NSW GOVERNMENT

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

NEW SOUTH WALES

ANIMAL HEALTH SURVEILLANCE

April – June 2018 » Issue 2018/2

In this issue

One case of anthrax and 56 exclusions

There was one anthrax incident during the quarter, on a property in the Central West region of NSW in early May. Ultimately, 20 cross-bred lambs in a mob of 600 died. The affected lambs had not been vaccinated.

The property had 1600 lambs in three separate feedlots, but only one of the three feedlots was affected. The feedlot area had been used for over 10 years without incident, though anthrax had occurred on a different part of the property in 2007.

The affected sheep had been introduced to the feedlot 2 months before the deaths occurred. The owner contacted the government district vet, who immediately investigated the case. At that stage one sick lamb and three carcases were available for examination. The lamb was lying down, feverish and breathing rapidly. The carcases were decomposing quickly, with unclotted blood oozing from the nasal cavities. At this point, an anthrax immunochromatographic test (ICT) was performed. The test was positive, and the result was later confirmed by the State Diagnostic Veterinary Laboratory with polychrome methylene blue stain examination of a peripheral blood smear from the ear of a dead lamb.

The incident was managed in accordance with the NSW DPI Anthrax policy. No movements of lambs from the feedlot had occurred in the previous 20 days. The carcases were burned and decontamination protocols followed. The property was placed under quarantine and all at-risk stock (1600 lambs) were vaccinated. A biosecurity direction required vaccination of stock on the property for at least 3 years. Deaths stopped within a week.

During the quarter there were 56 investigations in which anthrax was excluded as the cause of death. Of these:

- 36 involved cattle; alternative diagnoses included abomasitis, bloat, hepatitis, clostridial infection, water deprivation, lactic acidosis, *Babesia bovis* infection and nitrate/nitrite toxicity (*Sorgum* spp.)
- 18 involved sheep; alternative diagnoses included mastitis
- 1 involved pigs; an alternative diagnosis was Salmonella infection
- 1 involved a horse; no alternative diagnosis was identified.

The anthrax ICT was used in 40 of these 56 exclusions, with negative results. In the other 16 investigations, anthrax was excluded by laboratory testing or on clinical grounds by considering alternative diagnoses.

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

Pinkeye in Central Tablelands sheep

An unusually severe case of contagious opthalmia (pinkeye) was reported in a flock of 750 Merino ewes on the Central Tablelands of NSW. In mid-April 2018, just before lambing, about eight ewes were noticed to be blind. Each of these blind ewes died of pregnancy toxaemia. Then, at lamb marking in early June, 10% of the ewes in some mobs were noticed to be affected. In the worst-affected mob—the single-bearing 3-year-old ewes—a third of the animals were affected by mid-June.

The affected ewes showed a range of eye lesions, from corneal cloudiness to complete opacity and, in some cases, corneal ulcers. Lambs from the same mob also had watery eyes and opaque corneas.

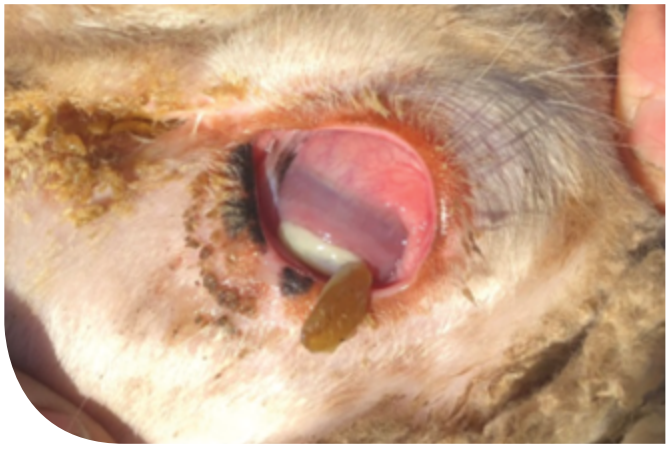
The owners sought further veterinary advice for this unusually severe outbreak, after the affected ewes did not respond to treatment with cloxacillin eye ointment.

