Animal Health Surveillance

Volume 8 Issue 2

ISSN 1445-9701

1 April to 30 June 2003

QUARTERLY REPORT

CONTENTS

Preface

This issue includes an article on the review of the uses of the antibiotic virginiamycin by the Australian Pesticides and Veterinary Medicines Authority. The review was initiated in response to concerns that continued use of virginiamycin in food-producing animals could lead to the development of antibiotic resistance.

Other topics include highlights of disease surveillance activities, items of interest from States and Territories, and summaries of disease monitoring and surveillance programs reported to Australia's National Animal Health Information System (NAHIS). Only summary information is recorded in NAHIS, with detailed data being maintained by the source organisation. The information included in this report is accurate at the time of publication but, because of the short reporting and production time, minor discrepancies may occur. *AHSQ* is available on the Animal Health Australia website (at www.aahc.com.au/nahis).

Gardner Murray
Australian Chief Veterinary Officer

Virginiamycin

In March 2003, the Australian Pesticides and Veterinary Medicines Authority (APVMA: formerly NRA, the National Registration Authority) released for public comment a draft report of its review of the uses of the antibiotic, virginiamycin. The period for comment closed on 31 July 2003. The review was undertaken because of concerns raised in the report of the Joint Expert Technical Advisory Committee on Antibiotic Resistance (JETACAR) about the potential for the continuous use of virginiamycin in food-producing animals to lead to antibiotic resistance that could cause public health concerns (see *AHSQ*, Vol. 7, No. 1 and www.health.gov.au/pubs/jetacar.htm). In summary, the draft recommendations are to:

- cancel the registration and label approvals of those products having label claims for growth promotion and/or improved feed efficiency only (pigs, chickens, turkeys);
- affirm the registration of products containing virginiamycin for the prevention of lactic acidosis in sheep and cattle and the prevention of necrotic enteritis in chickens;
- vary conditions of label approval for products containing virginiamycin for the prevention of lactic acidosis in sheep and cattle and the prevention of necrotic enteritis in chickens to give more specific instructions and restraint statements pertaining to their use; and
- constrain veterinarians' rights to prescribe virginiamycin for periods longer than on the label or to prescribe repeat treatments, through the proposed use of label restraints.

The National Drugs and Poisons Schedule Committee has proposed that virginiamycin be changed from Schedule 5 to Schedule 4 (prescription only) for all uses of virginiamycin. This amendment will come into effect on 1 September 2003.

Contributed by: Jonathan Webber, Office of the Chief Veterinary Officer (OCVO), Australian Government Department of Agriculture, Fisheries and Forestry (DAFF)

AnimalHealth AUSTRALIA
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Animal Health Quadrilateral Discussions

The annual Animal Health Quadrilateral Discussions ('Quads') were held in March in Queenstown, New Zealand. These discussions provide an opportunity for senior agricultural officials from Australia, Canada, New Zealand and the United States to meet informally to share information on issues of mutual interest concerning animal health and related topics. On this occasion, discussions included a session with the Food Safety 'Quads' to consider a number of items of joint concern, including transmissible spongiform encephalopathies, emergency management, and food safety.

Contributed by: Jill Mortier, OCVO, DAFF

OIE General Session May 2003

The 71st General Session meeting of the Office International des Epizooties (OIE, which is the world organisation for animal health) took place from 18 to 23 May in Paris.

Special attention was given to two new fields of activity for OIE — animal welfare and food safety. The first global conference on animal welfare is to take place at the OIE headquarters in Paris from 23 to 25 February 2004.

This General Session included elections, which are held every three years. Dr Bouna Niang from Senegal was elected as the new OIE president. Dr Gardner Murray of Australia was re-elected as President of the Regional Commission for Asia, the Far East and Oceania, and Dr Eva-Maria Bernoth of Australia was elected as President of the Aquatic Animal Health Standards Commission.

The terms of reference of the four specialist commissions of the OIE were reviewed and the names of the commissions were changed:

- the Fish Diseases Commission became the Aquatic Animal Health Standards Commission;
- the Foot-and-Mouth Disease Commission has changed to the Scientific Commission for Animal Diseases;
- the Standards Commission is now the Biological Standards Commission (to be known as the Laboratory Commission); and
- the Animal Health Code Commission will be called the Terrestrial Animal Health Standards Commission.

The Quadrilateral countries ('Quads' — Australia, the United States, New Zealand and Canada) met during the week to review progress of the International Working group on Animal Disposal Alternatives (IWADA) and agree on a framework for the path forward. A small group working on the next phase of IWADA will prepare an OIE document containing conceptual approaches and guiding principles for animal disposal.

The 'Quads' (excluding Canada) met with the Chief Veterinary Officers of UK and Ireland in May to progress the International Animal Health Emergency Reserve. The desired outcome is an arrangement, preferably based on a letter of intent, whereby the six countries could support each other in an animal disease or zoonotic emergency situation.

A number of proposals for amendments to the Terrestrial Animal Health Code (the Code) were discussed during the General Session. These included amendments to the chapters on equivalence, animal disease notification, avian influenza, leptospirosis, Rift Valley fever, classical swine fever, bovine spongiform encephalopathy (BSE) and scrapie. Of particular interest is the adoption of amendments to the BSE chapter of the Code. Changes were also made to the related appendix on 'Surveillance and monitoring systems for BSE'. Key changes include:

- surveillance that samples clinical suspects should be supplemented by sampling of cattle that have died on farm or in transit, 'downers', or cattle subject to emergency slaughter (so called '4D' cattle);
- where the required annual number of clinical suspects cannot be sampled, an appropriate number of 4D cattle can be substituted to make up the shortfall;
- disease investigations required if a case is diagnosed were clarified; and
- requirements for bovine products including embryos and tallow were slightly amended.

Minor amendments were also made to the scrapie chapter of the Code, and a new appendix 'Principles for recognising a country or zone historically free from scrapie' was adopted. The OIE also resolved that work be undertaken before May 2004 to simplify the BSE categories in the BSE chapter of the Code, and to address any conflict between the chapter and BSE categorisation guidelines. The 2003 Code is available on the internet (www.oie.int/eng/normes/en_mcode.htm).

Contributed by: Jill Mortier and Reg Butler, OCVO, DAFF

National Arbovirus Monitoring Program

The National Arbovirus Monitoring Program (NAMP) is a national program jointly funded by industry and government to monitor the distribution of economically important insect-borne viruses such a bluetongue, Akabane and bovine ephemeral fever (BEF) and their vectors.

This report covers the first half of 2003, when arboviral activity in northern Australia is expected. Drought persisted across a large area of eastern Australia during the period and affected the distribution of arboviruses and their vectors. Neither seroconversions nor vector activity were detected in the southern states of Victoria, Tasmania and South Australia in the first half of 2003.

AKABANE VIRUS

In Western Australia, although seropositive animals were detected in the north and west Kimberley and in the western area of the Pilbara, there were no reports of disease. In the Northern Territory (NT), viral activity was widespread, extending beyond the expected endemic area. In Queensland, activity was relatively widespread, being detected at all coastal sites as well as in more western areas. For the second year in succession, very little Akabane viral activity was detected on the Darling Downs, resulting in significant numbers of uninfected females likely to be at risk early in the 2003–04 season. In New South Wales (NSW), viral transmission commenced early and continued until late February, despite apparently unfavourable seasonal conditions. Southward spread well beyond the normal endemic area also quickly occurred. As a result, clinical cases are expected to occur. Already, there have been reports of abortion and arthrogryposis, and hydranencephaly can be expected from September 2003.

BLUETONGUE VIRUS

In Western Australia, bluetongue viral transmission occurred in the northern part of the Kimberley and the Pilbara, with infection detected at Karratha for the first time. Seroprevalence increased in the central Pilbara and the virus spread south to a new river system, and changes to the bluetongue virus (BTV) zone boundaries were required. Despite a late onset of the wet season in the NT, viral activity was early and widespread. Bluetongue viral activity occurred in all the northern herds in most months. A single seroconversion occurred at Mt Sandford in January, with serotype 1 the only serotype identified. In Queensland, viral activity was detected in sentinel herds along the entire coast. In some areas of Queensland and the Northern Territory, BTV zone boundaries were adjusted based on results from sentinel monitoring and cross-sectional surveys. Drought has been particularly severe in NSW with more than 95% of the state affected. This had implications for sentinel monitoring in a few areas although adequate sampling was still achieved. Transmission patterns were unusual in that there was little or no transmission at the most northerly coastal sites, with infection first occurring on the mid-north coast. Serology indicated transmission of serotype 1 with serology for serotype 21 yet to be completed.

BOVINE EPHEMERAL FEVER VIRUS

In Western Australia, low numbers of animals seropositive for BEF virus were detected in the north and west Kimberley and the western area of the Pilbara, but there were no reports of disease. In the NT, viral activity was widespread with evidence of transmission detected in all sentinel herds. In Queensland, viral activity in coastal areas was detected by sentinel monitoring. In NSW, poor seasonal conditions have probably limited the spread of BEF virus so far this year. Absence of disease reports is expected, as early and repeated exposure of herds to the virus in the north-east corner of the state should result in high levels of immunity and resistance to disease.

INSECT TRAPPING

In Western Australia, 14 species of *Culicoides* were collected, but numbers of all species were low and no exotic species were detected. In the northern part of the Northern Territory, all four species of *Culicoides* regarded as BTV vectors in Australia (*C. brevitarsis*, *C. fulvus*, *C. actoni*, *C. wadai*) were trapped, and *C. brevitarsis* was collected for the first time in the southern Barkly Tablelands, outside its normal range. In Queensland, all vector species remained within historical limits, with only *C. brevitarsis* being widespread. *Culicoides actoni* was not detected, although *C. wadai* was collected at a single site on the far north-east coast. Despite severe drought conditions until early 2003 in NSW and an abnormally cold winter, movement and numbers of *C. brevitarsis* were consistent with previous years, with activity ceasing in June. An exception was the detection of relatively large numbers on the south coast at Berry and Nowra from early January, which is earlier than expected. This finding is consistent with the detection of Akabane virus in this area. This vector was not found west of the Great Dividing Range. *Culicoides wadai* was detected on the far north coast late in the season.

