NSW GOVERNMENT

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

NEW SOUTH WALES

ANIMAL HEALTH SURVEILLANCE

July – September 2018 » Issue 2018/3

In this issue

Outbreak of *Salmonella* Enteritidis on a commercial chicken egg farm in NSW 2
Anthrax detection in the Central West Local Land Services region 3
Quarterly tuberculosis granuloma report for NSW 3
National surveillance for white spot disease in prawns 4
Hendra virus detection in NSW 4
Malignant catarrhal fever in the Western Local Land Services region 5
Lead poisoning in calves 5
Scrapie excluded in sheep with neurological signs 6
Tick fever excluded in dairy cattle with cycad toxicity 7

Outbreak of *Salmonella* Enteritidis on a commercial chicken egg farm in NSW

In September 2018, environmental samples collected from a commercial chicken egg farm in the Macarthur region of NSW tested positive for *Salmonella* Enteritidis (SE).

NSW Department of Primary Industries (DPI) Biosecurity and Food Safety was contacted by NSW Health after 23 human gastroenteritis cases caused by SE were confirmed in the Sydney area. The affected people had no history of overseas travel or other potential risk exposures, so investigations were undertaken to determine whether their infections were locally acquired.

During their investigations, NSW Biosecurity and Food Safety Compliance, with support from the NSW Food Authority, found that several people who had been affected by SE gastroenteritis in the Sydney region had consumed food made with eggs from one commercial chicken egg farm in the Macarthur region. When samples collected from this farm were confirmed as SE positive, NSW Food Authority contacted NSW DPI Animal Biosecurity to alert them of the outbreak.

Staff from NSW DPI Animal Biosecurity, NSW Food Authority and NSW Biosecurity and Food Safety Compliance worked together with NSW Local Land Services to contain the pathogen and minimise the biosecurity risk. NSW DPI implemented movement controls on the property by using a Biosecurity Direction (Section 128 under the *Biosecurity Act 2015*); the farm sheds were depopulated, and a decontamination program was implemented. The property will be subject to ongoing surveillance over the coming months to make sure that SE has been eradicated.

Salmonella Enteritidis is the most common serotype of *Salmonella* isolated from human cases of foodborne gastroenteritis around the world. Human cases of SE are rarely detected in Australia, with most cases thought to be acquired from travel overseas. In young chickens less than 2 weeks old, infection with SE can result in gastroenteritis signs such as poor growth, weakness, diarrhoea, and dehydration. In contrast, adult hens that become colonised with SE typically remain asymptomatic, with intermittent faecal shedding.

This form of *Salmonella* has the specialised ability to colonise the reproductive tract of birds and contaminate the contents of their eggs. SE is transmitted to people primarily through the consumption of contaminated eggs, which have been implicated in major overseas outbreaks of foodborne gastroenteritis in people.

The Australian poultry industry is currently considered to be free from SE. Because of the potential impact this bacterium could have on the egg industry and public health if it were to become widespread in Australia, SE is a notifiable disease under NSW legislation (Schedule 1 of the Biosecurity Regulation 2017).

The National *Salmonella* Enteritidis Monitoring and Accreditation Program (NSEMAP) is available to all commercial egg producers in Australia and is administered by NSW DPI. Although the affected property in the Macarthur region was not accredited under the NSEMAP, it is estimated that over 75% of Australian layers are currently part of *Salmonella* monitoring under this program.

For further information contact Jenna Fraser, Veterinary Policy & Project Officer, NSW DPI Animal Biosecurity, Tocal Agricultural Centre, on 0427 829 639.

Staff from the Greater Sydney Local Land Services region and the NSW DPI Animal Biosecurity unit collected whole blood and cloacal swab samples from 180 chickens on the infected property in September 2018. Photo J Fraser

All potentially infected eggs (including those that were recalled) were stored on the infected property before disposal. Photo J Fraser

Anthrax detection in the Central West Local Land Services region

One anthrax incident occurred during the quarter. In early September 2018, a property near Tullibigeal in Central West NSW was reported to have lost 12 out of 160 mixed-age cattle. An anthrax immunochromatographic test (ICT) was conducted on one animal by the District Veterinarian on 4 September, with a weak positive result.

