

NEW SOUTH WALES ANIMAL HEALTH SURVEILLANCE

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

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Newcastle Disease—5 years into compulsory vaccination

In May 2008 the World Organisation for Animal Health (OIE) decided that both *active* and *passive* surveillance is required to declare 'country freedom' from virulent Newcastle disease (ND). NSW DPI staff have contemplated doing active surveillance for ND virus to see if we can stop our compulsory vaccination program and work towards achieving country freedom. The problem is: how do we detect a few drops of virulent virus in a sea of vaccine virus? In 2000, targeted sampling of more than 800 poultry farms in Australia did not detect potentially virulent ND virus, but despite that, clinical outbreaks subsequently occurred. Because of these technological limitations, the Australian approach to the new OIE surveillance guidelines for country freedom is yet to be decided.

The median interval between ND outbreaks in Australia between 1998 and 2002 was 3 months, and the mean was 5 months. In the 5 years following the introduction of compulsory vaccination, outbreaks of ND have not been reported anywhere in Australia. Considering the previous pattern of inter-outbreak intervals, the current freedom over a period of 5 years is significant and demonstrates the success of vaccination in preventing ND. Data gathered by NSW DPI demonstrate that the vaccination strategies in use have been successful in achieving the required antibody responses.

Although active surveillance may be impractical, passive surveillance is important. The following recent case illustrates the importance of competent veterinary authorities investigating poultry diseases in which ND virus may be involved.

The episode started in a 27-week-old layer flock of 13,000 birds. Production was 15% to

20% below the standard for this strain and age. Poor egg shell quality was also observed, but mortality had remained low. A few birds in the flock were reported to be 'paralysed' in lateral recumbency and reluctant to get up, but the owner also reported that these birds appeared to recover after laying an egg. One bird was observed with signs of underlying neurological disturbance (torticollis). The flock had been vaccinated with live and inactivated Newcastle disease vaccines in accordance with national guidelines.

Significant and consistent post-mortem gross findings were peritonitis and haemorrhagic caecal tonsils. Poor bone formation was also evident, although calcium and phosphorus blood levels were within the normal ranges. Four of five chickens submitted for autopsy were about 25% below optimum body weight.

Although the presence of neurological signs raised some concern about the possible involvement of ND virus, the clinical history, autopsy findings, vaccination history and pattern of consistent low-grade mortality indicated a chronic disease rather than the acute disease pattern that can be expected with ND.

Histopathological examination showed a non-suppurative meningoencephalitis: small but significant areas of gliosis and/or perivascular cuffs were found in the brainstems of four of the five birds examined.

ND virus and avian influenza were excluded by polymerase chain reaction (PCR) testing by NSW DPI Regional Veterinary Laboratory, Menangle, as well as by the Australian Animal Health Laboratory (AAHL) in Geelong.

Although the cause was not identified, this case emphasises the importance of passive

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surveillance in NSW to exclude the presence of exotic diseases. It also highlights the observation made during the 1998–2002 ND outbreaks in NSW that birds exhibiting nervous signs and non-suppurative encephalitis are not necessarily infected with ND virus.

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

Equine influenza surveillance finds no cases

From 1 April to 20 June NSW DPI managed veterinary investigations on 26 properties where horses were reported to be displaying signs consistent with equine influenza (EI). All samples were PCR negative. Routine testing for antibody status has shown that a significant proportion of recovered horses are now serologically negative for EI virus antibody, 10 months after the initial infection was reported.

One incident caused concern. A swab taken from a horse being vaccinated with killed vaccine in preparation for export returned a positive PCR test. We re-sampled the horse and its companions and all tests were PCR negative, indicating that the swab had been somehow contaminated with vaccine. Vets have since been advised to collect samples *before* vaccinating with killed vaccine and to ensure that they guard against sample contamination. This incident highlighted the extreme sensitivity of the PCR test.

For further information contact Therese Wright, DPI Orange, on (02) 6391 3823.

New clinical findings in pestivirus infection

District Veterinarian Shaun Slattery from Narrabri Rural Lands Protection Board (RLPB) will shortly publish his observations on unusual clinical findings of *dry gangrene* in pestivirus-infected 6- to 9-month-old heifers.

The investigation started as an investigation of 'droopy ears and scouring' in six of 42 calves with fevers. Two calves had oedema of the ears, and one of these calves had a 15-cm length of tail that was cold to the touch and lacked muscle tone. Pasture in the paddock was dry, except for a small patch of sodden, green, heavily grazed couch grass around an overflow pipe from the dam. Ergot alkaloid toxicity was excluded and a provisional diagnosis of salmonellosis with terminal dry

gangrene was made. The calves responded to sulfadiazine therapy, but no enteric pathogens were subsequently isolated by the Wollongbar Regional Veterinary Laboratory.