Contributed by: Chris Baldock, National Technical Coordinator, Animal Health Australia's Animal Disease Surveillance Program

BSE in Canada — Australia's response

On 20 May 2003, Canadian authorities announced a case of bovine spongiform encephalopathy (BSE) in a cow. Australia's established BSE-related import policies were subsequently applied to bovine animals and their inedible products of Canadian origin. The 16 Canadian cattle imported since 1996 that remain alive have been placed in lifetime quarantine. Another five such cattle had already been slaughtered, but none showed any signs of BSE. Live cattle and 'risk' products can no longer be imported from Canada. The Australian Pesticides and Veterinary Medicines Authority has performed risk assessments of Canadian bovine material that was previously incorporated in veterinary therapeutics or vaccines, and no product recalls have been necessary. Australian authorities will continue to cooperate on these risk management approaches and keep them under review in light of international and domestic developments. Full details of the Canadian incident and response are available on the internet (www.inspection.gc.ca/english/anima/heasan/disemala/bseesb/bseesbindexe.shtml).

Contributed by: Reg Butler, OCVO, DAFF

Johne's disease in deer

There are currently 11 red deer herds classified as infected with Johne's disease (JD). All infections are with cattle-type *Mycobacterium paratuberculosis*.

Eight of the herds are in Victoria where the disease was first detected. Testing is being conducted in some herds using faecal culture and an enzyme-linked immunosorbent assay (ELISA) that is under evaluation. In one herd that had significant clinical disease in young deer, changing feeding practices to reduce the risk of ingesting feed contaminated by faeces has all but eliminated clinical disease.

In South Australia, there are two confirmed infected red deer herds. A large number of movements from them are being traced. A new infected red deer herd was confirmed in New South Wales in late 2002.

In Queensland, the one infected herd has progressed to Restricted (RD1) status after a negative herd test based on slaughter results and individual and pooled faecal cultures. There has been no evidence of clinical disease in the herd and the most recent evidence of infection was found in a mediastinal lymph node of an animal slaughtered two years ago.

In Western Australia, a two-year investigation into a trace from a Victorian herd in 2000 has resolved suspicion of infection. This herd, and four others, had also received introductions from the same Victorian source 10 to 15 years ago. These herds have either been disbanded, or 'sample tested' negative by individual or pooled (10:1) faecal culture. There are fewer than 100 deer herds in Western Australia, about 40 to 60 of which are commercial. Twelve herds imported deer from New Zealand (most recently in 1990) and/or from Victoria (with the last consignment, apart from the one referred to above, in 1997). Of these 12 herds, those still operating have been surveyed. A traceback investigation from an infected South Australian herd led to a Western Australian herd that has since dispersed. However, further tracing and testing of two Western Australian herds that purchased these deer has found no evidence of JD. Western Australia is considering the development of a case for Free Zone status for JD in deer.

JD has not been reported in deer in Tasmania, where there are about 130 herds of fallow deer and no red deer. These fallow deer herds are licensed by the national parks and wildlife service and are mainly located in areas away from the main dairying districts.

Animal Health Australia and the deer industry are developing a market assurance program (DeerMAP) to identify herds with an assessed low risk of being infected with JD. Financial support for the development of a validated diagnostic test for JD in deer (an integral component of DeerMAP) was provided by the Rural Industries Research and Development Corporation (RIRDC).

Contributed by: David Kennedy, Animal Health Australia's Johne's Disease Coordinator

Australian Wildlife Health Network

The Australian Wildlife Health Network is interested in receiving reports of wildlife incidents, and definitive diagnoses of causes of death, in wildlife in Australia. The Network appreciates and acknowledges the contributions from organisations and individuals that form the basis of this report.

At the direction of Animal Health Committee, a meeting was convened at the Australian Animal Health Laboratory at Geelong to begin developing a protocol for handling wildlife samples. The draft protocol includes criteria for wildlife disease investigation by the States and Territories and is based on those currently used by the Regional Veterinary Laboratories for submission of livestock samples. It will be reviewed by Animal Health Committee at its next meeting in October.

The Network is currently examining strategies for targeted surveillance of wildlife for West Nile virus. It has also offered assistance to Environment Australia with surveillance and documentation of areas infected with the highly virulent chytrid fungus, which has been associated with declines in amphibian populations in eastern Australia, Western Australia, New Zealand, the United States, Panama, Ecuador, Venezuela and Spain. The extinction of at least one Australian species of frog, *Taudactylus acutirostris*, has been attributed to this fungus, and chytridiomycosis is the first disease of amphibians to be listed by OIE.

FREE-RANGING WILDLIFE

Mortalities of an estimated minimum of 120 psittacine birds over a four-week period in March–April centred around Goulburn and Grabben Gullen (50 km south-west of Goulburn) in New South Wales. Most of the parrots were young galahs (*Cacatua roseicepilla*). *Chlamydophila psittaci* was confirmed in three of four birds examined, and avian chlamydophilosis (also known as psittacosis, parrot fever, chlamydiosis, or ornithosis) was diagnosed. Drought, lack of food, and general debility were thought to contribute to the expression of disease.

A second event involving the death of 12 galahs was reported from Venus Bay, Victoria. The cause of death is unknown. However, the syndrome appears to be similar to spironucleosis (*Spironucleus*-like protozoa, formerly *Hexamita* spp.), previously reported to be responsible for the deaths of wild king parrots (*Alisterus scapularis*). Investigations are continuing.

CAPTIVE WILDLIFE

Two separate incidents of chemical intoxication with chlorpyrifos-methyl, involving an estimated total of 200 rock pigeons (*Columa livia*), were reported at Owanyilla, Queensland, in late June. Most of the birds were males. It is suspected that they had been bred for eating, then poisoned and dumped when they became too big.

Investigations into the protozoal dermatitis consistent in morphology with *Leishmania* spp. in captive Red Kangaroos (*Macropus rufus*) from the Northern Territory are continuing (*AHSQ* Vol. 7, No. 4). Five additional animals with suspicious lesions have been sampled. As well as PCR, histopathology and serology, attempts are being made to grow the organism in culture to enable its speciation.

Three isolations of *Salmonella* species, in mixed cultures with other Gram-negative bacteria, have been reported from the Northern Territory in hatchling farmed crocodiles (*Crocodylus porosus*) with septicaemia: *S.* Typhimurium, *S.* Johannesburg and *S.* Ball.

Salmonella IV 43:z4,z23:- (formerly Houten) was isolated from the liver and epicardium of a young, captive black-headed python (*Aspidites melanocephalus*) that died in excellent body condition after a short illness in the Northern Territory. Abscesses were present in the stomach wall. There was endocarditis, and widespread thrombosis, all associated with large numbers of Gram-negative bacteria.

Australian bat lyssavirus (ABL) was isolated from two of 65 captive grey-headed flying-foxes (*Pteropus policephalus*) in May. The group was established as part of a relocation program at Ivanhoe (Melbourne) on 29 January 2003 from animals captured at the botanical gardens (about 8 km away). Both affected animals were sub-adult females. They showed behavioural changes, aggression towards cage-mates, and frequent urination on themselves. In one case, there was frequent wing-stretching and wrapping. Both animals were euthanised. Intraneuronal eosinophilic inclusions and subtle inflammatory changes were observed in the brain of one individual. There were no significant gross or histopathological findings in the other. Both were positive by immunohistochemistry for the presence of ABL antigen. A release strategy for the remaining animals in the group has yet to be finalised. However, release is likely to occur later in the year.

Contributed by: Chris Bunn, OCVO, DAFF, and Rupert Woods, Australian Wildlife Health Network Coordinator

Aquatic animal health

NSW SIMULATION EXERCISE

New South Wales Fisheries participated in Exercise Kilpatrick (30 April–1 May) to examine how effectively a disease outbreak in the Sydney rock oyster industry could be managed. The exercise provided information allowing better response to emergencies involving aquatic disease, and highlighted the problems associated with disease control in an industry where farmed stock exists close to wild stock and where movement of water-borne pathogens cannot be prevented.

STANDARD DIAGNOSTIC PROCEDURES

The program to expand the available range of Australian and New Zealand Standard Diagnostic Procedures (ANZSDPs) continues. Production of a comprehensive range of procedures covering the diagnosis of all common diseases of aquatic animals will take several years. The two latest ANZSDPs completed are those for white spot disease of crustaceans and for infectious salmon anaemia. Ten ANZSDPs are now available on the aquatic animal health website (www.affa.gov.au/aquaticanimal health: follow the AQUAPLAN link to the heading Standard Diagnostic Techniques).

INTERNATIONAL SYMPOSIUM

The 3rd International Symposium on Fish Vaccinology was held in April in Bergen, Norway. The aim of the symposium was to report on the scientific progress in veterinary immunoprophylaxis, disease control and general biomedical and life science with particular reference to fish. The symposium attracted 91 presenters and over 200 participants from many countries. The speakers reviewed the recent progress in fish vaccinology, including new adjuvants, formulation technologies and delivery methods, and discussed the perspectives of disease control for the future. The programme also included recent developments including DNA vaccination and recombinant vaccine technologies.

NEWS FROM THE OIE

Dr Eva-Maria Bernoth of the Australian Government Department of Agriculture, Fisheries and Forestry was elected President of the Aquatic Animal Health Standards Commission at the May 2003 General Session of the OIE. At this meeting, the OIE International Committee adopted the new criteria for listing an aquatic animal disease. There is now a single list of 'OIE-listed' aquatic animal diseases, encompassing all diseases previously listed as 'notifiable' or 'other significant'. The currently listed diseases were assessed against the new criteria, and several deletions will be proposed. In addition, the OIE International Committee adopted a new chapter on 'Requirements for surveillance for international recognition of freedom from infection'. This chapter is based on the principles provided in the Terrestrial Animal Health Code. The format and content of individual disease chapters in the Aquatic Code will need substantial amendment to take into account these new requirements. This was noted at the meeting of the OIE Aquatic Animal Health Standards Commission (AAHSC) held in Paris, France (23–27 June). Draft chapters for listed diseases will be prepared by the AAHSC and submitted for adoption by the OIE International Committee in May 2004. It was also determined at the AAHSC meeting that aquatic animal diseases will be included as a technical item at the November 2003 Conference of the OIE Regional Commission for Asia, the Far East and Oceania.

