NSW GOVERNMENT

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

NEW SOUTH WALES

ANIMAL HEALTH SURVEILLANCE

October–December 2015 » Issue 2015/4

In this issue

2 Investigations of notifiable diseases
3 Anthrax in the Central West
4 Update on 3D syndrome investigations in Western NSW
5 *Leishmania* in a dog
6 Significant calf losses on a dairy farm
7 Avian influenza and Newcastle disease excluded in poultry
7 Infectious arthritis outbreaks in Southern Tablelands lambs

Investigations of notifiable diseases

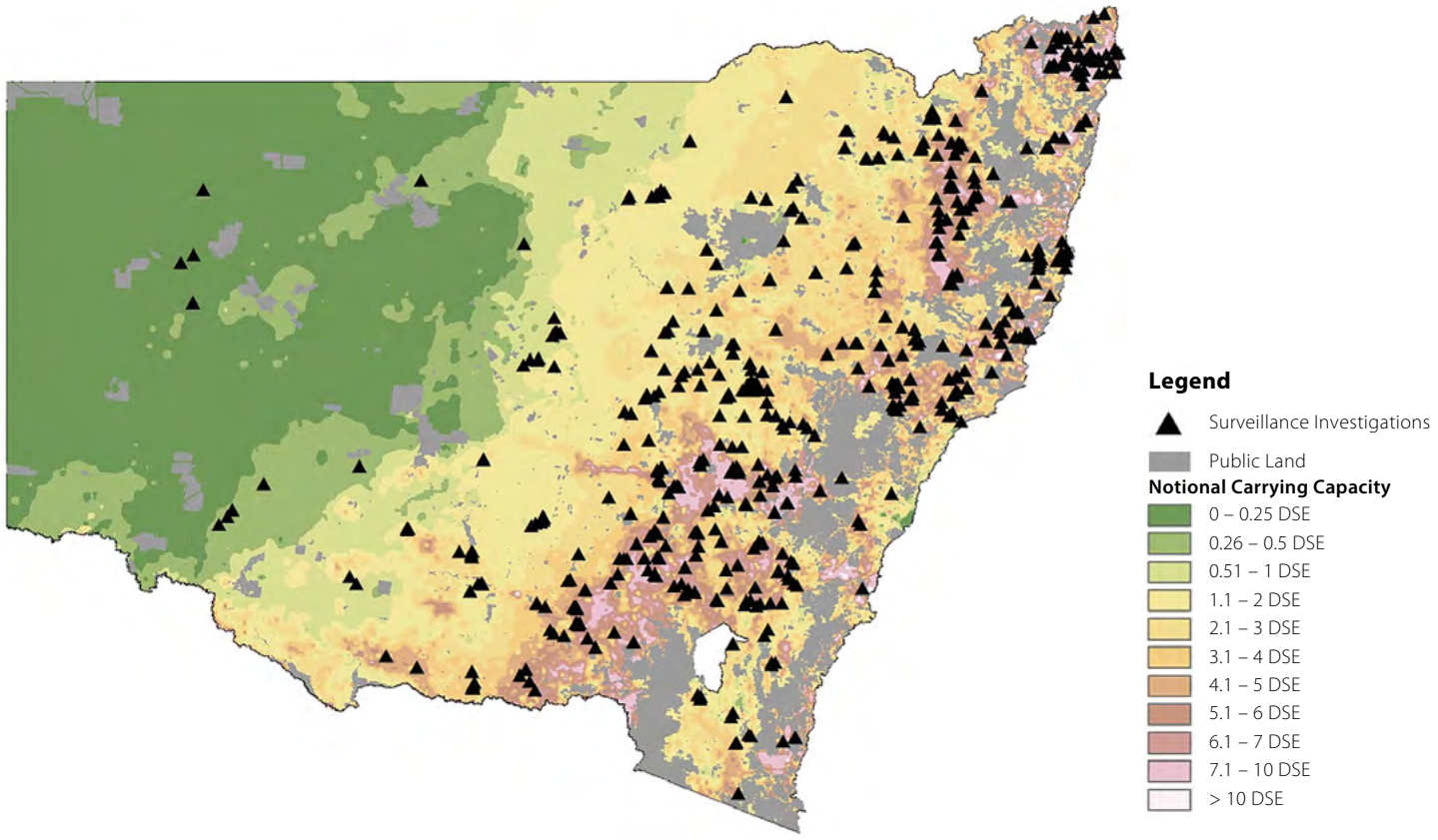
During the last quarter government vets investigated about 550 incidents where herd-level disease warranted official investigation and the confirmation or exclusion of notifiable diseases. *Table 1* shows most of the animals involved. (Some are excluded because of database discrepancies.)