Samples of tear fluid were positive on polymerase chain reaction (PCR) testing for *Mycoplasma conjunctivae* and PCR negative for *Chlamydia*. *Trueperella pyogenes* was also isolated, but this infection was presumably secondary. Following identification of mycoplasma as the cause, the worst cases were treated successfully with injectable oxytetracycline.

Pinkeye is usually a sporadic mild disease of sheep, and the sheep usually recover spontaneously without serious consequences. Occasionally, however, this disease can cause longer-term blindness and may lead to deaths from pregnancy toxaemia or from misadventure because of the inability to see. A range of organisms are isolated from these cases, including *Chlamydia pecorum*, *Mycoplasma* spp. and *T. pyogenes*.

For further information contact Bruce Watt, District Veterinarian, Central Tablelands Local Land Services, Bathurst, on (02) 6333 2300.

Mild case of pinkeye in a Merino ewe, showing corneal opacity and new blood vessel formation on the cornea. Photo B Watt



Severe chronic case of pinkeye in a Merino ewe. Photo B Watt

Exclusion of exotic diseases in weaner pigs

In June, a government vet investigated deaths in weaner pigs in a small piggery on the Central Tablelands of NSW. The piggery had 33 breeding sows. Three boars had been introduced in the previous 12 months. The various pens accommodated about 300 piglets, weaners and growers.

A private vet first investigated the incident. About 50 of the weaners had died in the past 6 months after intermittent bouts of loss of appetite, diarrhoea, lethargy and wasting. The sows were up to date with their vaccinations, and all animals were being fed age-appropriate commercial feed. The property had issues with rodent control and flooding in the weaner shed.

The vet conducted a post-mortem examination on one of the dead weaners. It had fluid in the body cavities, enlargement of the mesenteric lymph nodes and enteritis. Histopathological examination at the State Veterinary Diagnostic Laboratory showed marked necrotizing enteritis, lymphadenitis and vasculitis. Tests for African swine fever, classical swine fever, *Salmonella*, *Haemophilus parasuis* and porcine circovirus 2 (PCV2) were all negative. Because there were not enough fresh samples, a diagnosis was not reached, so the private vet contacted the district vet for help with further investigation.

The district vet examined a weaner pen in which nine of 12 weaners had recently died, including one during the previous night (pig 1). Two live pigs were examined: one was wasted (pig 2) and the other was weak (pig 3); both had normal vital signs and no evidence of neurological impairment, although pig 3 was quiet and reluctant to stand and its skin appeared inflamed. In the pen there was diarrhoea that contained undigested feed but no blood.

At post mortem examination all three weaners had thickening of the small and large intestines; pig 3 also had diphtheritic membranes in the small and large intestines. There was a severe, diffuse, proliferative and fibrinonecrotising enteritis with histopathology suggestive of *Lawsonia* infection.

PCR testing of pigs 1 and 2 was positive for *Lawsonia intracellularis* and *Brachyspira pilosicoli*. Selective salmonella culture was negative, and PCR was negative for *Brachyspira hyodysenteriae*, porcine delta coronavirus, porcine epidemic diarrhoea virus, transmissible gastroenteritis virus, porcine respiratory coronaviruses, bovine viral diarrhoea virus, classical swine fever (CSF) and African swine fever. The blood was slightly positive on reverse transcription PCR for PCV2, but the level was not consistent with porcine circovirus associated disease (PCVAD).

Lawsonia intracellularis one of the main gut pathogens of pigs; it causes a proliferative enteropathy, usually referred to as porcine intestinal adenomatosis (PIA), which can be severe and can be complicated by the involvement of other bacteria.

The proliferative enteropathy causes a range of clinical signs, including chronic mild diarrhoea and poor growth performance, although in this complicated case necrosis of the epithelium caused the deaths of weaned pigs. Some pigs may carry the disease and shed *L. intracellularis* into the environment without becoming unwell, although the finding of large numbers of *L. intracellularis* in the faeces is well correlated with severe pathology. The organism is widespread in the pig population and is difficult to eradicate. Clinical signs of the disease may appear only after a stressful period (weaning, co-mingling, cold temperatures, concurrent diseases).

The private and government vets implemented appropriate antimicrobial therapy, disinfection of the piggery and other management changes to reduce the severity of clinical signs, noting that total eradication of the disease was unlikely.