NATIONAL AQUATIC ANIMAL HEALTH TECHNICAL WORKING GROUP

The annual National Aquatic Animal Health Technical Working Group (NAAH TWG) Workshop was held from 2 to 5 June at Murdoch University in Perth. A range of national issues was discussed and resolutions passed, and forward actions were identified.

The NAAH TWG participants reviewed the changes to the OIE lists of aquatic animal diseases and endorsed to adopt for the National List of Reportable Disease of Aquatic Animals the re-naming of all mollusc diseases listed in the OIE Aquatic Animal Health Code, as well as the addition of European sheatfish virus and European catfish virus as causative agents of epizootic haematopoietic necrosis. NAAH TWG also noted the Network of Aquaculture Centres in Asia–Pacific's summary report and disease information (including case definition) for 'koi mass mortality' and endorsed the listing of this disease on the National List. NAAH TWG did not endorse the addition of the mollusc pathogen *Marteilioides chungmuensis*, grouper iridoviral disease, and epitheliocystis at this time, but will give the matter renewed consideration once summary descriptions — in particular case definitions — are received from the Network of Aquaculture Centres in Asia–Pacific, the organisation proposing the addition of these diseases for regional reporting purposes.

The NAAH TWG participants endorsed the development of a database for recording diagnostic capability and capacity of Australian laboratories for diseases of aquatic animals, thus identifying potential 'centres of excellence' as well as identifying gaps in Australia's diagnostic capability. NAAH TWG suggested that a delegate of the Australian Animal

Health Laboratory make a presentation to the Aquatic Animal Health Committee to demonstrate the potential benefits of the laboratory as a biosecurity centre within this network.

Noting the expiry of the Fisheries Research and Development Corporation's Aquatic Animal Health Subprogram on 30 June 2004, NAAH TWG participants strongly supported the submission of an application for a new subprogram, emphasising the need for continued national health networking and strategic advice.

Expressing concern about the perceived risk of spread of disease from ornamental fish imports, NAAH TWG participants agreed to request the Aquatic Animal Health Committee to endorse the establishment of a working group of State/Territory governments, Biosecurity Australia, AQIS and industry representatives, to analyse the issues and develop recommendations on management of ornamental finfish health in Australia.

Translocation of live animals used in aquaculture is an activity that poses the risk of transmitting disease. NAAH TWG agreed that there is a need for translocation policies that are consistent across jurisdictions and with international obligations. Given a recent query regarding the translocation of live abalone across State borders, affected States agreed to develop such a policy in consultation with Biosecurity Australia. Similarly, there is a need for such consistent guidelines for the use of aquaculture product as bait.

The draft revised Australian Aquatic Animal Disease Identification Field Guide was noted, and several suggestions were made regarding its user-friendliness as a CD-ROM publication. NAAH TWG members will continue to provide comments on format and contents throughout the revision process.

The current response to fish kill incidents differs among States and Territories. Although this may not be an area for urgent harmonisation, NAAH TWG agreed that each jurisdiction's fish kill response procedures and kits should be documented to serve as guidelines. NAAH TWG also suggested that a new section on 'number of fish kills investigated' be added to the Quarterly Aquatic Animal Disease reporting form to improve interstate awareness of such events among disease personnel.

Contributed by: Iain East, OCVO, DAFF

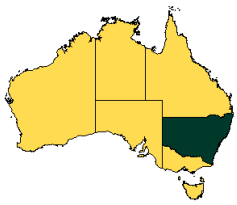
Disease Watch Hotline — 1800 675 888

The Disease Watch Hotline is a toll-free telephone number that connects callers to the relevant State or Territory officer to report concerns about potential exotic or other emergency disease situations. Anyone suspecting an exotic disease outbreak should use this number to get immediate advice and assistance.

For information about the Disease Watch Hotline, contact Jamie Penrose, Animal Health Australia.

State and Territory reports

New South Wales



Contributed by:
Barbara Moloney
NSW Agriculture

ANTHRAX

Two anthrax incidents occurred during the quarter. In both cases, the properties were quarantined, carcases burnt, and in-contact animals vaccinated. The first incident occurred in sheep on a Condobolin property that had a previous history of anthrax. Laboratory investigation confirmed anthrax as the cause of death of eight of 1050 sheep during the month of March. The second incident occurred in cattle on a Hillston district property where six out of 332 died. This property did not have a history of anthrax. However, anthrax had been confirmed on a neighbouring property approximately 18 years previously.

Anthrax was excluded as the cause of death for 11 other investigations during the quarter involving cattle (8) and sheep (3). Alternative diagnoses included nitrate poisoning and lead poisoning.

AUSTRALIAN BAT LYSSAVIRUS EXCLUSIONS

Three investigations for Australian bat lyssavirus (ABL) were conducted during the quarter. Two of these involved human exposure, all involved grey-headed flying-foxes, and all were negative for ABL.

BRUCELLA ABORTUS EXCLUSION

One animal out of a consignment of 437 head of dairy cattle headed for Vietnam from Queensland (but originating in NSW) gave a positive result (64) on the *B. abortus* complement fixation test. Follow-up testing of the original sample was negative on ELISA and rose bengal plate tests, but positive on serum agglutination test. Post mortem examination of the reactor was conducted by Queensland Department of Primary Industries, and no gross abnormalities were detected. Lymph nodes and other tissues were negative on culture for *B. abortus*.

AVIAN CHLAMYDOPHILOSIS (PSITTACOSIS)

A cockatoo with muscle wastage and diarrhoea from Blue Mountains district (where a human outbreak of psittacosis occurred in 2002) had gross lesions consistent with avian chlamydophilosis, and immunofluorescent antibody testing of spleen tissue was positive. Psittacosis also was diagnosed in crimson rosellas, in pigeons with coccidiosis as a subclinical problem, and in galahs from Goulbourn and surrounds (see Australian Wildlife Health Network report).

MYCOBACTERIUM AVIUM

Avian tuberculosis was confirmed on histological examination in backyard poultry from the Narrandera district. Considerable losses occurred in younger birds. Granulomas were grossly visible in multiple organs.

Lymph node lesions were detected at slaughter in one of 50 pigs at a northern NSW abattoir. Histopathology and microbiology confirmed *M. avium* as the cause.

DROUGHT-RELATED LOSSES

Drought continued to cause problems in many areas. Mortalities have occurred in cattle due to chronic grain overload-related development of rumen and liver abscesses, nitrate poisoning, and rock fern poisoning (weaners). In sheep, mortalities due to urea toxicity and phalaris 'sudden death' have been reported.

Northern Territory

Contributed by:
Diana Pinch
DBIRD

BOVINE EPHEMERAL FEVER

Eleven aged breeder cows died during mustering and drafting in April at a station in the Tennant Creek region. They showed a stiff gait and paresis, and went down in sternal recumbency. Initially, they drooled and were breathing heavily, then suffered progressive depression, with lateral recumbency, proceeding to death within 24 to 36 hours. Post mortem examination and laboratory testing showed a ketotic hepatopathy with secondary acute pneumonia. Bovine ephemeral fever (BEF) virus is the likely cause, as at least 12 cows with similar signs recovered when left undisturbed. BEF virus is known to be present in the area, as steers from a neighbouring station had been tested the previous month via reverse transcriptase-polymerase chain reaction (RT-PCR) test, with positive results.

TETANUS

Fourteen weaner steers were reported dead at a station in the Katherine region within two weeks of dehorning, castration, branding and vaccinating. One sick animal showed classical signs of tetanus, with rigid legs and neck, sawhorse stance, raised tail, grinding teeth, locked jaw and salivation. Equipment used was not

kept in hygienic conditions. The plan is to vaccinate two weeks before marking at the next round of mustering, and improve hygiene. A further 13 steers have died since the investigation.

BOVINE VIRAL DIARRHOEA

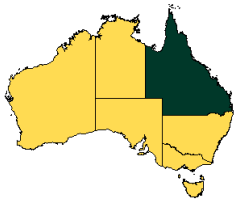
An 18-month-old buffalo on a research farm near Darwin was identified as a persistently-infected carrier of bovine viral diarrhoea virus. It had not been doing well for several months, was in poor body condition, and had pasty faeces. The cusps of the cheek teeth were irregular and sharp, and a generalised lymphadenopathy was present.

SCREW-WORM FLY EXCLUSION

There were two submissions in which screw-worm fly was excluded. In the first case, maggots were removed from a dog at a community south of Alice Springs. They were identified as larvae of the sheep blowfly, most closely resembling *Lucilia sericata*. The second case involved a calf bitten by a dingo. The maggots removed from the wound were identified as larvae of the steelblue blowfly, most closely resembling *Chrysomya saffranea*.

Queensland

Contributed by:
Janet Berry
QDPI



UNUSUAL MYCOBACTERIUM ISOLATED

As part of the Tuberculosis Freedom Assurance Program, an investigation was initiated by the submission of a pyogranuloma of the mediastinal lymph node in a steer from a Theodore property. The steer was in good condition but the carcase was condemned due to a neoplastic condition. A mycobacterium was isolated from the granuloma and identified at Oonoonba Veterinary Laboratory by 16S DNA sequencing and restriction enzyme profile. It was forwarded to the Mycobacterium Reference Laboratory at Prince Charles Hospital, Brisbane, for confirmation. The isolate was confirmed by biochemical profile as *Mycobacterium asiaticum*. This is an atypical mycobacterium of low pathogenicity. It has been isolated from humans in Australia. However, this may be the first recorded identification from cattle.

