

NEW SOUTH WALES ANIMAL HEALTH SURVEILLANCE

Information contributed by staff of the Livestock Health and Pest Authorities and the NSW Department of Primary Industries

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Theileriosis in NSW

Australia does not have the pathogenic bovine theilerioses such as East Coast fever (caused by *Theileria parva*) and tropical theileriosis or Mediterranean coast fever (caused by *Theileria annulata*).

However, benign theileriosis caused by *Theileria buffeli* occurs worldwide. It has been recognised in cattle blood smears in Australia since the early 1900s and detected in all States except South Australia and Tasmania. Although referred to as 'benign', it can sometimes cause moderate to severe anaemia in heavily parasitised cattle. We have previously reported such a case in *NSW Animal Health Surveillance 2006/4*.

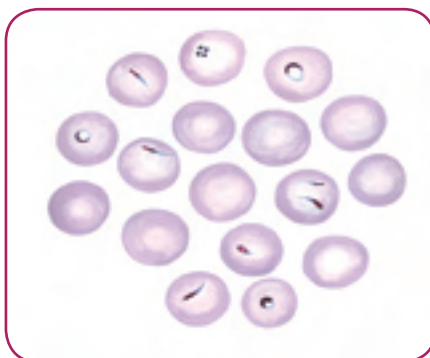
There may have been an increase in clinical cases of benign theileriosis in NSW over the past 12 months. During 2008, NSW DPI laboratories found *T. buffeli*-associated cases on 27 beef and dairy properties in NSW. These properties were located in eastern NSW in the areas covered by the Mid-Coast, New England, Central North, Cumberland, Tablelands and South East Livestock Health and Pest Authorities.

The majority of the cases occurred in cattle that had recently been brought onto the properties, and clinical disease was recorded in all age groups. There was wide variation among herds in morbidity and mortality rates, with a median morbidity rate of 10% and a median mortality rate of 2%. Cases were seen at most times of the year, without any pronounced seasonality.

Clinical signs have included lethargy, inappetence, pale mucous membranes, jaundice, abortions, and a drop in milk

production in dairy cows. Pyrexia was only occasionally reported. Packed cell volumes (PCVs) were invariably less than 10% (normal 24% to 46%), and blood smears usually showed a marked regenerative anaemia. Unlike with tick fevers, 'redwater' (hemoglobinuria) was not observed.

The diagnosis of theileriosis has been based on detection of the characteristic *T. buffeli* morphology in stained blood smears when associated with clinical signs. The common finding of *T. buffeli* in blood smears may lead to over-diagnosis. Levels of erythrocyte parasitemia have varied according to the stage of infection. Most have been less than 10%, but some animals have had over 20% of erythrocytes parasitised.



Theileria buffeli under the microscope. Courtesy Lyn de Vos

Three species of *Haemaphysalis* ticks have been listed as vectors of *T. buffeli* in Australia: *H. longicornis* (the bush tick or NZ cattle tick), *H. bancrofti* (the wallaby tick) and *H. humerosa* (the bandicoot tick). All the cases to date have occurred in regions where these ticks are found. However, ticks were found only on three of the 27 affected farms, although some farms had recently treated stock for ticks. Disease-transmission trials with the three tick species have not consistently produced clinical signs.

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NSW animal health authorities are continuing to investigate the epidemiology of the cases. Additional sampling is also planned to better reveal the risk factors for individuals and herds. If the incidence of clinical signs has increased, it may be due to change in movement patterns of livestock into endemic areas or changes in the ecology of the tick vectors.

Queensland DPI has not reported any increased incidence of clinical theileriosis.

For further information contact Paul Freeman, NSW DPI Wollongbar, on (02) 6626 1214.

Infertility in cattle causes economic losses

The most common venereal disease in NSW is bovine venereal campylobacteriosis (BVC), caused by *Campylobacter fetus venerealis*. It typically causes high returns to service and irregular cycling in heifers. These signs were noticed in a beef herd in the Gundagai district, prompting an investigation. Although the herd was 'closed', stray bulls had gained access to the property through damaged fencing across a river. Samples were collected for demonstration of *C. fetus* antibodies in vaginal mucus using an ELISA test. One heifer out of 15 tested positive and three others had inconclusive test results. BVC can be controlled effectively through vaccination.