Map 1 shows the locations of investigations run by government vets from Local Land Services (LLS) and the Department of Primary Industries (DPI). In general, the level of investigation is proportional to the area of greatest risk from diseases like anthrax and tick fever and from exotic diseases such as clinical bluetongue. There were, however, some gaps in locations regarded as being at higher relative risk for the incursion of exotic diseases (e.g. in the greater Sydney region). In some places, drought resulted in fewer calls than usual to investigate dead or dying stock. There have also been fewer investigations in areas where new staff are located, because it takes time for new government vets in an area to develop relationships with stock owners and private veterinarians.

Continued on page 3

Table 1. Animals involved in investigations of potentially notifiable diseases in the last quarter of 2015

	October	November	December
Camelids	0	1	0
Cattle	91	81	75
Dogs	1	0	0
Goats	2	5	3
Horses	7	4	2
Not specified	14	16	7
Other ruminants	1	0	0
Pigs	4	1	1
Poultry and other commercial birds	5	3	3
Rabbits	2	0	0
Sheep	59	53	57
Wildlife	0	0	1



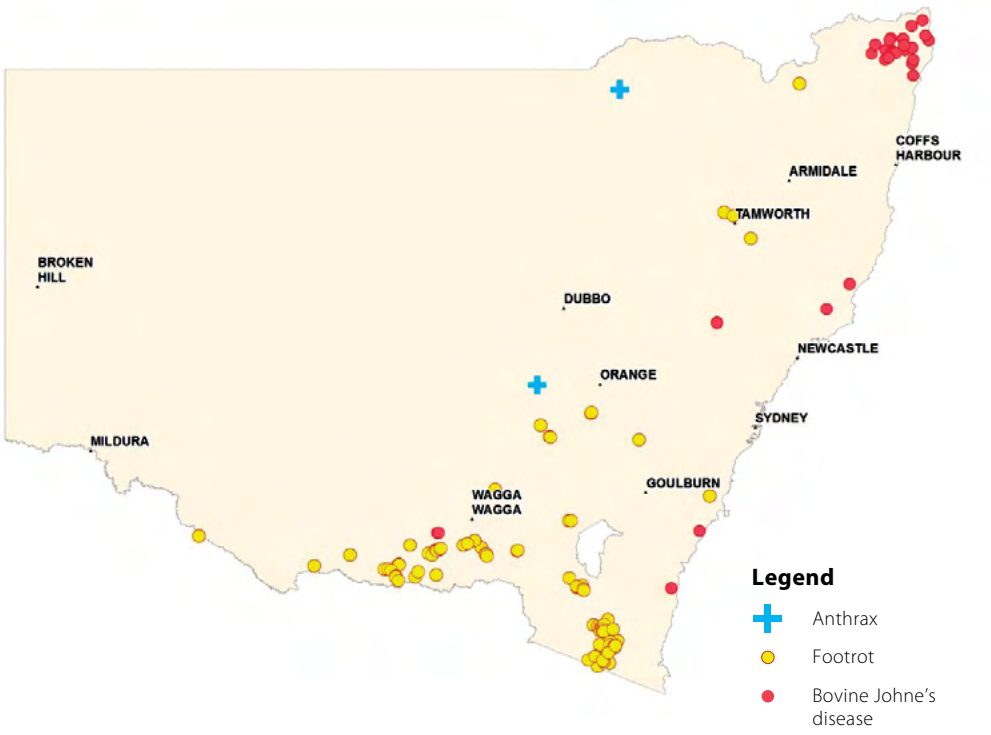
Map 1. Investigations of potentially notifiable diseases by Local Land Services and Department of Primary Industries vets in the last quarter of 2015. DSE, dry sheep equivalents

Continued from page 2

The key output of government surveillance is the detection of exotic and endemic notifiable diseases so that disease-control strategies can be put in place to minimize the impact of these diseases. In December 2015, properties were in quarantine for chemical residues, anthrax, footrot, Johne's disease or lead residues. *Map 2* shows the locations of properties quarantined for three particular diseases.