By 4 weeks later, the calves had relapsed and some were unable to walk. Samples for pestivirus testing showed all calves to be viraemic. It appears that, among the many manifestations of pestivirus infection, peripheral vasculitis with dry gangrene is another that may occasionally be seen.



Dry gangrene caused swelling and sloughing of ear tissue in this pestivirus infection. Photo: Shaun Slattery.

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

EUS goes outback

NSW DPI has confirmed a case of epizootic ulcerative syndrome (EUS) in fish in the Darling River near Bourke. This is the only confirmed report of EUS in wild fish in a western river in NSW, although the disease is known to occur regularly in the northern coastal rivers of NSW and is reported in many freshwater catchments and estuaries throughout Australia. EUS is a fungal disease caused by *Aphanomyces invadans*; predisposing factors such as acid sulfate soils and decreased salinity are needed to initiate clinical disease. Further sampling will determine the extent of the disease in Darling River fish and lead to the development of appropriate management plans for EUS.



Bony bream with EUS. Photo: R. Reece

For further information contact Jeffrey Go, DPI, on (02) 4640 6310.

Selenium deficiencies in cattle

Selenium deficiency diseases are often difficult to diagnose, since low blood selenium levels are not always accompanied by clinical signs. Many property owners call district veterinarians because of cattle and sheep just 'not doing well'. This results in valuable surveillance by district veterinarians.

In the last quarter, veterinarians in Braidwood, Moss Vale and Grafton reported ill thrift and muscular dystrophy syndromes that were responsive to selenium supplementation. On one property in the Braidwood area, 20 heifers were to be culled for poor growth. Pestivirus was excluded as the cause, but blood selenium levels, as measured by glutathione peroxidase activity, were very low. The heifers responded well to selenium supplementation. On another two properties selenium responsiveness occurred in older cows that showed ill thrift and lameness. Selenium deficiencies in cattle are not normally associated with lameness. Further surveillance is being undertaken to find cases of suspect myopathy in selenium-deficient adult cattle.

In the Braidwood cases, the properties had applied the recommended amount of superphosphate during the drought years. On the generally selenium-deficient soils in the area, the sulfur in the fertiliser could have precipitated an acute selenium deficiency in subsequent pasture growth, since sulfur competes with selenium for uptake by plants.

Selenium deficiency was reported also from Glen Innes and from Gerringong on the South Coast. In the latter case, profound selenium deficiency was diagnosed on a small farm where only four or five calves were surviving each year in a calf drop of 15. A sample from a recently deceased calf yielded very high levels of the muscle enzyme creatine kinase, showing that the ill thrift was associated with muscle damage.

For further information contact Bob Templeton, DV Braidwood RLPB, on (02) 4842 2536.

Porcine dermatitis and nephropathy syndrome

A piggery in the central west of NSW had increased mortalities in May that were associated with an unusual skin condition. Growing pigs became sick and died suddenly or within 1 or 2 days. Dead pigs typically showed purple, button-sized skin lesions on the perineum, back legs and ears, coalescing to larger areas of purple discoloration with necrotic black centres. At post mortem, the peripheral lymph nodes were enlarged, with necrotic centres. The kidneys were also enlarged and pale, with discrete paler spots in the cortex.

Skin histology showed that most of the skin blood vessels were affected by vasculitis and thrombosis.

In the peripheral lymph nodes, large areas of the medulla were obliterated by necrosis and suppurative exudate, partly bordered by an early fibroblastic response. There was severe lymphoid depletion within the nodes.

In the kidney, many glomerular tufts showed severe leakage of fibrin and erythrocytes into Bowman's space. Some glomeruli showed mesangial thickening. Occasional glomerular tufts contained fibrinoid necrotic material. Moderate numbers of glomeruli were sclerotic. The renal tubules were dilated and contained protein and haemoglobin casts. Some proximal epithelial cells contained refractile eosinophilic granules.

All the lesions were consistent with those described in porcine dermatitis and nephropathy syndrome. The differential diagnosis included bacterial infections such as erysipelas. However no bacteria were cultured and the pigs had apparently been vaccinated for this disease. PCR tests at AAHL were positive for porcine circovirus type 2.

For further information contact Patrick Staples, DPI Orange, on (02) 6391 3854.