Two other beef herds in the Gundagai district had poor fertility. In one herd there were high returns to service. In the other herd 27 out of 63 heifers were not in calf at pregnancy testing. However, in these cases BVC was excluded on the basis of vaccination history and laboratory tests. Balanoposthitis was suspected to be the cause of infertility in both herds.

For further information contact Ian Masters, Hume LHPA, on (02) 6944 1588.

Neuroaxonal dystrophy in lambs

Neurological disease in 4-month-old Dorset cross lambs was investigated in the Braidwood district. Four lambs died and 10 were affected out of 900. Affected lambs had paresis, knuckling of the lower limbs when moved, a kangaroo-hopping gait and tremor. Typical causes of ataxia in sheep like this might have been perennial ryegrass staggers or phalaris staggers, but these plants

were not obvious in the paddock. Yorkshire fog (*Holcus lanatus*) was present; although it is not a recognised toxic plant, samples were tested for cyanogenic glycosides as a precaution, with negative results. Variegated thistle had been grazed, but the signs were not consistent with nitrate toxicity.

Histopathological examination of brain samples revealed neuroaxonal dystrophy consistent with the condition called Gundagai ataxia in Merino sheep. This is an inherited condition. A confirmed diagnosis awaits further investigation.

For further information contact Bob Templeton, South East LHPA, on (02) 4842 2536.

Bronchopneumonia in dairy cattle

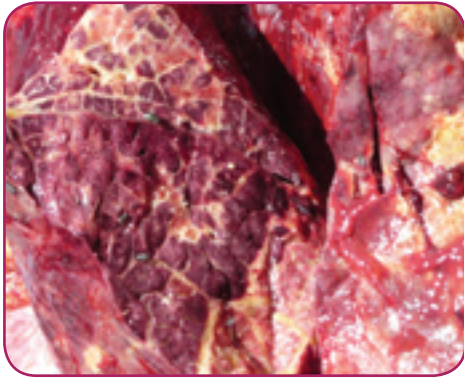
Twelve lactating dairy cows died from bronchopneumonia in February 2009 in the Walcha district. They died over a fortnight following a long period of wet weather. Cows initially displayed a drop in milk production and then segregated themselves from the herd. They showed dyspnoea, pyrexia, recumbency and death within 3 days of onset of clinical signs.



Dyspnoeic dairy cow. Photo: S Eastwood

On post-mortem examination, the lungs were congested with gross pneumonic changes. Haematology showed marked neutrophilia and lymphocytosis. *Mannheimia haemolytica* infection was suspected and aggressive antibiotic therapy commenced on individual cows showing decreased milk production. Deaths ceased.

The laboratory isolated a profuse, pure growth of *M. haemolytica* from lung samples. It is suspected that the warm, moist conditions and metabolic stress contributed to the outbreak of disease.



Pneumonia from Mannheimia haemolytica infection: Photo: S Eastwood

For further information, contact Steve Eastwood, DV New England LHPA, on (02) 6772 2366.

Mycoplasma ovis

Mycoplasma ovis was diagnosed in a flock of 5-month old Merino weaners in the Hume district. Five animals died and 40 were affected out of 250. Clinical signs included anaemia, weakness, ill thrift, scouring and jaundice. Post-mortem examination, blood smears and faecal egg counts were performed to rule out other possible causes of anaemia. Faecal egg counts revealed low to medium strongyle and *Nematodirus* worm burdens. Blood smear examinations confirmed *M. ovis* infection. The effect of *M. ovis* is more severe if sheep are stressed by internal parasites or malnutrition. The disease can be spread mechanically between animals by the transfer of infected red blood cells during marking and mulesing.

For further information contact Brigit Pitman, Hume LHPA, on (02) 6040 4210.

Canine distemper

An unvaccinated 2-year-old male Kelpie was presented to a veterinary surgery in Wagga Wagga with dyspnoea and fever. Initially, dust inhalation pneumonia was suspected. Dyspnoea and a fluctuating fever continued for 8 days. There was no response to antibiotics and no abnormalities were detected on chest X-ray. The dog developed neurological signs and ataxia, then nystagmus and facial twitching. Canine distemper was suspected and the dog was euthanased. Samples were sent for histopathology. Histopathological changes in lung tissue and the brain were typical of distemper, with intranuclear and intracytoplasmic

Paramyxoviridae (distemper) inclusions observed in the cerebral cortex.