Of course, the map focuses only on properties where a notifiable disease was confirmed. The next issue of *Animal Health Surveillance* will have a map showing locations where a notifiable disease was excluded following investigations by both government and private vets.

For further information contact Rory Arthur, Manager Animal Disease Surveillance, DPI on (02) 6391 3608.



Map 2. Locations of properties quarantined for three notifiable diseases in December 2015.

Anthrax in the Central West

Anthrax was confirmed as the cause of deaths of three cows over a period of several days on a property in the Parkes area in the Central West LLS district. After visiting the property and taking samples, the local LLS vet obtained two positive results on an ICT (immunochromatographic test) of the most recently dead cow. Further testing at the State Veterinary Diagnostic Laboratory (SVDL) confirmed anthrax as the cause of death; the dead cows were burned to ash (with permission of the Rural Fire Service) the same day. The remaining cattle were vaccinated and the property quarantined.

The National Livestock Identification System database was used to trace a number of animals that had recently been moved off the properties. All animals were accounted for and either returned to the property of origin, or detained for 21 days until proven unaffected, or destroyed.

On a second property in the Parkes area, anthrax was suspected as the cause of death in seven yearling cattle that had appeared fine just 36 hours before. The local LLS vet obtained a positive ICT result on the most recently dead animal. Samples were then sent to the SVDL, which confirmed anthrax as the cause of death. The property was quarantined and the owners were required to burn the carcasses to ash and to vaccinate the remaining cattle each year for at least 3 years.

Stock that die from anthrax are required to be burnt to ash. Photo N Cronin

No further deaths occurred.

For further information contact Graham Bailey, Senior Veterinary Officer Cattle Health Coordinator, DPI Orange on (02) 6391 3455.

Update on 3D syndrome investigations in Western NSW

A sporadic syndrome with the key signs of drooling and diarrhoea leading to death ('3D syndrome') has been under investigation on extensively grazed properties in Western NSW by DPI, LLS and private vets. Cases were first investigated in 2006, then again in 2009 and 2013. The most recent *Animal Health Surveillance* report was in issue 2014/1 under the title '3D syndrome investigation in the Western Division: *Salmonella* isolated'.

In the previous high-risk period (October 2014 to February 2015) there were no requests by landholders to investigate cattle deaths in which 3D syndrome was suspected.

In November 2015, a landholder on a property where 3D syndrome had previously been diagnosed reported deaths in calves. The affected mob had 231 cows with calves at foot in a 3200-hectare paddock. As the cows were continuously joined, the calves were of mixed ages. The owner reported that calves less than 14 weeks old had been found dead; on closer inspection, other calves were noted to have diarrhoea and drooling. The attending vet also noted nasal discharge. Two recently dead calves (estimated to be between 7 and 10 weeks old) were necropsied, and two affected live calves were sampled; they subsequently died.

Significant findings in the necropsied calves included a severe necrotising tracheitis (inflammation of the trachea with tissue death). Torovirus-like particles were observed under an electron microscope in the faeces of calf one, and a severe, multifocal, acute fibrinous pneumonia from which *Escherichia coli* was isolated was found in calf two.

Rotavirus was detected in the faeces of one of the affected live calves; the remaining calves tested were negative. *Campylobacter* sp. was detected on selective culture of faeces from the two sick calves. The faeces or intestinal contents were negative for *E. coli* K99, *Cryptosporidium* sp., helminths and coccidia; they were also negative for *Yersinia* and *Salmonella* by selective culture and coronavirus by real-time polymerase chain reaction (PCR). Nasal swabs were negative for infectious bovine rhinotracheitis by real-time PCR and for bovine respiratory syncytial virus by PCR; and tissue or blood samples tested negative on bovine viral diarrhoea virus antigen capture ELISA (enzyme-linked immunosorbent assay). Although the tracheitis and pneumonia had contributed to the deaths of the two autopsied calves, the cause of the diarrhoea was not determined. The calves are not considered to have met the case definition for 3D syndrome (i.e. minimal gastrointestinal tract pathology and younger than 3 months; see information for vets on the DPI website.