HAEMONCHOSIS IN GOATS

Haemonchosis was responsible for the deaths of 10 yearling goats out of a flock of 500 at Hervey Bay in early April. Affected goats were recumbent, cyanotic and twitching before death. Haematology revealed a reduced haemoglobin level, low packed cell volume, anaemia and marked leucocytosis. The histological findings in the tissues examined were consistent with severe anaemia, hypoxia and hypoproteinaemia. Haemonchosis was also considered responsible for deaths of goats investigated on animal welfare grounds in Laidley Shire in late June. A male goat with intermittent diarrhoea, anaemia, and poor body condition examined near Fernvale in mid-June had a faecal egg count of 12700 eggs per gram (e.p.g.). On larval culture, 60% were *Trichostrongylus* spp. and 40% *Haemonchus* spp. *Haemonchus contortus* was isolated from a seven-month-old goat, one of a mob of 35 affected goats at a Townsville farm. They were in fair condition, had accumulation of oedematous fluid in the submandibular space, and were severely anaemic. At post mortem examination, there were significant numbers of *Strongylus* spp. in the abomasum. A faecal sample showed 41920 e.p.g.

SMALL PREMATURE LITTERS IN PIGS

Reports of small early litters in a 35-sow piggery in north Queensland were investigated. The sows were free range and fed vegetable wastes (pumpkin, potato, lettuce and tomatoes). Some litters died due to mismothering or sows that had no milk. Autopsies on four piglets showed ventral oedema and moderate to severe hydropericardium. Histology revealed no pathological changes in the tissues, and serological tests for porcine parvovirus were negative. Follow-up phone calls indicated no further losses and it is considered that the problem was due to hot sunny weather and temporary lack of access to billabong water for cooling.

BRACKEN AND MULGA FERN POISONING

Acute ptaquiloside poisoning associated with bracken or mulga fern ingestion was suspected as the cause of death of cattle on five properties in southern Queensland during April and May. Animals were of mixed ages. Clinical signs were fever, swelling of the lower head and neck, mucoid nasal and oral discharge (sometimes tinged with blood), diarrhoea (again sometimes bloody) and straining, and some evidence of mucosal haemorrhages. Haematology of most animals showed severe leucopaenia and thrombocytopaenia, with occasional pancytopaenia. Bone marrow, where supplied, was hypoplastic. Bacterial infarcts and haemorrhagic lesions were present in tissue sections. Diagnosis was confirmed by identification of plant material in the rumen or suspected, due to history of access to potentially toxic plants.

FOWL CHOLERA

Fowl cholera continued to cause problems with increased mortality rates in some free-range layer flocks. In one flock, an increase in mortalities was associated with a drop in egg production, mild respiratory signs and an increase in cannibalism. In

addition to chronic peritonitis yielding a pure culture of *Pasteurella multocida*, birds also had a subacute rhinotracheitis and *Mycoplasma gallisepticum* was isolated from swabs.

FLUOROSIS

Three-year-old Santa Gertrudis cows showed generalised lameness on a property near Longreach in western Queensland. The cattle were drinking bore-water, and there was a history of fluoride toxicity on the property. Urine samples and horn samples from affected cattle had high fluoride contents. Samples of water had fluoride levels of 18 mg/L, a level that is hazardous to stock. Interestingly, specimens of teeth from cattle on the property had normal fluoride levels.

SALT POISONING

Five-year-old Merino wethers were reported as dying on a property near Blackall after walking about 7–9 km for shearing. After reaching the yards and drinking very salty bore-water, the affected sheep showed incoordination and recumbency before dying. Samples from one sheep showed moderate hypocalcaemia, marginal hypomagnesaemia, marginal hypoalbuminaemia and muscle damage. Arsenic and lead were not detected in kidney samples. Serum sodium was high, and salt poisoning was suspected.

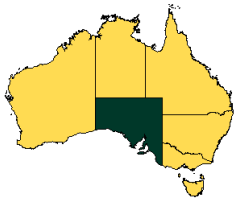
NITRATE POISONING

Nitrate poisoning caused the deaths of six yearling steers held at Murgon for tick clearance in late March. Aqueous humour contained 100 mg/L of nitrate, and hay fed to the cattle contained 6.5% potassium nitrate on a dry matter basis. In addition, *Clostridium botulinum* toxin in spleen samples was identified by ELISA. Nitrate poisoning was also suspected to be responsible for the deaths of five cattle held before slaughter at a Brisbane Valley abattoir in mid-April. Ryegrass hay samples had 3.6% potassium nitrate on a dry matter basis. Nitrate poisoning caused the loss of four weaner heifers held in stockyards and fed sorghum hay near Kilcoy in late April. Abomasal contents contained up to 500 mg/L nitrate, aqueous humour 200 mg/L nitrate, and hay up to 4.8% potassium nitrate on a dry matter basis. Nitrate poisoning caused the sudden deaths of four dairy cows grazing pasture containing 4.8% potassium nitrate on a dry matter basis at Kilcoy in mid-May. Another dairy cow died at Laidley in late May from nitrate poisoning.

NEOSPORA IN CATTLE

Neospora caninum was suspected as the cause of abortions and stillbirth in a group of 200 cows on a property in the Duaringa shire. Fourteen of 19 (74%) animals sampled were seropositive for *N. caninum*, an unusually high seroprevalence.

South Australia



Contributed by:
John Weaver
PIRSA

BOTULISM IN DAIRY CATTLE

Ingestion of botulinum toxin was suspected as the cause of death of 57 of 160 dairy cows on irrigated river flats near Murray Bridge. The feed had been changed to new silage and hay five days before the first case was seen. The deaths peaked about seven days after the first case. The major signs were varying degrees of flaccid paralysis, with many animals having a paralysed tongue. Feed analysis failed to detect the toxin. However, testing was limited to the two most common botulinum toxins.

PYRROLIZIDINE ALKALOID TOXICITY

Two cases of deaths in stock were seen in the Mallee country near Murray Bridge with evidence of involvement of pyrrolizidine alkaloid toxicity.

A group of 27 beef cows that had calved about five weeks previously was brought into a paddock with little grazing material and fed from two large round hay bales of mixed sorghum, paspalum and lucerne. Two days later, 12 were found dead. There were no obvious lesions at post mortem examination, but liver histology was suggestive of pyrrolizidine toxicity. However, it was considered unlikely that this caused the deaths. The hay appeared free of the usual plant sources of pyrrolizidine alkaloids. Nevertheless, potato weed (heliotrope) was known to have germinated following recent rainfall and the animals may have had access to this before their introduction to the paddock. Although the animals were not vaccinated against clostridial diseases, *C. perfringens* toxin was not detected.

On the second property, 26 out of 250 sheep were found dead. The owner reported the flock had been poor for some time. Deaths had occurred intermittently; some animals appeared to be blind, and many were jaundiced. The liver was enlarged, nodular and friable. Histological changes in the liver were consistent with exposure to a pyrrolizidine alkaloid. Again, potato weed was present.

MYOPATHY IN TURKEYS

A 12-week-old turkey flock had a rising mortality rate in male birds. Males and females were housed in the same shed, fed the same feed and water, but were separated by a fence. Affected birds had leg weakness that ranged from a trembling stance to paresis with wing-walking. Deaths were from injuries resulting from attacks by other birds. Petechiation in the gracilis muscle was the only gross lesion seen on post mortem

examination, and an acute myopathy in these (but not other) muscles was shown by histopathology. Ionophore coccidiostats produce a similar lesion, but were not found in the feed. There was a temporary response to vitamin E supplementation in the water, but the syndrome continued intermittently until slaughter age. This syndrome has occurred sporadically in turkey flocks for several years but a specific cause is yet to be determined.

FUNGAL DERMATITIS ON A HOBBY FARM

Severe skin problems presenting as lumps and sores in horses, goats, cattle and humans were investigated. Horses were the most severely affected, suffering severe weight loss. One horse died. Examination of the affected animals revealed raised skin lesions covered by a flaky cream scab up to 10 cm in diameter. The owner had treated the lumps with an undiluted household cleaner. The grazing paddocks were bare of grass. A fungus (*Microsporum* spp.) was isolated from material collected. The fungus is the likely cause of the skin lesions which were probably exacerbated by inadequate nutrition and application of the cleaning product. The deaths of the horse and a calf were attributed to poor nutrition.

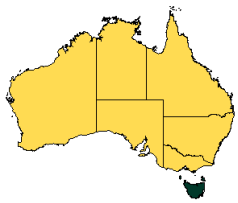
PHOSPHORUS DEFICIENCY IN CATTLE

Five cows with stiff-legged gait and arched backs were chewing sticks and bones. Blood analyses revealed normal levels of copper, cobalt and selenium, but phosphorus levels ranging from 0.5 to 1.2 mmol/L (normal range: 1.4–2.8). Phosphorus deficiency was diagnosed, and supplementation commenced with a dicalcium phosphate salt mixture.

ACTINOMYCES PYOGENES IN BEEF CATTLE

An investigation was conducted on a property where cattle had an extremely high prevalence of lumps and abscesses in the submandibular area. Three affected groups — approximately 70 animals from a breeding herd of 300 — were examined. The prevalence of lumps ranged from 25% to 72%. The older age groups were more severely affected. A number of cattle had active lesions suitable for sampling. All lesions were in soft tissue and did not involve bone. Submandibular oedema also was observed, both alone and in conjunction with other lesions. *Actinomyces pyogenes* was cultured from all samples submitted. Laboratory results indicated a marginal to severe copper deficiency. Cobalt and selenium levels were considered normal. Pestivirus serology was negative. Almost half of the tested animals had pepsinogen levels suggestive of *Ostertagia* infection, which may explain the submandibular oedema. Copper supplementation and a worm control program were recommended.

Tasmania



Contributed by:
John Elliott
DPIWE, Tasmania

NEWCASTLE DISEASE TITRE IN SHY ALBATROSS

An investigation into ongoing shy albatross chick mortalities was conducted in late 2002 during a visit to the colony on Albatross Island off the north-west tip of Tasmania. One of 37 serum samples had a haemagglutination inhibition titre of more than 1/80 to Newcastle disease virus, but no virus was isolated.