Follow-up samples were sent to the State Veterinary Diagnostic Laboratory (SVDL), which confirmed anthrax on 5 September with polychrome methylene blue staining and anthrax polymerase chain reaction (PCR) testing on blood and aqueous humor (the fluid in the front part of the eye).

Control measures were applied in accordance with the NSW DPI Anthrax Policy; they included quarantine, burning of affected carcasses, decontamination of potentially infected items and vaccination of a total of 820 cattle and 700 sheep. Tracing showed that there had been no at-risk movements of sheep or cattle off the property.

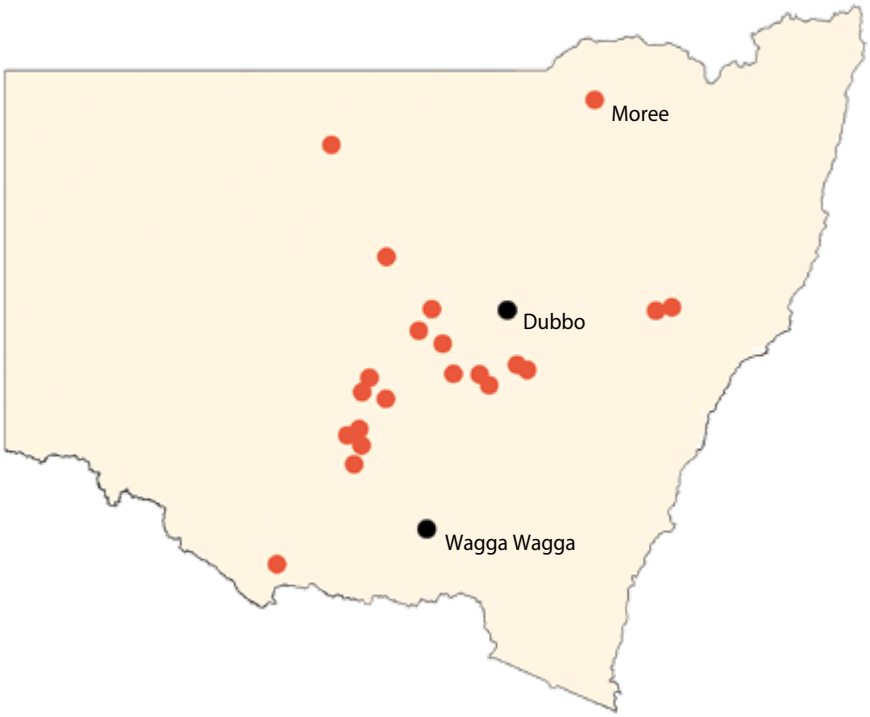
The property is located in the endemic anthrax area of NSW. In 2015 a neighbouring property under the same ownership was confirmed to have anthrax.

There were 49 investigations in NSW from July to September 2018 where anthrax was excluded as the cause of death. Of these:

- 31 involved cattle where alternative diagnoses included clostridial infection, water deprivation, lactic acidosis, *Mannheimia pneumonia*, various toxicities (*Phalaris* species, *Sorghum* species, *Trema tomentosa, Pteridium esculentum*).
- 15 involved sheep where alternative diagnoses included pneumonia, lactic acidosis, ketosis, trauma and toxicities due to unidentified plant and *Cynodon* species.
- two involved pigs where an alternative diagnosis in one case was identified as PCV2 enteritis.
- one involved a camel; no alternative diagnosis was identified.

Anthrax ICT was used in 36 of these 49 exclusions, with negative results. The other 13 investigations had anthrax 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.



Locations of anthrax-positive events in NSW from January 2008 to December 2017. Map by B Moloney

Quarterly tuberculosis granuloma report for NSW

Australia declared freedom from bovine tuberculosis (TB) in accordance with international guidelines in 1997 and has since maintained ongoing surveillance for this disease through abattoir surveillance of cattle carcases (i.e. meat inspection) for TB-like granulomas.

Five granulomas from cattle of NSW origin were submitted to the SVDL from abattoirs in NSW this quarter. Four were submitted in July, one was submitted in August, and no granulomas were submitted in September. No TB was detected in these samples.