Investigations are ongoing to improve our knowledge of cattle health in Western NSW and to determine the cause of 3D syndrome. DPI and LLS have run a mortality survey of farms in districts where 3D syndrome investigations have occurred. In addition, DPI vets ran a follow-up detailed survey of farms reporting deaths in cattle. In spring 2015, a vegetation survey of some affected farms was conducted.

Oesophageal pathology was a feature of the 2013 cases of 3D syndrome. In an attempt to investigate possible initiating events, the oesophagus of each heifer consigned directly to slaughter from an affected property was examined; abnormalities were detected in 15 of 26 cattle (58%) examined. The most common lesion (found in 12 heifers) was a lengthways tear of the oesophagus ranging from 1 to 10 centimetres long. Histopathology revealed oesophagitis (inflammation of the oesophagus) in 11 of the heifers (42%). Eosinophils were the main type of inflammatory cells.

The cause of 3D syndrome remains undetermined. The current hypothesis is that initiating events (which are likely to include physical abrasion from plant materials) cause pathology in the alimentary canal, which then results in the typical end-stage pathology. Bacteria that normally live in the alimentary canal (particularly toxigenic species) contribute to death because of changes to the integrity of the canal's lining. It is likely that this disease process happens at a low level in various pastoral districts of NSW and possibly other states. On occasions the initiating events are more widespread or common, resulting in more affected animals and properties.

For further information, contact Graham Bailey, Cattle Health Coordinator, DPI Orange on (02) 6391 3455.

Leishmania in a dog

Leishmania infantum is a protozoal vector-borne zoonotic disease that is endemic in many parts of the world, including Spain. The protist (infectious stage) is transmitted mainly by *Phlebotomus* spp. sandflies that are exotic to Australia. In humans the disease can affect the skin (cutaneous form), areas such as the lips and nose (mucocutaneous form) or internal organs such as the liver and spleen (visceral form). Fleas and ticks may play a role in disease transmission, but a causative relationship has yet to be established. Venereal, vertical (from mother to foetus or baby), and blood-borne transmission of the disease between dogs has also been reported. The disease is present and established in populations of foxhounds in the US, probably from non-vector-borne mechanisms; it has a prevalence of up to 45% in some high-risk kennels.

Clinical signs of canine leishmaniasis can include:

- lymph node disease or enlargement
- regional hair loss (often around the face),
- non-itchy, ulcerative, nodular or papular dermatitis (with or without bacterial skin infection)
- nosebleed
- chronic wasting
- eye disease conjunctivitis, keratoconjunctivitis sicca ('dry eye'), anterior uveitis (inflammation of the middle layer of the eye, including the iris) and retinitis
- polyarthritis
- diarrhoea
- kidney disease with protein loss
- kidney failure.

Clinical pathology of leishmaniasis in dogs can include any of the following:

- anaemia
- low platelet count
- increased numbers of lymphocytes (white blood cells)
- low levels of albumin protein in the blood

Leishmania in a dog. Photo G Weerasinge

- high levels of globulin protein in the blood
- high levels blood urea nitrogen and creatinine.

In Australia, the current procedure is to assess the serological status of imported dogs by using an immunofluorescence antibody test (IFAT) 45 days before the dog leaves its country of origin. False negatives, however, do occur because of the complicated way in which the disease develops. The disease is often detected by the development of clinical signs and by follow-up testing by private practitioners. It should be considered as a differential diagnosis in any dog or cat that has been imported from Mediterranean areas and is showing vague signs of disease.

In Australia the risk of transmission to humans from infected animals is low, because most Australian *Phlebotomus* sandflies are found only in the northern part of the country. However, as mentioned above, there are some knowledge gaps and putative alternative vectors, and further research is needed.

In late October, 2015, a stud male Staffordshire bull terrier was diagnosed with *Leishmania* at a small-animal referral clinic in Western Sydney. It had been imported into Australia 3.5 years ago from Spain with a negative IFAT. The dog had presented with chronic wasting, regional hair loss, intermittent lameness, dead sperm and enlarged lymph nodes. It was also blind and had been diagnosed with dry eye in September 2014 at another referral clinic. Initially cancer was suspected, but the specialist clinician had considered *Leishmania* and *Ehrlichia* infections in the differential diagnosis. Assessment of skin biopsies by a private pathology laboratory revealed macrophages containing basophilic inclusions that looked like leishmanial amastigotes (types of cells characteristic of one part of the life cycle of protozoans). The laboratory notified the DPI. A subsequent IFAT of the dog's serum showed a titre of greater than 1:640, confirming the diagnosis of *Leishmania infantum*.