For further information contact Lucienne Downs, District Veterinarian, Central Tablelands Local Land Services, Orange, on (02) 6363 7883.

Necrotizing proliferative enteritis: The intestines were diffusely thickened (pig 3). Photo L Downs

Necrotizing proliferative enteritis: Pig 2 (top) was wasted compared with its healthy pen mate. Photo L Downs

Necrotizing proliferative enteritis: A diphtheritic membrane lined the mucosal surface of the large intestine (pig 3). Photo L Downs

Fowl cholera in Muscovy ducks: avian influenza excluded

In June, a government district vet investigated the deaths of six Muscovy ducks and one goose in a period of 5 days. The waterbirds had been on the same diet of free-range feeds and wheat for several months. There were also about 100 chickens on the property, but they appeared healthy. None of the birds on this property had been vaccinated for any avian diseases.

The disease was acute: clinical signs lasted for about 24 hours before death occurred. Before dying, the ducks became lethargic and depressed, went off their food, separated themselves from the flock, sat down and appeared unable to stand.

A post mortem was done on a recently deceased Muscovy duck that was in good body condition. The liver had white 1-millimetre pinpoint spots over the entire surface. No abnormalities were detected throughout the rest of the carcase. Cloacal and oral swabs were taken from this and another duck, and from the goose, to test for the notifiable diseases avian influenza, Newcastle disease and *Chlamydia psittaci* infection. All results were negative.

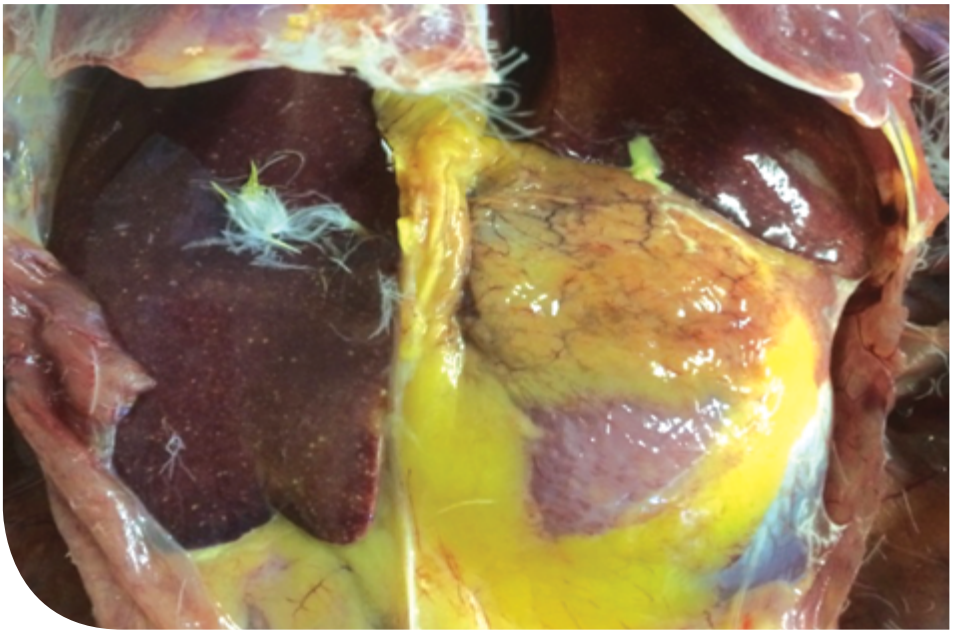
Other diseases considered were botulism, fowl cholera and white spotty liver disease (*Campylobacter hepatica*).

Histopathology on one of the ducks showed a multifocal necrogranulomatous hepatitis; the other duck had a multifocal fibrinonecrotising hepatitis, and *Pasteurella multocida* (the cause of fowl cholera) was isolated from the lesions.

Antibiotic sensitivity testing was done on the *P. multocida* culture to recommend an effective antibiotic, and treatment of any sick poultry was started.

The producer chose not to vaccinate using a commercially available vaccine, although this can help control fowl cholera caused by infection with virulent strains of *P. multocida*, depending on the strain involved.