For further information contact Dean Whitehead, Regulatory Specialist Animal Biosecurity, NSW DPI, Hay, on (02) 6990 1871.

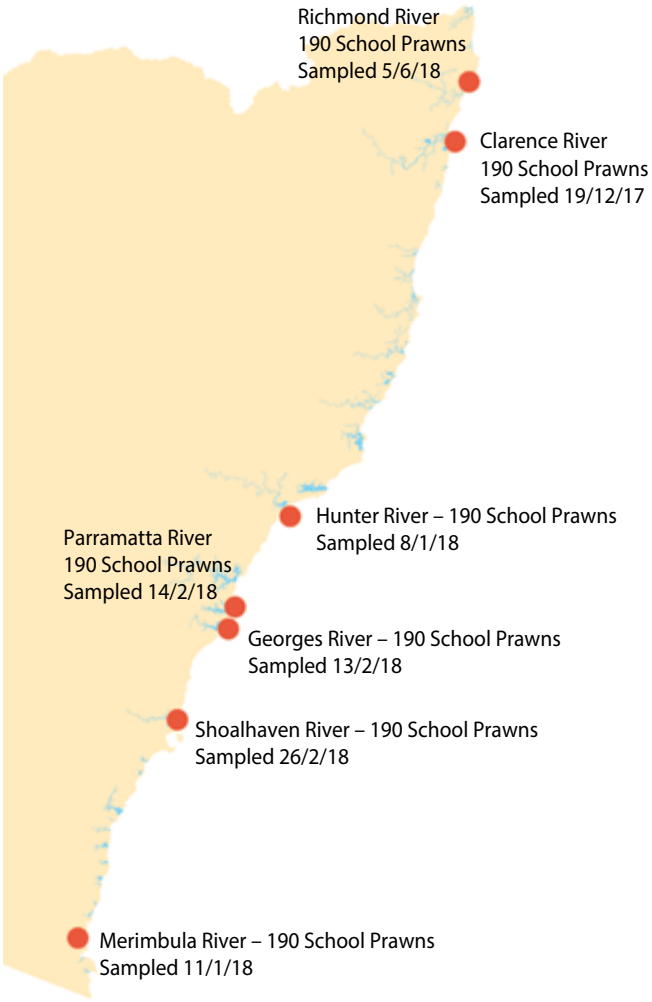
National surveillance for white spot disease in prawns

White spot disease (WSD) of crustaceans was first detected on tiger prawn (*Penaeus monodon*) farms in south-east Queensland in December 2016. This disease event caused extensive losses on all seven farms on the Logan River. The virus that causes the disease (white spot syndrome virus, WSSV) was also detected in localised areas of Moreton Bay, although clinical disease has not been reported outside the farms. The Queensland government implemented movement controls in the affected area, and NSW followed with the implementation of a Control Order that aimed to reduce the risk of WSSV spreading to NSW.

National proof-of-freedom surveillance for the virus was started at the beginning of 2018, with each jurisdiction implementing a risk-based surveillance program that was agreed on by AqCCEAD (the Aquatic Consultative Committee for Emergency Animal Diseases). This surveillance is needed to maintain Australia's proof of freedom from WSSV, or otherwise to demonstrate that WSSV is adequately contained within certain areas of the country. Surveillance is also needed to support market access for Australia's crustacean exports, maintain Australia's border biosecurity measures, reduce the risk of spread of the disease, and facilitate domestic trade in crustacean products.

NSW completed the first of four rounds of sample collection in seven different locations along the NSW coast during the first half of the year. One hundred and ninety samples were tested from each location by using quantitative PCR, and so far all samples have been negative for WSSV. The next round of sampling is due to start in November.

For further information contact Debra Doolan, NSW DPI Aquatic Biosecurity Officer, Port Stephens Fisheries Institute, on (02) 4916 3846 or Jeffrey Go, NSW DPI Veterinary Officer Aquatic Biosecurity, Elizabeth Macarthur Agricultural Institute, on (02) 4640 6310.