Canine distemper is rarely diagnosed these days, thanks to effective vaccination of domestic dogs. The source of infection of this dog was not determined. The case highlights the need to continue vaccinating dogs for distemper. Canine distemper should be considered a differential diagnosis for dyspnoea and fever that do not respond to antibiotic treatment in any unvaccinated dog.

For further information contact Geoff Treloar, Moorong Veterinary Clinic, on (02) 6921 3462.

Trucking typhlitis of lambs

A shipment of 300 cross-bred lambs was trucked 200 km from two properties in Victoria to a property near Deniliquin. The lambs were held in a small paddock with hay and drenched.

Approximately 2 weeks post arrival, some of the lambs started to scour and became weak. Morbidity was 20% and case mortality 10%. Autopsy revealed moderate enteritis with copious watery intestinal contents, particularly in the caecum and colon. The intestinal mucosa was thickened, the mesentery was oedematous, and the mesenteric lymph nodes were enlarged.

Histological examination revealed a moderate, multifocal, acute and erosive colitis and mild, multifocal, acute suppurative lymphadenitis.

Salmonella typhimurium was isolated from colon and mesenteric lymph node samples. About one-half of the affected lambs responded to a single injection of long-acting oxytetracycline, and the remaining survivors responded to a second injection.

This post-transport enteritis syndrome is relatively common in the western Riverina. The history, epidemic curve and gross pathology are consistently the same but the histopathology and causal organism are not.

Attack rates have varied from 20% to 60% and case mortality has varied from 10% to 90%. In different incidents *Salmonella*, coccidia and *Yersinia* have been identified and *Clostridium* has been suspected. Response to antibiotic therapy has varied from excellent, with a complete resolution of the incident, to insignificant.

When mixed mobs have been involved there has been a significant line effect. It has been possible to determine property of origin or saleyard factors that have caused disease expression in some lines, but not in others.

For further information contact Dan Salmon, Riverina LHPA, on (03) 5881 1055.

Lupin stubble causes sheep deaths

Lupinosis is caused by toxins produced by the fungus *Phomopsis leptostromiformis*, which colonises lupin plants. Albus lupins are normally highly resistant to the fungus but are somewhat susceptible when drought stressed.

This occurred in southern NSW this summer, when lupin stubble was grazed after harvesting. In the Hume district, approximately 100 Border Leicester ewes out of a mob of 200 died from lupinosis. The ewes were removed from the paddock containing albus lupin stubble in late December after a few sheep died, but mortalities increased over the next few weeks. In the Wagga district, 25% of a mob of cross-bred ewes died from lupinosis after grazing albus lupin stubble for 6 days.

In both cases, typical signs of jaundice, depression and death were observed. Gross pathology included yellow or orange livers, enlarged gallbladders and generalised jaundice. Pre-existing liver damage from pyrrolizidine alkaloid ingestion from heliotrope or Paterson's curse was suspected to be involved in the case in the Hume district.



Albus lupin seedlings. Photo: DPI Image Library

For further information contact Steve Whittaker, Hume LHPA, on (02) 6040 4210 or Tony Morton, Hume LHPA, on (02) 6923 0900.

Ear mites in a goat

A 1-year-old goat was presented to a veterinary hospital because it was showing signs of ear irritation: head shaking, rubbing and scratching its ears with its back feet. Examination of the external ear canals revealed numerous *Raillietia capra* ear mites and a small amount of exudate. Treatment with injectable subcutaneous ivermectin three times, at fortnightly intervals, failed to elicit any improvement. An improvement was obtained with ear drops based on pyrethrum and antiseptic, though the goat was presented again about 3 months later and small numbers of mites were still seen at that time.

Raillietia capra is morphologically very similar to *R. auris*, the ear mite of cattle. However, it was first described only relatively recently in 1980, in Mexico. It was recorded in Australia for the first time by Domrow (1988) in specimens that he examined at the Regional Veterinary Laboratory at Wollongbar. There is little information in journals or textbooks on the prevalence of infection or clinical signs. One reference reported that feral goats with ear infection showed no associated clinical disease.

For further information contact Patrick Staples, Orange Regional Veterinary Laboratory, on (02) 6391 3854.