For further information contact Kylie Greentree, District Veterinarian, Hunter Local Land Services, Maitland, on (02) 4932 8866.



Multiple white spots on the liver of a duck with fowl cholera. Photo K Greentree

Australian livestock tracing system used to keep lead-affected animals out of the food chain

Occasionally—usually on very extensive properties—Australian cattle have access to old lead batteries that have not been discarded safely. When the inevitable clinical illness occurs, government vets investigate the case and apply detention orders to animals with high blood lead levels until testing establishes that the stock are eligible for slaughter. This takes a minimum of 12 months, depending on the source of the lead.

People make mistakes, especially under the pressure of drought. In NSW, since April 2018 there have been four incidents, involving five head of cattle, in which lead-affected animals have been moved to saleyards without a permit. This is extremely uncommon; a breach of detention orders issued by Authorised Officers under the Biosecurity Act is considered serious by the Department, owners, and the cattle industry at large. There is a system in place to detect these movements and stop products from these animals entering export or domestic markets.

In these cases, the National Livestock Identification System (NLIS) detected non-approved movements, so that no adverse consequences to the reputation or the quality of Australian meat occurred. This highlighted one of the market advantages of being able to trace products back to the property of origin through the NLIS.

The NLIS is a permanent lifetime traceability system designed to:

- record the property identification code and the individual animal identification code for each head of cattle in Australia
- allow the movements of each identified animal to be tracked, because at each stage of the marketing of the animal (e.g. to a saleyard or an abattoir) the registration details on the database are required to be amended by the purchaser.

In NSW, cattle that have a blood lead level of greater than, or equal to, 0.24 µmol/L are deemed to be chemically affected. This is a miniscule amount and of no public health significance on its own. It doesn't mean that the meat from the animal affects human health; it just means that achievable quality standards have not been met.

When affected stock are detected, a standard process is followed. The

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government field vet notifies the State Residue Coordinator of any lead-affected animals and supplies the relevant individual animal identification numbers. Using the NLIS, the State Coordinator applies a 'PB1' status to the relevant affected animals on the NLIS database. This status will remain until subsequent testing shows blood lead levels less than 0.24 µmol/L. PB1-status cattle may be allowed to move from property to property under a permit issued by an officer authorised under the *NSW Biosecurity Act (2015)*.

However, an animal with a PB1-status must not be sold for slaughter. If this happens, when an animal with PB1-status is transferred on the NLIS database from the property where the status was acquired to a purchaser (e.g. an abattoir), the NLIS database automatically sends an email to the relevant State Residue Coordinator. The State Residue Coordinator then investigates whether an illegal movement has occurred.

In the four incidents in the quarter, authorised officers were able to trace and locate the PB1-status animals moved without permission within 24 hours of notification from the NLIS. All animals were located before slaughter.

Local authorised officers interviewed the stock owners to determine why the PB1-status animals were moved without a permit. In all cases, the movements of the animals by the owners were found to be accidental, not wilful. In one sad case, the owners were aged and had forgotten the restrictions. In another case, an affected animal had been accidentally mustered while its cohorts had remained on the property.

All parties then collaborated to develop and implement plans to manage the individual animals.

The automated NLIS device-based status alert system is extremely successful in promptly identifying movements of lead-affected animals in Australia. This allows the relevant jurisdiction and industry to respond rapidly and maintain the lead safety of Australian food products.

For further information contact Kate Wingett, Senior Veterinary Officer (Residues), NSW DPI, Orange, on (02) 6391 3717.

Deaths in poultry near Narrandera

In April a case of mass mortalities in a mixed-species poultry flock north of Narrandera was investigated by a district vet. In total the flock suffered about 25 deaths out of 90 birds over a 2- to 3-week period. Signs varied, but respiratory signs were consistently observed before death. The majority of birds that showed signs subsequently died.

