

Phosphorus deficiency in cattle in southern NSW

Phosphorus deficiency was diagnosed in a herd of Angus cattle in Hume RLPB. The cattle were on dry country and fed wheaten hay. Phosphorus deficiency had been confirmed in this area previously. One animal died and five were affected out of 40. Clinical signs included ill thrift, variable lameness (stiff gait and reluctance to move) and weight loss. Chlamydia was excluded on serology. Five out of five blood samples revealed phosphorus deficiency, with levels ranging from 0.24 to 0.39 mmol/L (normal range is 0.8 to 2.8 mmol/L).

Phosphorus deficiency was suspected to be the cause of weight loss and lethargy in three out of 40 Angus cows with calves at foot in Braidwood RLPB. Low and marginal blood phosphorus levels were detected in the blood samples of two of the three animals. The cattle are reported to have responded well to phosphorus supplementation.

In a large beef cattle herd in Murray RLPB, 100 out of a mob of 340 cows born in 2004 were in very poor condition (score 1 out of 5) and showing signs of laminitis, osteoporosis and arthritis. Bone chewing was observed. The cattle were on unimproved pasture and were not being given supplementary feed. The owner noted that there has been very little medic in the pasture because of reduced rainfall. The affected mob was weaned onto a

block of land that had not been cultivated in the last 35 years and had received no fertiliser. One affected cow was put in a crush so a blood sample could be collected. On release from the crush she went down and was paralysed because of fracture of the cervical spine. On post mortem severe osteoporosis was found. This cow had a low serum phosphorus level of 0.69 mmol/L (normal range is 0.8 to 2.8 mmol/L) and a serum calcium level of 2.88 mmol/L (normal range is 2.0 to 2.75 mmol/L). Blood samples were collected from three other affected cows and all had low phosphorus levels (below 1 mmol/L is significant in this context). Selenium and copper levels were normal. Bone samples from the cow that was autopsied have been submitted for histopathology. Further results are awaited.

For further information contact Sarah Robinson, NSW DPI Wagga Wagga, on (02) 6938 1967; Steve Whittaker or Brigit Pitman, Hume RLPB, on (02) 6040 4210; and Bob Templeton, Braidwood RLPB, on (02) 4842 2536.

Chondrodystrophy in calves

One small herd in Cooma RLPB had two deformed calves out of seven born. Both calves had limb deformities leading to difficulty standing or walking. Their appearance was suggestive of 'acorn calves', a problem that has occurred across south-east NSW over the past few years. The worst-affected calf was not able to walk and was euthanased for further investigation. The bones of both front and hind limbs were very short, with excessive fluid and cartilage erosion in some joints. Histopathology showed chondrodystrophy; testing for pestivirus was negative.

For further information contact Chris Haylock, DV Cooma RLPB, on (02) 6452 1122.

Mycoplasma ovis anaemia in lambs

Two flocks in the Cooma RLPB reported pale, weak and dying lambs. As this occurred 5 and 6 weeks after mulesing and there was no suggestion of anaemia in the

adult ewes, *Mycoplasma ovis* infection was suspected. A post-mortem examination was performed to rule out other possible causes of anaemia. Jaundice was a feature in one post mortem; there was splenic enlargement in both cases and no barber's pole worm or liver fluke burdens were present. These changes and the history are consistent with the spread of *M. ovis* at lamb-marking time.



Anaemic pallor in a lamb with Mycoplasma ovis. Photo: University of Sydney OLIVER™ Image library, courtesy Sarah Robinson

For further information contact Chris Haylock, DV Cooma RLPB, on (02) 6452 1122.

Enzootic ataxia in kids: copper deficiency

Limb weakness and perinatal mortality were investigated in a Boer goat flock in Wagga RLPB. Twelve out of 86 ten-week-old goat kids were affected and four died. The adult goats had been grazing oats over winter and then fed wheaten and canola hay with some grain. A calcium lick had been provided. The does gave birth to kids without a problem, but at 2 to 3 weeks the kids went down, initially in the hind legs, and were not able to stand. They remained bright and alert. Autopsy was performed on one animal and revealed muscle wasting, pale kidneys and a pale area on the right ventricular wall of the heart. Histopathology revealed a significant axonopathy consistent with copper deficiency. Blood samples were collected from 10 affected animals; eight of the 10 had low serum copper levels. Concurrent coccidial enteritis was diagnosed in the autopsied animal.