The clients chose to have the dog euthanased.

A traceback investigation was then arranged by the Greater Sydney District Vet and DPI. The district vet interviewed the breeder and found that the affected dog had been kept isolated from most of the dogs on the property and a monthly flea control program had been strictly followed. The affected dog had been living on the property for the last 1.5 months of its illness and before that

Continued on page 6

Continued from page 5

had been kept in South Western Sydney. During its time in Australia, semen had been collected from it and used to inseminate a bitch, in May 2013.

A small study using a risk-based sampling plan was designed to assess the risk of *Leishmania* transmission. Although the risk of vector transmission of *Leishmania* is low in Australia, unknown-vector transmission pathways were investigated by assessing and testing dogs that may have lived close to the affected one. The risk of venereal transmission was assessed by testing the semen samples and any bitches the dog may have been mated with. The vertical pathway of transmission was assessed by testing any puppies that may have been produced from such matings.

The dog had been frozen after euthanasia and was delivered to DPI pathologists at the Elizabeth Macarthur Agricultural Institute for necropsy, which showed multifocal hair loss and dermatitis around the head, changes to the spleen and chronic granulomatous inflammation of the testes. Stored semen samples were delivered to the Australian Animal Health Laboratory (AAHL) in Geelong for IFAT and PCR testing.

Three in-contact dogs were identified for assessment: two lived on site in the breeder's house and the remaining one belonged to the breeder's relative. The affected dog's semen had been used only once (in May 2013); five puppies had been produced. Four of these could be traced within the Sydney region. Three different veterinary clinics were contacted to provide medical records, and advice was provided on the disease and its public health risks. A total of eight dogs were examined by the district vet at the affected dog's primary clinic and had the following samples taken for analysis: 5 mL of clotted blood (for IFAT), 5 mL of whole blood (for PCR) and conjunctival swabs (for PCR). The samples were sent to AAHL.

The semen samples from both collection periods were negative (by IFAT and PCR) for *Leishmania*. All samples from the dogs assessed were also negative (by IFAT/PCR). Clinical examinations of the eight dogs (a bitch, her puppies, and the in-contact dogs) were unremarkable. The bitch appeared to have chronic dermatitis, but she had a long history of allergy that had been diagnosed before she was inseminated. Two of the offspring examined had multifocal areas of hair loss and dermatitis. The in-contact dog that had been living with the affected dog during its last 6 months had a moderate to high flea burden.

The owners of all of the dogs were told that the results were negative but that regular vet check-ups were essential to monitor for the development of clinical signs. Each private vet received a detailed report of the study, as well as a monitoring plan and clinical-sign scoring sheet. The fact that the semen samples were negative ties in well with the negative results from the puppies, but monitoring is still required because of the (very unlikely) chance that parasite shedding could occur intermittently. The owners of the in-contact dogs were given similar instructions. The in-contact dog with the moderate to high flea burden will be closely monitored by her private vet.

For further information, contact Guy Weerasinghe, District Veterinarian, Greater Sydney LLS, Penrith, on (02) 4724 2135.

Significant calf losses on a dairy farm

Investigations were done as to why 34 of 73 dairy heifers on a dairy farm near Young had delivered stillborn calves. Most of the calves were found dead shortly after birth or had needed help to be delivered. However, the assisted deliveries were considered to be easy pulls, the only exceptions being a large number (eight of 73) presenting backwards. The problem affected only the calves of the heifer group. The cows themselves appeared completely normal. The herd was routinely vaccinated with 7 in 1 but not for any other reproductive diseases.

Twenty-one heifers were selected, representing 14 that had calved normally and seven that had delivered the affected calves. Samples were screened for pestivirus, *Neospora* parasites and akabane virus and were tested for a number of metabolic problems. A recently born calf that was lethargic and slow to suck was also tested for pestivirus, *Neospora* and akabane.

Two freshly delivered but stillborn calves were necropsied. The post mortem was unremarkable, and testing of serum IgG levels revealed no evidence of infection.