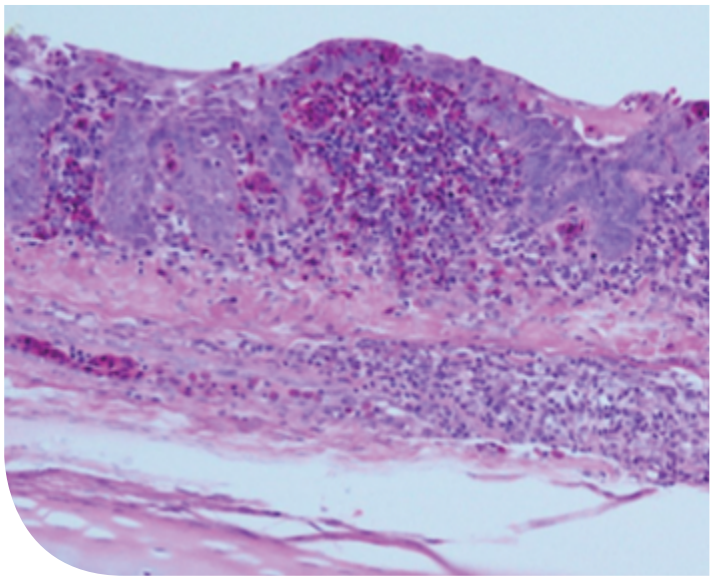
Post mortem exam of several birds revealed tracheitis and internal and external parasites. Fortunately, Newcastle disease and avian influenza were rapidly excluded by laboratory tests.

Histopathology and PCR testing confirmed the presence of infectious laryngotracheitis (ILT) virus. Although not an Emergency Animal Disease, ILT is notifiable, meaning that if anyone suspects that it could be present in NSW they must report it to Local Land Services or NSW DPI.

ILT is a herpesvirus and, as with cold sores in people, birds can remain carriers for the rest of their lives and be intermittently infectious. This makes management of the disease difficult. A vaccination plan was developed with the owners, although it can be difficult to acquire the vaccine in small numbers of doses for backyard flocks.

For further information contact Tim Biffin, District Veterinarian, Riverina Local Land Services, Wagga Wagga, on (02) 6923 6314.

Infectious larygotracheitis: Significant numbers of small intestinal worms (*Ascaridia galli*) were found in one of the birds necropsied. Source: T Biffin



Infectious larygotracheitis: Looking under the microscope at the trachea of one of the birds necropsied, inflammatory changes are visible. Image courtesy of Prof. S Raidal, Charles Sturt University

Mastitis in sheep: contagious agalactia excluded

A farmer near Berrigan in southern NSW contacted the district vet to investigate an unusually high number of ewe mortalities that had occurred in his flock during lambing. The flock consisted of 1200 Merino ewes in three mobs. The ewes had shown rapid weight loss and lethargy and died within days: about 50 had died with these same signs since the beginning of lambing in April.

A clinical exam was done on an affected ewe: only fever, mild respiratory noise and mastitis were found. A milk sample was taken from the affected gland. Two dead ewes were examined, and both had lesions consistent with mastitis.

One of the dead ewes had abnormal gross lung pathology, including pleural adhesions, so samples of lung and milk were collected. Samples from the other dead ewe were not fresh enough for use.

Samples were submitted to the State Veterinary Diagnostic Laboratory for culture. *Mannheimia haemolytica* was isolated from the milk of the live ewe and *Aerococcus viridans* was isolated from the milk of the dead ewe. The lung culture was negative. All samples were negative for *Mycoplasma agalactiae* on PCR; this bacterium causes the notifiable disease contagious agalactia outside Australia.

The clinically affected ewe responded to treatment with oxytetracycline prescribed by a private vet. Nine more ewes were identified and treated in the following weeks, and eight recovered.

The owner had not detected mastitis before on his property and was not aware of any similar disease or mortality incidents in his immediate area.

For further information contact Scott Ison, Team Leader Animal Biosecurity, Murray Local Land Services, Deniliquin, on (03) 5881 9917.

Kikuyu poisoning outbreak in the Hunter

In autumn 2018, the Hunter region suffered an outbreak of kikuyu poisoning that killed about 100 head of cattle. No other species of grazing animal was affected.

Nine of the farms affected by this outbreak were surveyed to gather information about the conditions surrounding these kikuyu toxicity events. None of the properties had been affected by previous outbreaks. The results of the investigation were consistent with findings from previous outbreaks of kikuyu poisoning in Australia.