EFFECTS OF EXPOSURE TO SNAKE VENOM

A 2.5-year-old sheep that was injected with snake venom for biopharmaceutical production had a relatively sudden onset of signs that included hyperreflexia, knuckling and ataxia. Spinal cord sections showed a chronic loss of neurones from the dorsal horn of the spinal grey matter. There was no evidence of inflammation or malacia. The dorsal horn neurones are mostly sensory and a deficit in this region is consistent with the clinical signs observed. Many snake venoms are neurotoxic. Long-term exposure to snake venom may have been responsible for the neuronal loss in this sheep.

EXCLUSION OF RABBIT CALICIVIRAL INFECTION IN A PADEMELON

A hand-raised pademelon (*Thylogale billardierii*) died after a three-day illness in which it was lethargic, depressed, then unable to stand. On post mortem examination, the lungs were mottled but other major organs were grossly normal. Microscopically, there were some signs of an acute exudative pneumonia and lymphoid necrosis in the spleen. These changes are not typical of any known disease of pademelons. The clinical and pathological signs are similar to those of caliciviral infection in rabbits. This is unlikely in a marsupial. However, serological testing was undertaken, with negative results.

SUDDEN DEATHS IN PIGLETS

In one week, six unweaned piglets from three litters in a 50-sow herd died one to two days after onset of diarrhoea. Post mortem examination showed blood-tinged diarrhoea, some pulmonary oedema, and hyperaemic skin. The gut was hyperaemic but no signs of enteritis or colitis were observed. There were abundant bacteria adhering to the mucosa throughout the gut, and *Escherichia coli* with K88 adherence antigen was cultured.

PNEUMONIA IN WEANER CATTLE

Fifteen of a group of 250 weaner calves had become ill, and three died, since purchase about four weeks previously. Signs included fever, coughing and depression. Post mortem examination of two animals showed pleuropneumonia. An acute suppurative bronchopneumonia was apparent microscopically, and a heavy growth of *Pasteurella haemolytica* was cultured.

LABORATORY ACCESSIONS AND NOTIFIABLE DISEASES

During the quarter, there were 118 aquaculture accessions, 554 livestock accessions, 30 companion animal accessions, 50 wildlife accessions and 23 accessions from other sources.

The following investigations into possible cases of notifiable diseases were undertaken during the quarter.

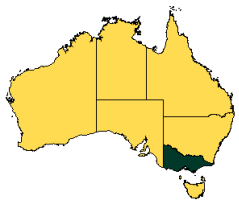
Disease	Investigations	
	+ve	No.
American foulbrood	1	1
Anthrax	0	1
Avian psittacosis	2	6
Bovine tuberculosis (*M. bovis*)	0	8
Brucella abortus (bovine brucellosis)	0	13
Brucella ovis	0	20
Enzootic bovine leucosis	3	30
Clinical salmonellosis	0	2
Enzootic bovine leucosis	1	1
Hydatidosis	0	5
Johne's disease	11	83
Leptospira hardjo	4	12
Leptospira pomona	1	12
Listeria	3	3
Marine aeromonad disease	1	42
Negative fish bacteriology*	0	42
Negative fish virology+	0	1
Piscirickettsiosis	0	2
Pullorum disease (*S.* Pullorum)	0	1
Q fever	0	4
Salmonella abortus equi	0	1
Salmonella abortus ovis	0	3
Salmonella enteritidis	0	1
Transmissible spongiform encephalopathy	0	3
Shellfish diseases#	0	14
Verotoxic *E. coli*	0	40

* Bacterial kidney disease, furunculosis, goldfish ulcer disease, streptococcosis of salmonids

\+ Epizootic ulcerative syndrome, epizootic haematopoietic necrosis, infectious haematopoietic necrosis, infectious pancreatic necrosis, *Oncorhynchus masou* virus disease, spring viraemia of carp, viral encephalopathy and retinopathy, viral haemorrhagic septicaemia

\# Iridovirosis of shellfish, nocardiosis of shellfish, perkinsosis of shellfish

Victoria



Contributed by:
Tristan Jubb
DPI, Victoria

SALMONELLA DYSENTERY IN A DAIRY HERD

On a dairy farm near Colac in south-western Victoria, 30 of 200 lactating Friesian cows suddenly developed dysentery, fever and an overnight loss of milk production. Over the next week, another 20 cows became sick. All affected animals were separated and treated for salmonellosis; however, four animals died. *Salmonella* Typhimurium 170 was isolated from diarrhoeic faeces. The disease started the same day the milkers were fed a new batch of finely-milled triticale during morning milking. The grain was milled in a similar fashion to previous batches, all of which were from the same source. The milking herd was also intensively strip-grazing a fodder crop during the day and had been for several days before the outbreak. The source of the infection is as yet undetermined. The loss to the farmer was estimated to be more than $11000.

DIARRHOEA IN DAIRY CALVES

An outbreak of severe diarrhoea in dairy calves occurred in May and June on a property in north-eastern Victoria. Features of the outbreak were the young age of the calves (1 to 2 days old), the high incidence of clinical cases (about 70 of the 80 calves present became ill), and the high case fatality rate in untreated calves (15 died). The only pathogen identified in faecal samples was *Escherichia coli* K99. It is presumed that a highly virulent strain was introduced into an immunologically-naive herd that produced little protective antibody in the colostrum. The organism may have been spread by subclinically-affected cows. The cost of the outbreak to the farmer was estimated to be more than $4000.

SALMONELLA ABORTIONS IN CATTLE

An outbreak of diarrhoea and abortions occurred on a dairy farm in south Gippsland. Twenty-one dairy cows died and an additional fifty cows in the final six weeks of pregnancy aborted. Sera were negative for *Brucella abortus* antibodies. Culture of foetal stomach contents and faeces from affected adults yielded *Salmonella* Typhimurium. The cost of the outbreak to the farmer was estimated as exceeding $90000. The cows were grazing pasture and no grain was fed. The water source was town supply and no dams or low-lying wet areas were present. Only dry cows were affected. The dry cow group included animals recently purchased and introduced to the farm. None of the introduced cattle was affected, suggesting they may have been immune from previous exposure and included a carrier animal.

ACUTE BOVINE LIVER DISEASE IN CATTLE

Three outbreaks of acute bovine liver disease (ABLD) were reported in Victoria this quarter.

A dairy herd in west Gippsland was affected by ABLD in mid-April. Of the 69 adult cattle in the herd, 23 died quickly and six became severely debilitated and were culled. The cost of the outbreak was estimated to be more than $50000. This was the first report of the disease in this district.

In late May, ABLD killed two cows and caused severe photosensitisation in another 32 heifers and cows in a 270 cow dairy herd near Bairnsdale in east Gippsland. This herd suffered a similar episode in May 2002, when nine cows died and 21 others were severely photosensitised and subsequently culled. Also in late May, near Terang in western Victoria, two cows died and two were severely photosensitised in a group of 50 dry dairy cows.

Striking features of the post mortem examinations were the ecchymotic haemorrhages covering the serosal surfaces of the abdominal organs. The livers were grey and friable, and the walls of the gall bladders were markedly thickened. The abomasal mucosa was very red in some cases. In others, there were ecchymotic haemorrhages throughout the muscles. Microscopically, the livers showed marked necrosis and degeneration of hepatocytes in the periportal regions. In some cases there was extensive pooling of erythrocytes in necrotic periportal areas and oedema and mild mononuclear cell infiltration of portal triads with moderate diffuse cholangiole proliferation. In the Warragul outbreak, there was mild multifocal biliary hyperplasia, and hyperplasia of epithelial cells in bile ducts. Low spore counts of *Pithomyces chartarum* found in grazed paddocks may explain the biliary hyperplasia but the periportal necrosis is a typical feature of ABLD. The increase in liver enzymes with this disease is spectacular. One cow in the second outbreak sampled only hours before death had the following typical changes (μ/L, normal values in parentheses): glutamate dehydrogenase 184, (< 20), gammaglutamyltransferase 184 (< 36), aspartate aminotransferase 1234 (20–150), creatine phosphokinase 1327 (50–400), and lactate dehydrogenase 4615 (50–400).

ABLD has been recognised for more than two decades, but the aetiology remains unknown. Blue–green algal intoxication, facial eczema, mycotoxicoses from mouldy grain fed during milking, and *Myoporum* (Boobialla) poisoning have been ruled out as causes. Rough dogstail grass (*Cynosurus echinatus*) has been a consistent finding in previous outbreaks, and was present in the Bairnsdale and Warragul outbreaks, but absent from the Terang outbreak. A mycotoxicosis is suspected.

BOVINE RESPIRATORY DISEASE

Dusty environmental conditions probably contributed to the deaths from pneumonia of feedlot dairy cattle in northern Victoria. Lack of pasture due to the drought forced many dairy farmers to lot-feed their cows. In one herd, 70 of 200 cows had severe pneumonia, and seven died. In another herd of 150 cows, 11 were sick, and three died. Survivors showed seroconversion to a range of viruses, including infectious bovine rhinotracheitis, bovine viral diarrhoea virus, parainfluenza 3 virus, bovine respiratory syncytial virus, and adenovirus 3. Introduction of dust-prevention measures saw the cessation of problems.

NITRATE POISONING IN CATTLE

In northern Victoria, setbacks to nitrogen-fertilised pasture and crops caused by dry weather and frosts resulted in high losses in dairy cattle on many farms from nitrate poisoning. There were three incidents where more than 40 cattle died, and at least a dozen cases where more than five cattle died. In one case, 43 of 60 dairy heifers died after eating out a 0.5 ha holding paddock containing lush capeweed and marshmallow in the two hours before transport to an agistment property. Four of the 17 survivors aborted. Rapid treatment with methylene blue saved many cattle, but pregnant survivors often aborted. Risks were greatest on paddocks that could not be irrigated due to the drought and that had high nitrogen reserves. Oat crops and annual ryegrass were involved, as were weeds such as marshmallow and capeweed, which dominated pastures after natural rainfall. Marshmallow (*Malva parviflora*), not usually favoured by stock, became exceptionally lush and palatable. Many farmers tested crops and pastures before grazing, but faced serious difficulties if pastures were toxic, because few alternative sources of feed were available.