On further questioning it was found that the copper deficiency had been precipitated by excess molybdenum supplementation.

Molybdenum was fed on the advice of a nutritionist to prevent copper toxicity while the goats were grazing heliotrope. Molybdenum supplementation ceased in April 2008 in early gestation.

The flock has been treated with copper sulfate drench or copper bullets in order to treat subclinical copper deficiency.

For further information contact Tony Morton, DV Wagga Wagga RLPB, on (02) 6923 0900.

Enteritis in lambs

In Murray RLPB 302 out of 350 six-month-old lambs developed diarrhoea and lost weight 1 week after shearing. One lamb that had recently died was noticed to have had bloody dysentery. Gross pathology included blood-tinged intestinal contents in the jejunum, ileum, caecum and colon, with 'tiger striping' in the caecum. Marked acute multifocal necrotising enteritis and colitis with haemorrhage and myriad bacilli was observed on histopathological examination.

The presence of large numbers of bacilli in all sections of intestine examined was considered highly significant. This clinical picture and histopathological findings may be consistent with clostridial enteritis (haemorrhagic enterotoxaemia), associated with *Clostridium perfringens* type C. The lambs were treated with sulfadimidine with a good response. Overcrowding and stress are likely to have been the factors predisposing the lambs to the enteritis.

Enteritis caused by coccidiosis was diagnosed in a mob of lambs in Murray RLPB. The lambs had been walked 10 kilometres along the road to a new property, and bloody faeces had been noticed along the road. They were put on irrigated pasture for 1 week and then brought in and crutched because some had diarrhoea, even though they had been drenched by the former owner 1 month earlier. The owner found some bloody faeces and blood in the holding paddock overnight. A total of 30 lambs died. An

autopsy was performed on a lamb that had died. Blood-tinged faecal contents were found in the caecum and colon, and stripes of congestion and inflammation were seen in the intestinal wall. Large numbers of coccidia were observed in a sample of large intestinal content. A good response to sulfadimidine drench at a dose rate of 250 g/kg was reported.

For further information contact Sarah Robinson, NSW DPI Wagga Wagga, on (02) 6938 1967.

Photosensitisation from St John's Wort in lambs

Approximately 150 out of 300 crossbred lambs suffered from photosensitisation after grazing a paddock that had more St John's wort in it than the farmer thought. The affected lambs were moved into a shearing shed, with the worst-affected lambs protected completely from sunlight. Conjunctivitis was treated with antibiotic eye ointment. The lambs were fed hay while in the shed and recovered enough to go back to the paddock within a couple of weeks. Ten sheep died and four remained blind, although they were able to eat and drink. Approximately 60% of the affected lambs suffered a setback in growth.



St John's wort causes photosensitisation. Photo: NSW DPI Image Library

For further information contact Sarah Robinson, NSW DPI Wagga Wagga, on (02) 6938 1967.

Balanoposthitis in bulls

Five beef herds in the Upper Murray region of Hume RLPB had bulls with ulcerative penile lesions. Affected bulls were reluctant to

serve, and as a result herd conception rates were down. Recently joined heifers were found to have ulcerative vaginal lesions. The problem had been apparent in one herd for the last 3 years. District surveillance funds were used to help define the extent and nature of the problem in the local area. Penile and vaginal swabs have been collected from five properties so far, and four of these were PCR positive for bovine herpesvirus-1 (results are pending for the fifth property). Bovine herpesvirus-1 infection is highly infectious. Rhinotracheitis is the most commonly observed symptom (infectious bovine rhinotracheitis—IBR). The venereal form of bovine herpesvirus infection causes pustular balanoposthitis and sporadic vulvovaginitis. The genital carrier state is considered to be an important factor in the maintenance of this venereal disease.