Kikuyu poisoning occurs when cattle graze kikuyu that is growing rapidly after rain in late summer/autumn after a prolonged period of summer drought. There is no visible sign on the toxic pasture to indicate that it is affected, other than the fact that cattle will often leave it ungrazed if they have the choice of eating something else. This selective grazing behaviour is important to note, because the deaths in the 2018 outbreak occurred when cattle had no alternative feed available (i.e. there was a monoculture kikuyu pasture, or the alternative grazing options had been exhausted and they had nothing left to eat but kikuyu).

There was no consistent association with the type of fertiliser that had been applied to the pasture or how recently it had been applied. Stress or damage to the affected kikuyu plants by insect attack (e.g. army worms or grasshoppers) was also not a consistent feature.

However, the affected pastures had all been subject to severe drought stress. There were no reported cases of kikuyu poisoning on irrigated kikuyu pasture.

Many of the affected cattle were just found dead. The most common signs of poisoning observed before death were the drooling of thick, ropy saliva; sham drinking; severe dehydration; lack of appetite; abdominal pain; unsteady gait; lying down; depression; and muscle tremors. Abdominal distension was also sometimes apparent. Most of the affected cattle died (80%).

Kikuyu poisoning affects the fluid balance in the animal, resulting in an accumulation of fluid in the rumen; this fluid is not absorbed into the bloodstream, so that although the stomach is full of water the animal is severely dehydrated. This is presumably what causes the 'sham drinking': the dehydrated animal feels desperately thirsty but can't fit any more fluid into its stomach. It consequently stands in a dam or with its face in a trough wanting to drink, but is unable to do so.

Post mortem samples from affected cattle invariably feature severe damage to the lining of the stomach (rumen, reticulum and omasum). It remains unclear how kikuyu causes this damage and disrupts the animal's ability to absorb water from its gut. It has been thought for decades that a fungus in the affected kikuyu might be responsible, and pasture samples collected during this latest outbreak are being investigated for fungus. It has also recently been theorised that chemicals in the kikuyu—possibly high potassium levels—may cause an electrolyte and fluid imbalance.

Be aware that this grass can represent a risk when growing rapidly after a drought. Take the following steps to reduce the risk of poisoning:

- If you are introducing cattle into risky kikuyu, fill them up with something else first so that they can be more discriminating when they enter the kikuyu paddock.
- Don't force cattle to graze risky pasture. Leave the gate open behind them when putting them into such pasture, and put out some hay or silage in the kikuyu paddock so that the cattle have an alternative source of feed.
- Watch the behaviour of the cattle: if they seem reluctant to eat what looks to be good, young kikuyu, remove them from the paddock and spell it for several weeks. The period of risk seems to be relatively brief and passes after a few weeks. The risk is presumably associated with a particular stage of growth of the kikuyu.
- When reintroducing cattle after a period of risk, follow the steps listed above and let the behaviour of the cattle guide you regarding the ongoing risk.

For further information contact Jim Kerr, District Veterinarian, Hunter Local Land Services, Tocal, on 0439 185 275.

Tick fever confirmed on the Mid North Coast of NSW

Following a call to the EAD (Emergency Animal Disease) hotline by a Mid North Coast cattle owner, the district vet visited a property south-west of Port Macquarie to investigate the deaths of three cows. A further eight from a mob of 120 appeared unwell. The cattle had been grazing kikuyu-dominant pasture. The paddock they had been in most recently had been flooded 3 weeks earlier, so it had missed a rotation but was still quite lush.

Eleven days earlier the cattle had been yarded and the majority of the calves had been consigned to a local saleyard. The best 20 weaner heifers were selected as replacements and put into a separate paddock, and the bulls were removed from the herd. At the time of the initial visit neither the bulls nor the heifer mob were affected.

Post mortem examinations were done on two dead cows. In both, the livers were enlarged and were mottled on the cut surface. There were numerous haemorrhages throughout the carcases. One animal had red urine. A small number of adult bush ticks were identified on the skin, but no cattle ticks were found. Two sick cows were examined. They had increased respiration rates; one had an elevated rectal temperature (40 °C), and there were pinpoint haemorrhages in the vulval mucosa. Differential diagnoses at this stage included bracken fern toxicity, cycad toxicity and tick fever, despite the apparent absence of cattle ticks.