Deaths from grain poisoning, bloat (on subterranean clover), and calving difficulty in weak cows were also reported in dairying areas.

POOR PREGNANCY RATES IN DAIRY CATTLE

With much of Victoria's dairy industry badly affected by the drought, many herds were underfed. This caused very poor pregnancy rates in many herds. Farmers were often unaware of the extent of the problem as cows in poor condition failed to show detectable signs of oestrus after mating, and were assumed to be pregnant, although they had failed to conceive. Pregnancy testing in the autumn revealed pregnancy rates as low as 30%. This will have long-term consequences for farmers trying to rebuild herds after the drought.

ACORN POISONING IN CATTLE

A dairy farmer in western Victoria lost 12 yearling cattle in a herd of 30 from acorn poisoning in unusual circumstances. The cattle had been held for a week in two paddocks containing oak trees before being relocated to their home farm. One of the paddocks served as an oak tree windbreak for the property. Two days after returning home, the cattle began to sicken and die, with deaths continuing for four weeks. On post mortem examination, the remarkable features were the friable, dark grey–brown kidneys. The notable histological feature was a chronic fibrosing glomerulonephropathy, typical of acorn poisoning. The paddocks had been used in this manner for nearly 50 years, without problems. However, six weeks before this incident, a severe hailstorm had knocked huge amounts of acorns and leaves from the trees. The farmer reported the storm was severe enough to create a flood of acorns and a carpet of oak trash on the paddocks.

NEOSPORA ABORTION IN DAIRY HEIFERS

An abortion outbreak affected 14 heifers on a dairy farm near Swan Hill. Comparison of acute and convalescent sera from aborted heifers, and sera from healthy herd-mates, showed rising antibody titres for both pestivirus and *Neospora caninum* in affected cattle, and absence of titres in the healthy herd-mates. All samples were negative for *Brucella abortus*. Dams of aborted heifers were seronegative. It is possible that recent infection with pestivirus activated a latent neospora infection in the heifers. This is consistent with recent literature reports associating neospora abortion with infection with pestivirus.

PCR DETECTION OF PIG PATHOGENS

Various diagnostic polymerase chain reaction (PCR)-based tests are now available through the Department of Primary Industries' Pig Health and Research Unit at Bendigo. Tests for the detection of *Actinobacillus pleuropneumoniae* (porcine pleuropneumonia) and *Haemophilus parasuis* (Glasser's disease) can be performed on dry swabs of suspect tissue. This is of immense benefit in the case of the latter disease, as the organism is notoriously difficult to isolate. A multiplex PCR for faeces is also available for the detection of common enteric pathogens in faeces — namely *Brachyspira hyodysenteriae* (swine dysentery), *Brachyspira pilisicoli*, *Lawsonia intracellularis* (ileitis) and *Salmonella* species. A multiplex PCR is also available for *Escherichia coli* cultures to detect the common fimbrial and toxin types associated with these strains. These tests have proven valuable to practitioners needing to differentiate the causes of dysentery. The *E. coli* PCRs can also be used on cattle isolates. Often an unusual serotype of *E. coli* is isolated from a scouring calf. PCR can then be used to detect the presence of virulence factors to determine the significance of the isolates. (Contact Dr Ross Bowles on 03 5430 4433 for more information.)

SUSPECTED LISTERIOSIS IN DOGS AND SHEEP

Disease consistent with listerial infection was seen in north-central Victoria from November 2002 to May 2003. Onset of central nervous system (CNS) signs in a number of sheep was associated with feeding of silage from the face of a freshly-opened pit. Typical CNS signs of circling, unilateral blindness and partial facial paralysis were described, and results of histological examination were consistent with a diagnosis of listeriosis. Three weeks later, two dogs on a neighbouring property were presented to a veterinary clinic with similar CNS signs of drooping lips, drooling, unilateral circling, unilateral blindness, eyelid droop and depression. The owner noted that the dogs had 'gone visiting' the property where listeriosis had been diagnosed in the sheep, soon after that event. The dogs were treated with antibiotics (clindamycin for 10 days followed by doxycycline for 30 days) and recovered over several months. In April 2003, the property owner with the affected dogs reported an outbreak of abortions in ewes, and the birth of as many as 15 weak lambs, many of which died shortly after birth. No examinations were performed on the lambs as the carcases — including one on the back of a vehicle — were scavenged by the dogs. Although there is only indirect evidence of listeriosis in the first event, the timing of the canine outbreak, access to carcases, typical unilateral CNS signs, and response to antibiotic treatment make it highly likely that listerial infection was involved. The cause of the abortion storm is speculative, but consistent with listeriosis.

HYPOCALCAEMIA AND OTHER METABOLIC DISEASES IN SHEEP

With the return of normal seasonal conditions in central Victoria since April, there were numerous reports of onset of metabolic disease in sheep, typically those associated with hypocalcaemia. This pattern was predicted by anecdotal reference to what occurred during the recovery from the 1982 drought. Abundant growth of capeweed and grass in some areas was associated with hypocalcaemia, which was seen in both dry and lactating sheep. Several outbreaks were associated with grazing of soursob (*Oxalis* spp.). Nitrate poisoning has not been a significant issue with dryland grazing.

Pregnant ewes in a flock in north-western Victoria developed star-gazing, blindness, ataxia and abortion three days after walking five kilometres, and the changing of their ration to hay and urea. Histological

examination of brain, liver and other tissues from the ewes and foetuses excluded infectious causes and supported the diagnosis of pregnancy toxaemia.

UNUSUAL DEATHS IN SHEEP GRAZING CEREAL STUBBLES

On a property in western Victoria, sheep grazing a renovated swamp paddock have died each summer–autumn after showing staggers. Sheep were usually found dead, but some were observed to be normal, then stagger, collapse and die quickly. White muscle disease was suspected. However, autopsy findings have been unremarkable, and no abnormalities were noted in a wide range of tissues including heart, muscle, lung and brain submitted for histological examination. Blood samples had slightly elevated levels of creatine phosphokinase and lactate dehydrogenase, but levels of glutathione peroxidase were normal. The swamp had been used to graze sheep for more than 20 years without problems until it was ploughed and sown to oats or barley starting four years ago. Deaths tend to occur in sheep grazing the crop stubbles and cease when they are removed. A plant toxicity is suspected. The dominant weeds present include swamp isotome (*Isotoma fluvialis*) and soft broom (*Genista monspessulana*). There are anecdotal reports of both being toxic.

EQUINE INFECTIOUS ANAEMIA

A Queensland horse being transported to Korea was tested for equine infectious anaemia in Victoria. Following the detection of antibodies to the retrovirus in the blood, the owners elected to euthanise the animal. Mild hepatic haemosiderosis and mild chronic hepatitis consistent with infection with equine infectious anaemia virus were seen histologically.

DIFFERENT IRIDOVIRUSES KILLING REDFIN AND FARMED MURRAY COD?

High fingerling mortality rates occurred in wild redfin and farmed Murray cod this summer. Tissues from both species contained basophilic intracytoplasmic inclusions, and apoptotic cells and icosahedral virions morphologically consistent with an iridovirus were detected by electron microscopy. The relatively small redfin inclusions were labelled by a polyclonal antiserum to epizootic haematopoietic necrosis virus (EHNV). However, the consistently larger Murray cod inclusions were not. Other histological changes in the Murray cod were consistent with infection by a cell hypertrophy iridovirus rather than a ranaviral iridovirus such as EHNV.

MYCOBACTERIUM AVIUM IN RED-NECKED WALLABIES

In April, several red-necked wallabies were found sick or dead at a small fauna park. Post mortem examination of one wallaby found multiple creamy, green, pustular abscesses in the spleen, liver and mesenteric lymph nodes. Microscopically, acid-fast bacteria morphologically consistent with *Mycobacterium* spp. were located at the periphery of the abscesses in the liver, mesenteric lymph nodes and pancreas. *Mycobacterium avium* infection was confirmed using a multiplex polymerase chain reaction test on both splenic swabs and formalin-fixed tissue. Overcrowding, and heavy faecal contamination of the water source and grazing areas by wild ducks and domestic poultry, were likely predisposing factors.

Western Australia

Contributed by:
Richard Norris
Department of Agriculture – WA

HAEMOPHILUS SEPTICAEMIA

Haemophilus septicaemia was suspected as the cause of widespread illness and deaths in yearling cattle 20–60 days after entering a south-west feedlot. Respiratory and nervous signs were observed before death, and all animals autopsied had pneumonia, myositis and myocarditis. Antibiotic treatment of affected surviving animals was effective.

NEUROMUSCULAR DISEASE

A new familial neuromuscular disease was seen in Gelbvieh cattle. This condition, recently described in the scientific literature, seems to be specific to this Belgian breed. There are characteristic muscular, renal, vascular and neural lesions that cause clinical signs in animals between 4 and 20 months of age. The affected Western Australian cattle were 18 months of age when they developed weakness and were eventually unable to stand.

KIKUYU TOXICITY

Kikuyu toxicity was seen in cattle that had grazed lush, recently fertilised, kikuyu pastures on two properties in the south-west. Lesions consisted of severe rumenitis, omasitis and, in the heart of an animal from a property with a previous history of kikuyu poisoning, focal areas of acute myocardial necrosis. Cardiac lesions have only recently been recognised in kikuyu poisoning of cattle.

FACIAL ECZEMA

Facial eczema occurred in cows grazing irrigated pastures on which the *Pithomyces chartarum* spore count was very high, with some spore counts exceeding 400000 spores/gram of pasture. A sudden severe drop in milk production occurred, followed by

the development of photosensitivity. Approximately 300 cows in the herd of 750 had depressed milk production, and an additional 30 ceased production. Pasture fungicide application, the addition of zinc to the ration and moving cattle off severely affected pastures are recommended in outbreaks of facial eczema.