BHV-1 can cause penile lesions. Photo: S. Whittaker and David Hall

For further information contact Steve Whittaker or Brigit Pitman, Hume RLPB, on (02) 6040 4210.

Listeriosis in sheep at Bombala

A grazier was feeding lucerne silage and triticale grain to 2500 drought-affected sheep on a property at Bombala in a hand-feeding enterprise. The silage was fed out once a week. After about a fortnight the sheep began to die—usually one or two each day. The most obvious signs were

an apparently semi-paralysed lower lip, which flapped about while the sheep was moving around in the paddock; a tendency to have a circling gait; and the presence of unswallowed feed in the pharynx of affected animals. Sick animals took 1 or 2 days to die, and they perished in lateral recumbency. Twenty sheep died.

Listeria monocytogenes bacteria were isolated from the spinal cords of affected animals. After access to silage was removed, deaths from listeriosis ceased within 10 days. The silage had been preserved in plastic-covered round bales weighing up to 500 kg. The grazier suspected that if he had fed the silage out more frequently he may have prevented the infection.

For further information contact Brian Hodge, DV Bombala, on 02 6458 3055.

Craniomegaly in stillborn Angus calves

During the course of investigations of several arthrogryposis multiplex (AM) cases in 2008 (*Animal Health Surveillance, 2008/3*), NSW DPI veterinarian Dr Laurence Denholm received a number of photographs of abnormal stillborn Angus calves, many from David Gardiner, a District Veterinarian with the Mudgee-Merriwa RLPB. Some of these photographs show stillborn calves with severe craniomegaly which is likely to be associated with hydrocephalus. Developmental defects of the eyes and/or eyelids and jaws were also present, with prominent abnormalities of the dentition. Several cases had arthrogryposis. No stillborn calves with this pattern of developmental defects were however submitted for post-mortem examination.

Pedigrees obtained in a number of these craniomegaly cases traced to GAR Precision 1680 on both the maternal and paternal side. Accordingly, at the time it was assumed that this craniomegaly phenotype was part of the AM syndrome.

More recently, with the publication in late 2008 of several lists of US and Australian Angus bulls that have tested as carriers or

tested as free of the identified mutation in AM, it has become clear that many of the craniomegaly cases have sires that are not carriers of the AM mutation. Accordingly, it is now assumed that this craniomegaly syndrome is a separate and distinct defect present in the same Angus bloodlines as AM. However, additional cases are needed to identify the mutation and demonstrate that this congenital craniomegaly developmental defect is caused by a separate mutation to that responsible for AM, and, if so, to develop a DNA diagnostic test for the defect.



Stillborn Angus calf with craniomegaly and other cephalic defects. Photo: David Gardiner.

Fresh cadavers on ice for necropsy would be appreciated, but where this is not possible, pedigree information and samples as for cases of suspected schistosomus reflexus would be invaluable. Pedigree data will be handled in strict confidence without any future disclosure in a way that would identify the breeders of affected calves.

For further information or to report stillborn calves with craniomegaly, please contact Dr Laurence Denholm, DPI Orange, (02) 6391 3634 or 0418 641957 or laurie.denholm@dpi.nsw.gov.au

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. If you would like more specific information about diseases occurring in your part of the State, contact your local Rural Lands Protection Board District Veterinarian, Departmental Senior Regional Animal Health Manager, Regional Health Leader, or Regional Veterinary Laboratory.

For Statewide information, contact NSW DPI's Animal and Plant Biosecurity Branch in Orange on (02) 6391 3237 or fax (02) 6361 9976.

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

This is a report under the Animal Disease Surveillance Operational Plan, Project 3.1, 'Reporting for Animal Disease Status in NSW'.

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Copies of NSW Animal Health Surveillance reports are available on the internet at:
<http://www.dpi.nsw.gov.au/reader/ah-surveillance>

Disclaimer

The information contained in this publication is based on knowledge and understanding at the time of writing (January 2009). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up-to-date and to check the currency of the information with the appropriate officer of New South Wales Department of Primary Industries or the user's independent adviser.

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