The serology of the cows and one calf was negative for pestivirus, *Neospora* and akabane as the cause of the stillbirths. In the metabolite testing, five of the seven heifers with stillborn calves had marginally low calcium levels (1.69 to 1.99 mm/L; normal 2.00 to 2.75 mmol/L). Three of these seven also had marginally low magnesium levels (0.56 to 0.66 mmol/L; normal 0.74 to 1.44 mmol/L).

No obvious histological lesions were found in any organs.

With the IgG levels being completely normal and most of the likely viral causes being ruled out, it's likely that the low calcium levels were significant. Some of the heifers in this particular dairy herd had been on DCAD (dietary cation–anion difference) diets for up to 30 days (compared with the usual 10 to 14 days) because of the difficulty in pinpointing joining dates. This may have led to a subclinical calcium deficiency that then affected the heifers' ability to calve normally.

For further information contact Eliz Braddon, Team Leader Riverina LLS, Young on (02) 6381 4700.

Avian influenza and Newcastle disease excluded in poultry

A poultry producer reported a loss in egg production, along with respiratory signs and sporadic deaths, in mixed-age, free-range laying hens. Five per cent of the flock had died over a 7-month period.

All age groups were affected. Several affected birds were examined by the district vet and found to be failing to thrive and depressed. They were displaying open-mouthed breathing and audible gurgling. Some had an eye discharge. Many of the affected birds also had diarrhoea, and their cloacas were matted with faeces. The hens had been vaccinated against Newcastle disease. Five hens were necropsied and each had inflammation of the serosal surfaces of the reproductive tract and intestine, accompanied by varying amounts of congealed yolk in the body cavity (the coelom). All but one also had small to moderate amounts of blood in the trachea and oral cavity.

Laboratory samples were negative for Newcastle disease, avian influenza and *Chlamydia psittaci*. However, pooled samples were positive for infectious laryngotracheitis (ILT).

The owner culled all the sick birds and restocked with hens vaccinated against ILT.

For further information contact Rory Arthur, Manager Animal Disease Surveillance, DPI on (02) 6391 3608.

Infectious arthritis outbreaks in Southern Tablelands lambs

Lameness, ill thrift and deaths were reported in Merino lambs in five flocks over a wide area near Peelwood, Bigga, Binalong and Cowra. The lambs had been marked and mulesed in early October 2015, after which they had developed joint swelling. The owners reported that although they observe the occasional affected lamb in most years, the numbers affected this year were excessive, and the clinical signs more severe.

In one flock, 12% of 700 lambs on maiden ewes were lethargic, lying down and reluctant to move, 4 weeks after marking and mulesing. The owner recalled that a few lambs had had swollen joints before marking. Inspection of the mob showed that most of the limb joints were involved, but not multiple joints in the same animal. A profuse, predominant growth of *Mycoplasma* sp. bacteria was isolated from yellow-green joint fluid taken from two affected animals. The isolates could not be further identified with RNA sequencing and PCR. All affected lambs in the mob were treated with long-acting oxytetracycline, and only three died in this outbreak.

In two other flocks the death rate was at least 10% in mobs of 650 and 1000 lambs; more than two-thirds of the lambs were affected 3 weeks after marking and mulesing. In both of these flocks, permanent yards had been used for many years, without incident, for marking. One owner noted that the two worst-affected mobs were the first and last through the yards. Polyarthritis was a feature of these lambs, with the carpal and hock joints most commonly involved. Affected joints were typically 2.5 times normal size, with the joint capsule distended with thick yellow-green pus. A spinal cord abscess was found during a post mortem examination of a lamb that had shown posterior paralysis. Routine aerobic culture of affected joints produced no growth, but anaerobic culture resulted in a profuse pure growth of *Fusobacterium necrophorum* in both flocks.

In each of the flocks examined, the lambs had been treated at marking and mulesing with a topical local anaesthetic and antiseptic preparation, as well as with an insect growth regulator effective against blowfly strike. However, the owners had observed that the mulesing wounds had been very slow to heal, possibly because of irritation from unusually large numbers of bushflies. Three owners had observed affected lambs frequently chewing at the mulesed areas in response to this irritation.

For further information contact Bill Johnson, Team Leader South East LLS Goulburn on 4824 1900 and Fiona Kelk, District Veterinarian, Yass on (02) 6226 1155.

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*

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

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

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

JN 13871 02/16