BRACKEN FERN POISONING

Bracken fern poisoning was seen in yearling cattle on agistment for five weeks. The animals, which were in poor condition, developed scouring, anaemia and staggering before death. There were haemorrhages throughout the carcase, and bacteria were observed in the lungs without an accompanying inflammatory reaction.

SALMONELLOSIS

An unusual outbreak of salmonellosis, characterised by a high mortality rate, was seen in neonatal calves. Affected animals were healthy at birth, suckled normally, then became sick and died within a week. Severe intestinal lesions were seen at autopsy and *Salmonella* Typhimurium was cultured from most organs. Some of the cows also were scouring, which may have contributed to the environmental contamination.

SEASONAL CONDITIONS IN SHEEP

Seasonal conditions were common in the late summer period, especially vitamin E deficiency myopathy, salmonellosis, grain poisoning, polioencephalomalacia, and lupinosis. Some myopathies may have persisted due to underdosing of affected mobs with vitamin E preparations. (Note: a dose of 2000 mg, *per os* or intramuscularly, per sheep, is recommended).

LISTERIAL ENCEPHALITIS

Listerial encephalitis was seen in ewes grazing short, but rapidly-growing, kikuyu pasture in the southern region. Six animals were ataxic, weak, disoriented, and eventually died. It was suggested that the ingestion of rotting vegetable matter on the soil surface may have been a contributing factor in the development of this condition.

INFECTIOUS LARYNGOTRACHEITIS

Infectious laryngotracheitis (ILT) was seen in red and white Sussex birds in Denmark. The lesions were extensive and highlighted the similarities between ILT and several of the exotic poultry diseases, in particular, avian influenza and Newcastle disease. Supplies of ILT vaccine, which were in short supply, have now been restored.

OSTRICH FADING SYNDROME

Ostrich fading syndrome, with typical lesions in the intestine, was seen in four-month-old chicks. The birds died after sudden onset of ill-thrift and one day of recumbency. This condition, still prevalent in Western Australian ostrich flocks, has an unknown aetiology.

SPINAL ATAXIA IN A HORSE

Severe poliomyelitis was seen in a two-year-old thoroughbred gelding with an acute onset of spinal ataxia. Non-suppurative inflammation was severe in the spinal cord and less severe lesions were present in the brain. The lesions were similar to those of West Nile Virus (WNV) encephalitis as seen in horses in the United States, however, tests at the Australian Animal Health Laboratory (Geelong) showed that no WNV antigen was present and no virus was isolated. Although several other viral tests also were negative, an Australian flavivirus remains a possible cause.

ULCERATIVE STOMATITIS IN MARES

An outbreak of ulcerative stomatitis in horses occurred in March and was noted in last quarter's *AHSQ* (Vol. 8, No. 1, p. 19). Further details are now provided.

The lesions were seen in mares stabled together on a farm in the southern region. The horses showed no signs of discomfort or fever despite several developing severe ulceration of the tongue and gums. Other horses (and all cattle) on the farm had no lesions. The exotic vesicular stomatitis virus was excluded from the differential diagnosis by testing at the Australian Animal Health Laboratory. The disease was similar to a condition known in New Zealand as Balclutha horse disease, for which an aetiology has not been established.

Quarterly Disease Statistics

Quarterly disease statistics — control activities

OVINE BRUCELLOSIS

Contagious epididymitis, caused by *Brucella ovis*, is present in commercial flocks at a low level that varies around the country. Voluntary accreditation programs (usually in stud flocks) for ovine brucellosis freedom are operating in all States. Table 1 shows the number of accredited flocks at the end of the quarter.

ENZOOTIC BOVINE LEUCOSIS

Enzootic bovine leucosis (EBL) accreditation programs have been operating in the dairy industries in Queensland and NSW for several years. Victoria, South Australia, Western Australia and Tasmania are undertaking a program of bulk milk testing of all dairy herds. Table 2 shows the number of dairy herds tested free of EBL at the end of the quarter.

TUBERCULOSIS

Australia was declared a Free Area for bovine tuberculosis (TB) on 31 December 1997. The National Granuloma Submission Program is the major surveillance tool for TB. Table 3 summarises results from the program.

JOHNE'S DISEASE

Johne's disease (JD) occurs primarily in dairy cattle and sheep in Australia and to a lesser extent in beef cattle, goats, deer and camelids. JD occurs in NSW, Victoria, Tasmania and South Australia. Surveillance programs have not identified endemic JD in Queensland, Western Australia and Northern Territory, and active measures are taken to stamp-out any incursions. Table 4 shows the number of herds and flocks known to be infected. A National Ovine Johne's Disease Control and Evaluation Program will be completed in 2004. A new National Strategic Plan for bovine JD has recently been endorsed. Market Assurance Programs (MAPs) are in operation for cattle, sheep, goats and alpaca, with the number of herds or flocks that have reached a status of Monitored Negative 1 (MN1) or higher shown in Table 5.

Information about components of the National JD Control Program can be obtained from State coordinators and Animal Health Australia's JD coordinator, David Kennedy 02 6365 6016. Lists of beef, dairy and alpaca herds and sheep flocks assessed in the Market Assurance Programs are available on the internet (at www.aahc.com.au/jdmap).

Table 1: Ovine brucellosis accredited-free flocks at 30 June 2003

NSW	NT	QLD	SA	TAS	VIC	WA	AUS
781	0	56	479	102	619	138	2175

Table 2: Dairy herds tested free of enzootic bovine leucosis at 30 June 2003

	NSW	NT	QLD	SA	TAS	VIC	WA	AUS
Free	1277	0	1093	536	605	6549	360	10 420
Herds	1280	0	1109	536	605	6597	360	10 487

Table 3: Results of the National Granuloma Submission Program

	Granulomas submitted	TB +ve
Apr – Jun 02	1441	0
Jul – Sep 02	1577	0
Oct – Dec 02	1373	0
Jan – Mar 03	870	0
Apr – Jun 03	1280	0
NSW	63	0
NT	0	0
QLD	962	0
SA	79	0
TAS	7	0
VIC	92	0
WA	77	0

Table 4: Herds/flocks with JD at 30 June 2003

	Cattle	Sheep	Goats	Deer	Alpaca	Total
NSW	136	1150	10	1	0	1297
NT	0	0	0	0	0	0
QLD	0	0	0	0	0	0
SA	50	55	6	2	0	113
TAS	20	40	6	0	0	66
VIC	1124	98	6	8	2	1238
WA	0	0	0	0	0	0
AUS	1330	1343	28	11	2	2714

Table 5: Herds/flocks with a JDMAP status of at least MN1/TN1 status at 30 Jun 2003

	Cattle	Sheep	Goat	Alpaca	Total
NSW	872	305	32	127	1336
NT#	0	0	0	0	0
QLD#	1	7	0	0	8
SA	271	245	20	37	573
TAS	106	35	1	1	143
VIC	367	154	6	37	564
WA#	0	0	0	0	0
AUS	1617	746	59	202	2624

#Herds/flocks in Free or Protected Zones are equivalent to status of MN1 or better because of the zone's status.

BOVINE BRUCELLOSIS

Although bovine brucellosis is now exotic to Australia, surveillance is maintained through abortion investigations and miscellaneous testing of cattle for export or other reasons. A total of 157 abortion investigations were performed during the reporting period — all with negative results for bovine brucellosis, as shown in Table 6.

Table 6: Surveillance for bovine brucellosis

	Abortion investigations		Test for other reasons	
	Tests	+ve	Tests	+ve
Apr – Jun 02	275	0	7082	0
Jul – Sep 02	182	0	2336	0
Oct – Dec 02	69	0	3617	0
Jan – Mar 03	183	0	5205	0
Apr – Jun 03	157	0	1728	0
NSW	3	0	35	0
NT	0	0	0	0
QLD	66	0	518	0
SA	1	0	84	0
TAS	5	0	4	0
VIC	18	0	216	0
WA	64	0	871	0

Quarterly disease statistics — laboratory testing

The results of serological testing for a range of viral diseases from routine laboratory submissions for the quarter are shown in Table 7.

Table 7: Serological testing from routine submissions to State and Territory laboratories

	Akabane		Bluetongue		Bovine ephemeral fever		Enzootic bovine leucosis		Equine infectious anaemia		Equine viral arteritis	
	Tests	+ve	Tests	+ve	Tests	+ve	Tests	+ve	Tests	+ve	Tests	+ve
Apr – Jun 02	14469	123	15133	594	2219	532	9918	5	920	5	473	2
Jul – Sep 02	12945	530	21762	264	1196	273	11428	7	1142	0	432	22
Oct – Dec 02	3222	358	12223	462	1754	243	8155	4	1127	1	417	12
Jan – Mar 03	5604	505	16018	406	1681	308	2277	4	686	3	353	11
Apr – Jun 03	6239	725	7045	487	1526	421	851	0	561	8	504	11
NSW	748	327	631	38	257	21	282	0	134	0	286	10
NT	556	240	1449	302	749	304	0	0	6	0	0	0
QLD	251	135	641	129	235	86	22	0	110	3	7	0
SA	239	0	557	0	1	0	165	0	6	0	0	0
TAS	51	0	1	0	0	0	4	0	0	0	0	0
VIC	219	0	286	0	161	0	372	0	250	0	159	1
WA	4175	23	3480	18	123	10	6	0	55	5	52	0

Quarterly disease statistics — surveillance activities

SALMONELLA SURVEILLANCE

The National Enteric Pathogen Surveillance Scheme (NEPSS) is operated and maintained on behalf of the Commonwealth and States/Territories by the Microbiological Diagnostic Unit at the University of Melbourne. Data on isolates of salmonellae and other pathogens are submitted to NEPSS from participating laboratories around Australia. Quarterly newsletters and annual reports of both human and non-human isolates are published, and detailed data searches are provided on request to NEPSS. Table 8 summarises *Salmonella* isolations from animals notified to NEPSS for the quarter.