Vertebral osteomyelitis in sheep

A producer contacted the Central Tablelands district veterinarian to examine a lamb that was paralysed in the hindquarters but could bear weight on the front legs. At post-mortem examination, the only abnormality detected was a fluctuant swelling, bulging on and below the 10th thoracic vertebra. When incised, the swelling exuded thin yellow pus. When the vertebra was cut in half with pruning shears, a purulent osteomyelitis of the vertebra with bone lysis was apparent.



Osteomyelitis with bone lysis and a presumed pathological fracture.
Photo: B. Watt

Vertebral osteomyelitis in sheep is usually assumed to be due to an ascending infection following tail docking or mulesing, but it could be haematogenous in origin, as suspected in this case. *Escherichia coli*, *Streptococcus* and *Fusobacterium necrophorum* are commonly isolated from such abscesses. Vertebral osteomyelitis is also reported to be a common cause of sudden-onset hind limb paralysis in kids a few months of age. Paresis or paralysis can develop slowly as the abscess gradually compresses the spinal cord, or it may occur rapidly when bone destruction eventually causes a pathological fracture.

For further information contact Bruce Watt, Tablelands LHPA, on (02) 6331 1377.

Suspected anthrax

In March, one cow out of a mob of 55 with calves at foot died on a property near Tullibigeal in the central west of New South Wales. Samples were collected by the Lachlan Livestock Health and Pest Authority Ranger and submitted to the Regional Veterinary Laboratory at Orange. As the affected animal had been dead for a number of days it was not possible to obtain a suitable blood smear, but swabs were taken for PCR testing.

The property had a recent history of confirmed anthrax; one cow out of 50 had died in November 2007. Vaccination was undertaken at the time of the case but not followed up.

In view of the possibility of anthrax, the property was placed under quarantine, the carcass burned, and all at-risk animals vaccinated. It was confirmed that no animals had recently left the property. Although the PCR test for anthrax was negative, the case was regarded as suspected anthrax.

For further information contact Barbara Moloney, NSW DPI Orange, on (02) 6391 3687.

Bluetongue exclusion in the Western Division

Three of a group of four rams in north-west New South Wales developed severe pneumonia. One died before veterinary examination. It had been very depressed and reluctant to move. On the back feet there was evidence of a separation of the

horn from the underlying soft tissue around the coronet.



Foot lesions in a dead ram. Photo: C. Cavanagh

In the 42°C heat most tissues had undergone autolysis before samples could be collected; despite this, later histological examination of lung samples showed significant pneumonic changes.

One of the surviving rams was very ill, with a high fever, depression, very hot feet and reluctance to stand. The other was more mobile, fevered, and had a mucopurulent nasal discharge. Both these rams responded to antibiotic treatment.



A mean look with a nasal discharge. Photo: C. Cavanagh

Strains of bluetongue virus exist in northern Australia, restricted to vector-endemic areas, but clinical bluetongue disease is not seen in ruminants. Nonetheless, surveillance is ongoing, even in relatively remote, semi-arid areas such as this. Because of the apparent coronitis, tests were conducted to exclude bluetongue as a possible cause. Both PCR and ELISA tests were negative.

For further information contact Charlotte Cavanagh, NSW DPI Bourke, on (02) 6872 2077.

Hendra disease exclusion

Testing at AAHL excluded Hendra virus infection from a 13-year-old horse near Murwillumbah that died after a very short illness. The horse had shown both respiratory and nervous signs, and shortly before falling ill it had been grazing an old orchard frequented by fruit bats. In this incident, histopathology confirmed Crofton weed poisoning as the probable cause of death.

Hendra virus infection was first detected in NSW in 2006—also in the Murwillumbah area—and that case remains the only confirmed one to date.



Crofton weed causes lung damage in horses. Photo: DPI Image Library

For further information contact Paul Freeman, NSW DPI Wollongbar, on (02) 6626 1214.

Potential humpy back

A producer in the north-west of NSW noticed that 5% to 10% of each mob on the property was lagging behind at mustering for shearing. When the sheep were pushed they would stop, 'walk with a stilted gait, walk backwards, shake and sit down'. When the sheep stood up, they would stand with an arched back with their feet under their body in a hump-backed fashion.

A post-mortem examination was performed, but no abnormalities were detected. The producer had noticed potato bush (*Solanum esuriale*) on the property and had noticed the sheep eating this plant. The toxin in *Solanum* plants causes the condition called humpy back, in which there is a nervous tissue degeneration that is usually not obvious unless samples are examined microscopically.