Cattle ticks rounded up

A horse owner near Canberra found ticks on one of two horses she had recently transported 1000 km from Queensland. She contacted the Yass RLPB and the property was quarantined while formal identification of the ticks was performed by the Cattle Tick Program officers at Wollongbar.

The horses had been treated at the Queensland border spray facility on 15 April 2008 and arrived at the Canberra property on 16 April. Because cattle ticks in various stages were present, the infestation may have resulted from larvae surviving spray treatment at the border or being secreted in horse rugs or blankets. Regulatory Officers from the Goulburn region commenced eradication treatments and monitoring of the adjoining holdings.

Elsewhere, 26 tick outbreaks were detected in the Tweed, Lismore and Kyogle areas. 'Trace-forward' of cattle movements revealed that nine properties had been infected from a property where there had been a tick fever outbreak at the end of March. The remainder of tick detections were from saleyard inspections, abattoir surveillance and owner notification.

In a separate case, camera surveillance on the Queensland border detected an illegal movement of three cattle into the Kyogle area. Cattle Tick Program staff immediately quarantined the property, detected cattle ticks and began treating all stock on that same property while starting legal proceedings.

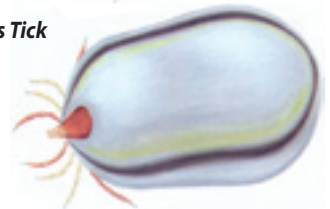
Bush Tick



Cattle Tick



Paralysis Tick



Bush, cattle and paralysis tick identification. Photos by NSW DPI.

For further information contact Larry Falls, DPI, on (02) 6266 1100.

Trichomoniasis in cattle and cats!

Trichomoniasis was diagnosed in a large herd of 340 cows and 61 bulls near Glen Innes in April. About 4 months after joining, less than

50% of cows were pregnant and 20% of empty cows had enlarged, fluid-filled uteri on rectal palpation. On laboratory examination, 14 of 61 bulls were positive for *Tritrichomonas foetus*.

In the past, trichomoniasis has been regarded as rare in NSW, but with several cases now reported in the North West in the last 12 months it is clear that this is no longer the case. Plans are to be considered to reduce the spread of this venereal disease from Queensland, as large numbers of breeding stock are traded across the border.

The first reported case of *T. foetus* in a cat in NSW occurred during the quarter. An Australian-bred female Abyssinian cat in a Sydney cattery developed diarrhoea that was diagnosed on both culture and PCR as due to *T. foetus*. *Tritrichomonas foetus* was also identified in the offspring of this cat and a male imported cat.

Importation of an infected cat from the USA or UK may have introduced this pathogen. Chronic diarrhoea associated with *T. foetus* infection in cats has been reported in the USA since 1996 and the UK since 2006.

For further information contact Belinda Walker, DPI Gunnedah, on (02) 6741 8363, and Diane Ryan, DPI EMAI, on (02) 4640 6378.

TSE exclusions confirm TSE-free status

Ketosis was diagnosed as the cause of central nervous system signs in a mob of 600 sheep near Wagga. When examined, six of the ewes were 'standing around' and unresponsive to stimuli before death. They were grazing dry, poor-quality summer grasses, and although supplementary oaten and grass silage was provided, they were in poor body condition, exacerbated by pregnancy. Samples for scrapie examination were negative.

Scrapie was also excluded in a mob of 500 ewes near Armidale in which affected sheep showed progressive ataxia, recumbency, opisthotonos and apparent blindness. Histological changes in the brain cortex were consistent with severe multifocal polioencephalomalacia caused by thiamine deficiency.

An imported cow died at Muswellbrook and was tested negative for transmissible spongiform encephalopathy (TSE) as part of the imported cattle testing program.

Samples submitted by Steve Eastwood, DV Armidale RLPB; Tony Morton, DV Wagga RLPB; and Ross Kemp, DV Hunter.

Encephalomyocarditis in pigs

Three of 50 grower pigs died over a 2-day period at a small piggery in northern NSW. All the dead pigs were in the one pen. The mortalities were initially thought to be related to a dietary change. When a whole pig was submitted to the laboratory for necropsy, there was evidence of acute congestive heart failure and the heart showed multiple, depressed white-cream foci, approximately 5 × 2 mm, beneath the epicardium of the right ventricle. The cut surface showed chalky lesions extending throughout the ventricular muscle. These lesions are characteristic of encephalomyocarditis (EMC) virus infection, which is transmitted by rodents. EMC usually causes sudden death, often when pigs become excited, such as at feed time. It is common for mortalities to be confined to one or two pens in the piggery. In baby pigs the lesions are often less distinct and must be distinguished from those of foot and mouth disease.