White spot surveillance locations, December 2017 to June 2018. Map by B Rampano

Hendra virus detection in NSW

Hendra virus was detected in an unvaccinated horse located near Tweed Heads, in northern NSW, in September 2018. This was the first confirmed case of Hendra virus in the state this year.

Samples from the horse were sent by a private veterinarian for laboratory analysis at Queensland's Biosecurity Sciences Laboratory at Coopers Plains, where they tested positive for Hendra virus.

The 4-year-old Arab cross was initially noticed by the owner to be lethargic and not eating properly. It deteriorated the next day and was euthanased by a private veterinarian.

Whenever Hendra virus infection is suspected, appropriate biosecurity precautions, including personal protective equipment, should be used.

Potential signs of Hendra virus in horses may include neurological, respiratory or colic-like signs, or sudden death. After samples have been collected from a horse showing potential signs of Hendra virus, the owners should be advised to read the NSW DPI Primefact: *Waiting for Hendra Results*.

Horse owners should talk to their private vet about vaccinating their horses against Hendra virus.

To help minimise the risk of horses becoming infected, horses should not be allowed to graze beneath or near flowering and fruiting trees that are attractive to bats, or where bats are roosting. Feed and water should not be placed under trees; instead, containers for feed and water should be located under a shelter so that they can't be contaminated from above.

Front cover photo: A healthy Friesian horse vaccinated against Hendra virus. Photo Kelly Smith Photography

For further information contact Jenna Fraser, Veterinary Policy & Project Officer, NSW DPI Animal Biosecurity, Tocal Agricultural Centre, on 0427 829 639.

Malignant catarrhal fever in the Western Local Land Services region

In July 2018, a producer in the Western Local Land Services region reported deaths in 130 home-bred poll Hereford weaners between 13 and 15 months old. This mob of weaners had been vaccinated at marking with a 7-in-1 vaccine and with Piliguard® for pinkeye. The heifers received a 7-in-1 booster at weaning, but the steers did not. The animals had been weaned 3 weeks before the onset of clinical signs, with steers going into a feedlot and heifers going out into a paddock. In the feedlot, the steers were initially fed a ration of vetch hay, oats and fava beans, and after a week on this diet they were transitioned to a ration of vetch hay and a finisher pellet.

The producer reported finding two steers dead in the feedlot 5 days before he contacted the district vet; he also noted three other steers showing signs of lethargy, lack of appetite and runny noses.

The district vet visited the property and examined both a heifer and a steer. Both animals had a purulent nasal discharge and watery eyes. The heifer had opaque corneas, with no menace reflex, and the steer had milder bilateral corneal opacity but still had a menace reflex. Both animals had peeling of the nasal epithelium, but there were no lesions in the mouth, including on the tongue, or on the feet. Both the heifer and steer were feverish (40.1°C and 40.7°C, respectively) and had increased respiratory rates (60 and 64 breaths per minute), with rough respiratory sounds on both sides. Both the heifer and steer were still alert and responsive and had normal ruminal contractions, but they had diarrhoea and were hyper-responsive to external stimuli. Blood and nasal swabs were collected.

The samples were submitted to the SVDL for testing; infectious bovine rhinotracheitis was the leading likely diagnosis. Both animals were negative for this disease on antibody ELISA testing but were positive for malignant catarrhal fever (MCF) virus on real-time PCR, which detects the virus that causes sheep-associated MCF, namely ovine herpesvirus 2. During the wait for the test results the affected animals were treated unsuccessfully with an antibiotic (oxytetracycline) and an anti-inflammatory (ketoprofen). Nine of the affected animals eventually died.

The producer also runs a poll Merino stud on the property, but the only contact the poll Hereford weaners had had with the sheep were with introduced Suffolk rams that were being lot-fed in the same area as the steers. No other reports of MCF had been made in the area.

Differential diagnoses of MCF include bovine viral diarrhoea/mucosal disease and infectious bovine rhinotracheitis, but they also include important notifiable diseases such as foot and mouth disease and rinderpest.

Affected heifer with watery eyes, nasal discharge and peeling of the nasal epithelium. Photo F Wills

Affected steer with watery eyes, corneal opacity and purulent nasal discharge. Photo F Wills

For further information contact Felicity Wills, District Veterinarian, Western Local Land Services, Broken Hill, on 0409 858 901.