Potato bush causes humpy back in sheep. Photo: DPI Image Library

For further information contact, Charlotte Cavanagh, NSW DPI Bourke, on (02) 6872 2077.

An unusual case of grain poisoning in Merino ewes

Grain poisoning killed approximately 20 of 1000 Merino ewes near Nyngan in early February. They had previously been grazing stubble, were yarded for 12 hours, and then moved to fresh wheat stubble. The owner was unaware of any large grain spills to which the sheep might have had access in the paddock. The majority of ewes were found dead the next morning. Others in the mob appeared depressed, were lame, or had pasty, grey scours.

Post-mortem examinations were conducted on a dead ewe and a downer ewe. No significant gross findings were seen in either animal. Some grain (30% at most) was noted in the rumens of both animals, but no inflammation or damage to the mucosal surface of the rumen was evident. Rumen pH was around 6 in both animals. Grain poisoning was confirmed by laboratory testing when serum D-lactate levels of greater than 1 mmol/mL were found, along with histopathological changes in the rumen wall.

Given the small amount of grain seen in the rumens of both ewes and the limited access to grain, this was an unusual presentation of grain poisoning. It was hypothesised that the heat wave that the district was experiencing at the time could have played a role in the course of the condition, since death in lactic acidosis is ultimately due to dehydration and circulatory shock, which would have been exacerbated by the heat.

For further information contact Katharine Marsh, DV Central West LHPA Nyngan, on (02) 6832 1008.

Chlamydophila in yearling cattle

At a property near Coonamble, 12 of a mob of 100 homebred Charolais-cross yearlings (mixed sex) developed a syndrome of stiffness and sudden weight loss. The mob had been grazing a lucerne paddock for several weeks. There was a significant mosquito presence around the cattle. A nearby mob of cows in a different paddock was not affected.

The affected cattle were mostly recumbent but all were able (reluctantly) to rise. All animals had a stiff gait and most showed some discharge from the nares and mouth. The discharge did not string, and the mouths of two cows were later examined and no abnormalities detected. The mob was brought into yards for examination and the stiffness eased on walking.

A fever of 40.0°C was present in the only animal whose temperature was taken.

All six blood samples from affected animals were positive on *Chlamydophila* complement fixation testing. This case was interesting, because without laboratory testing and veterinary examination the owner may have assumed the cattle had ephemeral fever.

For further information contact Shaun Slattery, SDV North West LHPA, on (02) 6792 2533.

Ill thrift in yearling cattle

The owner of 90 Angus cross steers and heifers observed that the mob had a significant 'tail' of ill-thrift cattle that grew slowly and had rough coats. The mob included homebred as well as imported steers, but all were spring-2007-drop calves from the Oberon district in NSW. The cattle were running on productive phalaris, ryegrass, fescue and clover pastures. Representatives of the mob were examined and blood tested in March 2009. These tests showed evidence of high levels of previous exposure to liver fluke (positive fluke ELISA) and internal parasites (elevated pepsinogen). Glutathione peroxidase levels were also low, confirming selenium deficiency. The sample of animals tested were all pestivirus antigen negative and had adequate blood vitamin B12 levels.

Internal parasitism, fluke infestation and selenium deficiency are major animal health problems in cattle on the Central Tablelands. Lost productivity is estimated to have cost this owner approximately \$50 dollars per

head, totalling \$4,500. The owner had treated these cattle on several occasions, including recently with macrocyclic lactone and triclabendazole drenches, but the timing of some of these treatments was inappropriate. The owner had never supplemented his cattle with selenium. The owner was advised to wean his spring-drop calves in about March, which was 2 to 3 months earlier than he was used to. He was also advised to supplement the calves with a long-acting selenium product and to drench at weaning (but not at marking), onto pastures with a low worm burden. He was then advised to drench for fluke and internal parasites in May and again in the spring.



Poor growth rate is associated with internal parasites and selenium deficiency. Photo: B Watt

For further information contact Bruce Watt, Tablelands LHPA, on (02) 6331 1377.

Photosensitisation in sheep

If forage brassicas (rape) are fed to sheep too early, they can cause photosensitisation. When 230 Merino weaners grazing a rape crop were found to be suffering from photosensitisation, the first thought was that it was caused by the rape. The first obvious sign of a problem was that the weaners were seeking shade in a period of hot, sunny weather. They were removed from the crop and 70 sheep with swollen or sunburned heads and ears were isolated and fed in a shed. Many recovered quickly, but cases continued to develop in the mob.