Another post mortem examination was done the next day on another cow that had died overnight. Findings included an enlarged spleen (which was soft and bulging on the cut surface), blood-tinged pericardial fluid and red urine.

The State Veterinary Diagnostic Laboratory confirmed the presence of *Babesia*-like organisms in blood smears, and samples tested PCR positive for *Babesia bovis*. The herd was treated with imidocarb, but losses continued in the days following the initial examination and subsequent treatment and eventually reached 50 head.

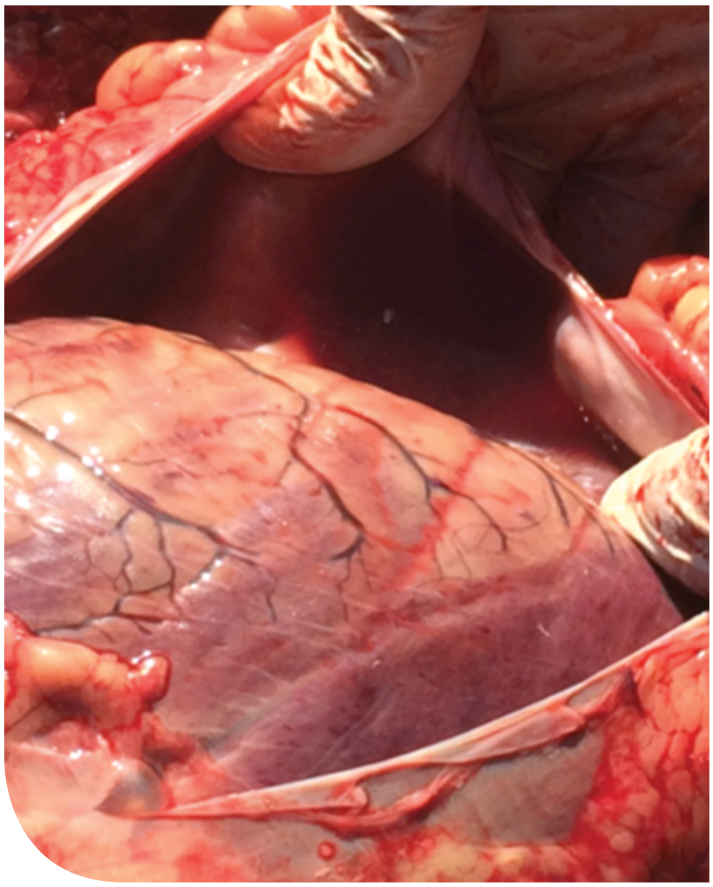
Within 5 days of the initial diagnosis, the owner of a nearby property also contacted the district vet, having lost one cow and with another sick. Red urine had been noted by the owner. The sick cow died before the vet arrived at the property, so a post mortem was done. The gross findings were consistent with those of tick fever, and *B. bovis* infection was confirmed by PCR at the laboratory. The remainder of the herd were treated with imidocarb.

Cattle ticks are normally not present on the Mid North Coast because of the control and eradication program that is run in NSW by the Department of Primary Industries. Given the intense interest in the local community, an information evening was organised by North Coast Local Land Services so that a NSW DPI Senior Veterinary Officer and cattle tick program staff could provide valuable information to about 80 stockowners on cattle tick and tick fever.

NSW DPI cattle tick program staff traced the stock movements off the initial property. Deaths occurred in traced stock on two more properties: tick fever was confirmed on one property and was highly suspected on the other.

Investigations into the source of the cattle ticks in the area are continuing.

Tick fever: Enlarged pulpy spleen. Photo I Poe



Tick fever: Blood-tinged pericardial fluid. 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'.

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Copies of NSW Animal Health Surveillance reports are available on the internet at: *www.dpi.nsw.gov.au/newsletters/animal-health-surveillance*

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Disclaimer

The information contained in this publication is based on knowledge and understanding at the time of writing (August 2018). However, because of advances in knowledge, users are reminded of the need to ensure that the information upon which they rely is up to date and to check the currency of the information with the appropriate officer of NSW Department of Industry, Skills and Regional Development or the user's independent adviser.

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