Lead poisoning in calves

Lead poisoning was confirmed as the cause of death in unweaned calves on a property in the southern Central West Local Land Services area. Cows and their calves were confined in a newly created drought lot and were being fed silage in feeders.

The source of the lead was a battery located under the tray of an old truck parked within the lot. The height of the truck tray meant that only the calves were able to access the battery directly.

A total of five calves died. The initial deaths were sudden, although the last two animals displayed neurological signs before death. One animal that also appeared feverish was treated with oxytetracycline. Its apparent initial recovery prompted the investigation to include sporadic bovine encephalomyelitis or *Histophilus* or *Listeria* infection as possible diagnoses. However, this calf later died, and the increased liver lead levels in another calf that was necropsied confirmed lead poisoning. Blood testing revealed detectable levels of lead in a substantial proportion of the calves but in none of the cows, showing that direct access to the battery was the issue.

A second case of sudden death with potentially neurological signs in a single calf on a different local property also prompted an investigation to rule out lead poisoning. The calf was in a paddock with a large rubbish dump. Liver lead levels were within the normal range, but the producer was advised to clean up or fence off the rubbish to prevent stock access. No cause of death was determined.

Many producers are still unaware that batteries and farm rubbish are a significant risk for lead poisoning in livestock. Vets should include lead poisoning as a possible diagnosis in cases of sudden death, particularly with neurological signs.

For further information contact Nik Cronin, District Veterinarian, Central West Local Land Services, Forbes, on (02) 6850 1600.

Scrapie excluded in sheep with neurological signs

Listeriosis was diagnosed as the cause of neurological disease and mortalities in a commercial Merino flock near Bathurst, NSW, in early September.

Over 2 weeks the producer observed five cases across four mobs comprising 500 animals in total. The affected ewes ranged from 2 to 4 years old and were due to start lambing in 5 weeks. There was no significant difference in the number of cases between mobs that had been scanned as single versus multiple bearing. Ewes had received a ration of pasture silage and barley for 3 to 4 months before the onset of losses.

The producer described the ewes as circling in the paddock with their heads tilted to the side; they then became progressively depressed and lay down with the head tucked tightly into the flank. Most affected animals were unresponsive to thiamine administration and were euthanased after 24 hours. No ewes with clinical signs survived beyond 48 hours.

On physical examination, one ewe that was lying down held her head tightly against the right flank and immediately returned to this position if her neck was straightened. Excessive salivation was noted on the right side of the muzzle, but there were no other signs of one-sided facial nerve paralysis. Her vision appeared normal. The ewe developed a horizontal nystagmus (rapid, involuntary eye movements) and paddled her limbs when handled. She was euthanased for a post mortem.

The ewe was carrying a single, near-full-term lamb. The necropsy findings were otherwise normal. The brain and cervical spinal cord were submitted to the SVDL as part of the National Transmissable Spongiform Encephalopathy Surveillance Project. Additional samples were collected to investigate differential diagnoses.

Histopathology of the brainstem revealed a suppurative meningoencephalitis with microabscesses; these findings were consistent with listeriosis. Culture of a brain swab confirmed that the bacterium *Listeria monocytogenes* was present.

Following the diagnosis, the producer tried unsuccessfully to treat two affected ewes, which were still walking, with high doses of penicillin. Losses continued for another fortnight. A total of 15 ewes died in this outbreak.

Listeriosis can occur in four different forms in sheep: meningoencephalitis, abortion, enteritis and septicaemia (in lambs). Although reports exist of meningoencephalitis and abortion occurring simultaneously in the same flock, this is not usually the case. No reproductive losses have been observed on this farm.

Feeding of poor quality silage has been linked to outbreaks of listeriosis in ruminants. The organism does not multiply in well-made silage with a low pH (4 to 4.5). Poor-quality silage that is contaminated with soil or is on the edge of the pit or stack may have a pH greater than 5.5. This provides a suitable environment for the bacteria to survive and replicate.