For further information contact Graeme Fraser, DPI Wollongbar, on (02) 6626 1236.

Suspected *Pimelea* toxicity

Three cows died and another six of 30 were sick over a period of months on a property near Coonabarabran. They all had grazed in the same paddock. In May, a cow died after losing condition over 4 weeks, showing lethargy and bottle jaw. At necropsy, there was marked subcutaneous oedema and ascites. The liver was normal in size but a darker brown than normal, and the gallbladder was enlarged and contained dark yellow bile. Histology of the liver showed marked periacinar sinusoidal congestion, and the lungs showed moderate fibrosis and alveolar septal thickening caused by oedema. The histopathology was best explained by congestive heart failure. The findings were consistent with plant poisoning by a species of *Pimelea*, sometimes called flaxweed, rice flower, wild flax or poverty weed.

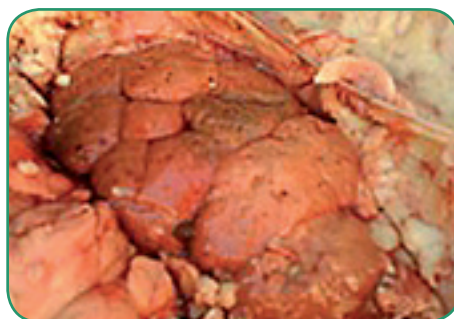
For further information contact Alison Bradford, DV Coonabarabran RLPB, on (02) 68 421 300.

Sudden deaths in cattle

Enterotoxaemia killed five of 38 Hereford 2-year-old heifers on a grazing property near Condobolin. The losses occurred amongst the biggest animals in the mob. The cattle had not been vaccinated against clostridial infections.

They had been recently moved from a paddock with little feed availability into a paddock with far better pasture quality and availability.

The deaths occurred 3 days after 5 mm of rain. On post mortem examination the rumens were found to be engorged with grass. The kidneys of the two animals autopsied were found to be in advanced decomposition in comparison with the rest of the abdominal organs, indicating pulpy kidney. The small intestine lining was haemorrhagic, with multiple haemorrhages throughout the omentum. No further losses were reported after the mob was vaccinated with five-in-one and moved back to the poorer quality paddock.



Pulpy kidney in enterotoxaemia. Photo: Bert Luchjenbroers.

For further information contact Bert Luchjenbroers, DV Condobolin, on (02) 6895 2152.

Malignant catarrhal fever: new test

A 15-month-old Angus heifer had fever, a frothy nasal discharge and bilateral ocular discharge when it died on a property at Oberon, near the Blue Mountains. Several 2- to 4-cm patches of hyperaemia were found in the buccal cavity, and the vaginal mucous membrane was hyperaemic. A PCR test confirmed the presence of ovine herpesvirus 2 (sheep-associated malignant catarrhal fever virus). The availability of a PCR test for the disease now enables ante-mortem testing and diagnosis. Blood collected in EDTA (ethylenediaminetetraacetic acid) or lithium-heparin tubes is the preferred sample.

For further information contact Graham Bailey, DPI Orange, on (02) 6391 3870.

Regulatory surveillance for swill feeding

Three Forbes district farmers were fined a total of \$32,980 in Forbes Local Court for swill-feeding 620 pigs at three separate properties in the Central West. They were charged with

14 offences related to feeding prohibited substances to stock and failing to prevent stock from having access to prohibited substances (carcasses). The pigs were being allowed to feed on the carcasses of sheep and other dead animals, including pigs and poultry, from the Forbes properties.

NSW DPI and the local RLPB investigated the case and brought it before the court as a breach of the Stock Diseases Act. The men were fined \$19,000 and ordered to pay court costs of \$13,980.

For further information contact Andrew Sanger, DPI, on (02) 6042 4207.

Field investigations crucial for surveillance

A mob of ram lambs near Forbes had access to grain and about 15 died over the next few weeks, presumably from grain poisoning. The district veterinarian was called when a significant portion of the flock developed continued scouring, loss of condition and a 'tucked up' appearance. A sick-looking lamb that wasn't actually scouring was selected for post mortem examination, but the only abnormality detected was a kidney abscess. The kidney sample and blood and faecal samples from two other sick lambs were taken for laboratory examination.

Three interesting issues emerged. The first was that none of the diseases identified was directly attributable to grain poisoning. The second was that the lambs had heavy burdens of *Trichostrongylus* sp., which was causing the scouring. The third was that the abscess was caused by *Actinobacillus seminis*. This organism is resident on the genital mucosa and is most often associated with epididymitis. It occasionally causes bacteraemia, with disease referable to sites of localisation such as the joints or, in this case, the kidney.