On closer examination, the worst-affected sheep were jaundiced. Post-mortem revealed a toxic hepatopathy due to ingestion of hairy panic and cathead, which were present as weeds amongst the rape and in wheat stubble paddocks.

For further information contact Chris Haylock, South East LHPA, on (02) 6452 1122.

Heat wave detrimental to livestock on Southern Slopes

In the southern inland of NSW, producers and district veterinary staff responded to a short period of excessively hot weather in late January and early February by taking steps to treat or prevent health and welfare problems.

At Wagga saleyards, three young cattle died from heat stroke despite careful management. Another two animals were close to death but were successfully treated by pouring cold water over them. In the Riverina district, a small number of lambs died from scabby mouth, a disease which normally has a low mortality rate, but in this case they were unable to suckle properly and dehydrated rapidly.

For further information contact Tony Morton, Hume LHPA, on (02) 6923 0900 or Dan Salmon, Riverina LHPA, on (03) 5881 1055.

Koala deaths on North Coast

The volunteer group Friends of the Koala has noted that increasing numbers of sick koalas are being reported on the Far North Coast. From July 2008 to the end of January 2009 there were 450 reports of sick koalas. About one-third of these were euthanased or died, and most of the remainder were sick, many showing various types of cancers.

Although cases were seen all across the region there is some suggestion that affected koalas were frequently located in areas close to horticultural enterprises, suggesting the possibility involvement of a chemical toxin. Alternatively, research has shown that many koalas in south-east Queensland are infected with a gammaretrovirus. Retroviruses such as HIV and CAE (caprine arthritis encephalitis) cause immune system suppression and various cancers, so it is likely that many of the sick koalas in northern NSW are also suffering from retrovirus infection. Stressors such as overcrowding, poor nutrition, noise or chemical toxins—all consequences of urbanisation—can cause clinical disease in subclinically affected individuals.

For further information contact Paul Freeman, NSW DPI Wollongbar, on (02) 6626 1214.

Footrot quarantines as at 31 December 2008

District (based on former RLPB boundaries)	Total no. of flocks (>50 sheep)	Quarantined flocks		No. of sheep in quarantine	No. of flocks quarantined for >3 years
		No.	%		
Armidale	1153	3	0.26	17 953	2
Casino	4	0	0	0	0
Coonabarabran	354	0	0	0	0
Coonamble	292	0	0	0	0
Grafton	13	0	0	0	0
Kempsey	2	0	0	0	0
Moree	121	0	0	0	0
Narrabri	178	0	0	0	0
Northern New England	768	2	0.26	4500	1
Northern Slopes	288	0	0	0	0
Tamworth	595	1	0.17	800	0
Tweed-Lismore	7	0	0	0	0
Walgett	274	0	0	0	0
Balranald/Wentworth	240	0	0	0	0
Bourke	105	0	0	0	0
Brewarrina	226	0	0	0	0
Broken Hill	110	0	0	0	0
Cobar	131	0	0	0	0
Hillston	236	0	0	0	0
Milparinka	36	0	0	0	0
Wanaaring	40	0	0	0	0
Wilcannia	81	0	0	0	0
Central Tablelands	1400	5	0.36	5100	3
Condobolin*	1200	0	0	0	0
Dubbo	1220	0	0	0	0
Forbes	1154	0	0	0	0
Molong	1000	1	0.1	450	0
Mudgee-Merriwa	1146	0	0	0	0
Nyngan	349	0	0	0	0
Young	1550	0	0	0	0
Goulburn	676	1	0.15	3000	1
Yass	1050	1	0.1	600	0
Cooma	607	0	0	0	0
Bombala	265	0	0	0	0
Braidwood	567	0	0	0	0
Gundagai	620	5	0.85	22 000	3
Hay	278	0	0	0	0
Hume	709	2	0.28	3850	1
Murray	800	0	0	0	0
Narrandera	698	0	0	0	0
Riverina	556	0	0	0	0
Wagga Wagga	1436	0	0	0	0
Gloucester	4	0	0	0	0
Hunter	95	0	0	0	0
Maitland	6	0	0	0	0
Moss Vale	471	1	0.21	49	0
South Coast	78	0	0	0	0
Total	23 189	22		58 302	11

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 Livestock Health and Pest Authorities 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 (April 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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