For further information contact Amy Masters, District Veterinarian, Central Tablelands Local Land Services, Orange, on 0428 710 002.

Affected ewe with head turned towards right flank and excessive salivation. Photo A Masters

Muzzle of the affected ewe. Photo A Masters

Tick fever excluded in dairy cattle with cycad toxicity

A dairy farmer in the southern part of the North Coast Local Land Services region contacted the district vet following the death of two dairy heifers and one bull. The property was next door to a property that in April this year had lost 60 head from tick fever (*Babesia bovis*). Cattle tick had since been detected on the current property as well, though not in the mob that was currently affected.

The mob of approximately 60 animals were grazing predominantly ryegrass pastures, with some heavily timbered country. The bull had been found dead the previous day, with a heifer found dead on the day of the initial property visit. A third animal was found dead, although it appeared to have been dead for at least 2 days.

A post mortem examination was done on the freshly dead heifer. The liver was one and a half times normal size, with rounded margins and mottling on the cut surface. There was widespread haemorrhage over the omentum and myocardium, with pinpoint haemorrhages in the subcutaneous tissues. The spleen was of normal size, and there was no evidence of blood in the urine, making tick fever unlikely. In the rumen there was abundant material consistent with cycad leaves. Similar gross findings were seen in the bull, although there was a marked degree of self-digestion of the tissues. Samples from the heifer were submitted to the SVDL.

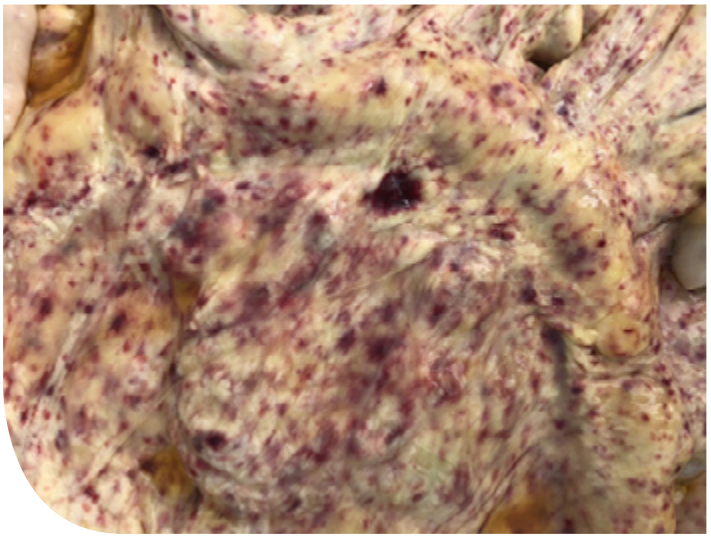
The following day blood was collected from a sick recumbent animal that was euthanased. Smears were negative for anthrax. Biochemistry changes included a marked elevation in the bilirubin level and in levels of the liver enzymes GLDH and GGT; this was consistent with severe hepatobiliary damage. There were also marked elevations in the levels of the enzymes CK and AST, indicating muscle damage.

Histopathology of the liver revealed diffuse centrilobular hepatocellular loss and necrosis, with marked centrilobular haemorrhage and midzonal and centrilobular hepatocellular lipid-type vacuolar degeneration. Changes in the heart included moderate, acute, multifocal to coalescing epicardial, myocardial and endocardial haemorrhage. *Babesia bovis* and *Babesia bigemina* PCR tests were negative.

A paddock inspection revealed numerous cycads that had been grazed. A total of 14 head died over a 6-day period.

For further information contact Ian Poe, Team Leader Animal Biosecurity, North Coast Local Land Services, Kempsey, on 0429 987 255.

Cut surface of the liver of a heifer with cycad damage, showing mottling. Photo I Poe



Omental haemorrhage in the heifer with cycad damage. Photo I Poe

Cycad with evidence of being grazed. Photo I Poe

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:
Jenna Fraser, Animal Biosecurity,
Department of Primary Industries
Tocal Agricultural Centre
Tocal Road PATERSON NSW 2421
T: (02) 4939 8940
E: jenna.fraser@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*

Cover image: © Kelly Smith Photography

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 Service

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

JN 15111 10/18