This investigation highlights the importance of on-farm investigation with appropriate laboratory testing, which identified the main problem (parasitic diarrhoea caused by *Trichostrongylus* sp.). This avoided disease being attributed to a previous problem (grain poisoning) or to an important but low-morbidity disease (renal abscess).

When epididymitis was investigated in a *Brucella ovis*-free ram flock near Young, *A. seminis* was a strong candidate for causing

acute orchitis and epididymitis in 5% of the young rams. In this case, however, *Histophilus ovis* was cultured from the lesions. It is a normal inhabitant of the genital tract, and the reason for its emergence on such a large scale on this property is unclear.

For further information contact Sam Allan, DPI Bathurst, (02) 6330 1215.

Salmonella typhimurium kills cow

Salmonella typhimurium caused the death of a cow in a mob of 200 near Gundagai. It developed watery diarrhoea, became progressively weak and anorexic, and died 2 days later. At post-mortem examination, the liver was enlarged and brownish yellow. The spleen was enlarged and congested on the cut surface. Petechial and ecchymotic haemorrhages were present in the heart, kidney, lungs and small intestine. *Salmonella typhimurium* was isolated from intestinal samples and a mesenteric lymph node.

For further information contact Joan Jordaan, DV Gundagai RLPB, on (02) 6382 1255.

Post-marking polyarthritis

Erysipelothrix rhusiopathiae caused lameness and ill-thrift in 20% of lambs on a Border Leicester stud near Yass. This was noticed about 4 weeks after marking. When opened, the joints showed fibrinosuppurative arthritis, and a pure growth of the bacterium was obtained from culture of joint fluid. In a similar case in the Hume RLPB area, the polyarthritis was accompanied by some mortalities and *Haemophilus somnus* was isolated.

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

New approach to AUSVETPLAN development

What to do with pet and caged birds in a highly pathogenic avian influenza (HPAI) outbreak?

In 1985, HPAI emerged on a poultry farm near Bendigo, Victoria. In town nearby, an elderly woman's pet budgerigar had to be put down under sad circumstances, since a worker from the infected poultry farm had visited the house in which the budgerigar lived. Similarly, at Mangrove Mountain in 1999, the owner of a 'multilingual' talking cockatoo was devastated: Newcastle disease had been diagnosed on the property. Rules were rules: as well as the poultry, the old cockatoo had to go.

Such decisions to destroy pet birds during exotic disease eradication were undoubtedly defensible 10 to 20 years ago. Perhaps the authorities thought that the risk of leaving potentially infective birds alive and causing disease elsewhere had to be managed by removing all possible sources of infection. Maybe they thought that there's always the risk that if you make one exception, everybody will want one and that will be hard to manage.

Nowadays, the general community is often not satisfied with zero-risk approaches to disease eradication. Animal Health Australia's AUSVETPLAN Technical Review Group is taking this issue into account in reviewing

the AUSVETPLAN response to avian influenza, and this time a structured risk management process promoted by NSW DPI is helping to make the decision.

When we assess the risk that a pet or caged bird will potentially infect other birds with AI, the risk *ranking* actually comes out as negligible or very low—low enough that it does not even have to be acted upon.

The *likelihood* component of the risk matrix is expressed very clearly in AUSVETPLAN: caged birds are not associated with the spread of highly pathogenic AI. Certainly they could be, but they are not. Similarly, the *consequences* of an occasional pet bird acquiring the disease are far less significant than the consequences of spread to poultry sheds containing tens of thousands of poultry.

So the risk ranking of pet birds spreading AI is insignificant compared with other risks (e.g. movement of infected hens). In future outbreaks, it's possible that AUSVETPLAN will allow pet birds on infected properties to survive an eradication campaign.

Because of NSW DPI input, all AUSVETPLANS will, in future, have very much more specific, risk-based procedures for destruction and movement controls, taking them further ahead as the world standard in emergency response plans.

For further information contact Rory Arthur, DPI Orange, on 02 6391 3823.

Getting Information on Animal Diseases

This surveillance report can convey only a very limited amount of information about the occurrence and distribution of livestock diseases in New South Wales. If you would like more specific information about diseases occurring in your part of the State, contact your local Rural Lands Protection Board District Veterinarian, Departmental Senior Regional Animal Health Manager, Regional Health Leader, or Regional Veterinary Laboratory.

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

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

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 2008). 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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PRIMARY INDUSTRIES