Contact: National Enteric Pathogen Surveillance Scheme, Microbiological Diagnostic Unit, University of Melbourne

Table 8: Salmonella notifications, 1 April to 30 June 2003

Serovars	avian	bovine	canine	equine	feline	ovine	porcine	other	Total
S. Bovismorbificans	0	26	3	0	1	0	2	0	32
S. Dublin	0	29	1	0	0	1	0	0	31
S. Infantis	0	3	4	0	0	0	2	6	15
S. Typhimurium	0	70	7	6	1	1	1	10	96
Other	1	79	14	2	4	0	5	43	148
Total	1	207	29	8	6	2	10	59	322

ZOONOSES

The National Notifiable Diseases Surveillance System (NNDSS) of the Communicable Diseases Network Australia collects statistics about many human diseases. A summary of information about five important zoonoses is submitted to NAHIS each quarter (see Table 9).

Contact: Communicable Diseases Intelligence, Australian Government Department of Health and Ageing (Internet address: www.health.gov.au/pubhlth/cdi/cdihtml.htm)

Table 9: Notifications of zoonotic diseases in humans

Disease	Q2-02	Q3-02	Q4-02	Q1-03	Q2-03 AUST	Current quarter ACT	NSW	NT	QLD	SA	TAS	VIC	WA
Brucellosis#	6	11	11	5	8	0	0	0	6	0	0	2	0
Leptospirosis	55	17	25	33	46	0	9	1	33	0	0	2	1
Listeriosis	18	16	13	24	18	0	10	0	0	1	0	7	0
Ornithosis	52	97	33	27	31	0	14	0	0[nn]	0	0	16	1
Q fever	193	181	196	205	128	0	71	0	39	8	0	4	6

nn disease is not notifiable in these States

Brucella melitensis and *Brucella abortus* are exotic to Australia.

NATIONAL TSE SURVEILLANCE PROGRAM

The National Transmissible Spongiform Encephalopathies Surveillance Program (NTSESP) is an integrated national program jointly funded by industry and governments to demonstrate Australia's ongoing freedom from BSE and scrapie, and to provide early detection of these diseases should they occur. Table 10 summarises the activity of the program over the past five quarters. All specimens tested were negative for TSEs. Information about NTSESP is available on the internet (at www.aahc.com.au/surveillance/ntsesp).

Contact: Chris Baldock, Animal Health Australia's NTSESP National Coordinator

Table 10: Number of animals tested under NTSESP (All were negative for TSE)

	Apr – Jun 02		Jul – Sep 02		Oct – Dec 02		Jan – Mar 03		Apr – Jun 03	
	Cattle	Sheep	Cattle	Sheep	Cattle	Sheep	Cattle	Sheep	Cattle	Sheep
NSW	30	32	29	21	17	23	15	26	26	16
NT	8	0	10	0	6	0	1	0	5	0
QLD	41	8	43	16	71	31	38	4	46	8
SA	1	6	6	17	6	3	5	7	8	10
TAS	3	0	2	5	2	5	3	0	1	6
VIC	17	33	34	24	28	36	13	13	23	13
WA	7	40	5	28	9	36	7	35	1	14
AUS	107	119	129	111	139	134	82	85	110	67

PORTS SURVEILLANCE PROGRAM

Biosecurity Australia conducts the Ports Surveillance Program for *Culicoides*, screw-worm fly, exotic bees and bee mites. Seaports, particularly those servicing returning livestock vessels and those dealing with high risk deck cargo such as timber, mining equipment and containers, are considered to be high risk locations for incursions of such pests. The program increases the capacity to detect any incursions at an early stage, and this in turn increases the probability of a successful eradication program. The *Culicoides* surveillance also supports the livestock export trade by confirming the continuous or seasonal absence of *Culicoides* vectors at ports from which livestock are loaded. Table 11 shows the number of times that insect trap sites were inspected for the Port Surveillance Program — no exotic insects or mites were detected.

Contact: David Banks, Biosecurity Australia, DAFF

Table 11: Number of inspections of insect trap sites

	Apr – Jun 02	Jul – Sep 02	Oct – Dec 02	Jan – Mar 02	Apr – Jun 03
Port surveillance					
Asian bees	10	0	12	16	12
Bee mites	22	16	27	31	30
Culicoides	34	35	34	35	32
Screw-worm fly	36	35	37	36	37
NAQS					
Screw-worm fly	39	33	53	108	108

NORTHERN AUSTRALIA QUARANTINE STRATEGY

In recognition of the special quarantine risks associated with Australia's sparsely populated northern coastline, AQIS conducts an animal disease surveillance program as an integral component of the Northern Australia Quarantine Strategy (NAQS). The NAQS surveillance program provides early warning of disease threats to livestock industries, and in some cases human health. NAQS surveillance activities include both offshore and onshore components. Tables 11 and 12 summarise NAQS activity in Australia over the past five quarters.

Contact: David Banks, Biosecurity Australia, DAFF

Table 12: Summary of recent NAQS activity in Australia

	Apr – Jun 02		Jul – Sep 02		Oct – Dec 02		Jan – Mar 03		Apr – Jun 03	
	Tested	+ve	Tested	+ve	Tested	+ve	Tested	+ve	Tested	+ve
Aujeszky's disease	143	0	179	0	197	0	53	0	147	0
Classical swine fever	143	0	179	0	197	0	53	0	147	0
Japanese encephalitis	279	0	79	0	210	0	362	17	14	0
Nipah virus	143	0	179	0	197	0	76	0	104	0
Porcine reproductive and respiratory syndrome	143	0	179	0	197	0	53	0	147	0
Surra	72	0	8	0	69	0	182	0	20	0

In 1995–97, animals at sentinel sites on islands in the Torres Strait, but not the Australian mainland, seroconverted to Japanese encephalitis during the latter part of the wet season (March–April). In March 1998, seroconversions occurred at a number of sites on islands in the Torres Strait, and for the first time on the mainland at the tip of Cape York Peninsula. Sentinel pigs at Badu Island have seroconverted each wet season since then (except for 1999), and seroconversions have been detected on other central Torres Strait islands in surveys. No further seroconversions have been recorded at the mainland sentinel pig locations.

AUSTRALIAN MILK RESIDUE ANALYSIS SURVEY

The Australian Milk Residue Analysis (AMRA) Survey is an independent monitoring program for agricultural and veterinary residues and environmental contaminants in raw cow's milk. The AMRA Survey is coordinated by Dairy Food Safety Victoria on behalf of the Australian Dairy Authorities Standards Committee (ADASC) and the Australian dairy industry. The AMRA Survey is an integral part of the Australian dairy industry's efforts in securing access to major export markets, including the European Union. The samples taken in the Survey are from bulk milk farm pick-up tankers. Table 13 summarises the results for the quarter.

For further information contact: Kelly Long (AMRA Survey Coordinator), Dairy Food Safety Victoria, phone 03 9810 5900; fax 03 9819 4299; e-mail klong@dairysafe.vic.gov.au

Table 13: Australian Milk Residue Analysis Survey, 1 April to 30 June 2003

Each pair of figures gives the number of samples above the maximum residue limit and the number of samples tested.

	NSW		NT		QLD		SA		TAS		VIC		WA		AUS	
Aflatoxins	0	2	0	0	0	2	0	2	0	1	0	3	0	1	0	11
Antimicrobials	0	16	0	0	0	10	0	9	0	10	0	101	0	4	0	150
Macrocyclic lactones	0	3	0	0	0	0	0	1	0	1	0	3	0	0	0	8
Organochlorines	0	4	0	0	0	2	0	1	0	1	0	17	0	1	0	26
Organophosphates	0	4	0	0	0	2	0	1	0	1	0	17	0	1	0	26
PCBs	0	4	0	0	0	2	0	1	0	1	0	17	0	1	0	26
Synthetic pyrethroids	0	4	0	0	0	2	0	1	0	1	0	17	0	1	0	26
Triclabendazole	0	16	0	0	0	10	0	9	0	10	0	101	0	4	0	150

NATIONAL RESIDUE SURVEY

Of 3201 samples tested during the quarter for agricultural and veterinary chemicals, there were one antimicrobial, four hormone metabolites, and three metal detections above action levels. Table 14 summarises the results.

The one antimicrobial residue was a sulphadiazine detection in a pig kidney of 0.14 mg/kg, which exceeded the MRL of 0.1 mg/kg. A traceback investigation has been initiated; however, NRS is awaiting a report from the relevant State authority.

Zearalenone metabolite residues in a beef faecal sample were detected. The presence of zearalenone metabolites indicates likely ingestion of *Fusarium*-infected pasture or grain. No traceback investigation was initiated. Detections of 17-alpha 19-nortestosterone were found in two samples of cattle urine and two of sheep urine. All residues detected were well below the traceback action level of 0.01 mg/kg. A boldenone residue was also found in one of the 17-alpha 19-nortestosterone cattle urine samples, but the level did not suggest illicit use and so no trace back was initiated.

Two horse liver samples were found to have lead residues of 1.3 and 0.12 mg/kg. No maximum level (ML) has been set for horses; thus, traceback investigations were initiated for both samples. The 0.12 mg/kg residue was traced to an aged horse, and general environmental contamination was suspected. NRS is waiting for the traceback report for the other lead residue detection. A 1.6 mg/kg lead residue was detected in a sheep liver, exceeding the residue action level (RAL) of 1.0 mg/kg; traceback investigation was initiated, but the report is not yet available.

Further results, reports and information on NRS can be found on the internet (at www.affa.gov.au/nrs).

Contributed by: Daryl Crapp, National Residue Survey, DAFF

Table 14: National Residue Survey, 1 April to 30 June 2003
Each pair of figures gives the number of residues above the maximum residue limit or the maximum level and the number of samples tested.

	NSW		NT		QLD		SA		TAS		VIC		WA		AUS	
Anthelmintics																
cattle	0	46	0	2	0	64	0	9	0	4	0	38	0	12	0	175
pigs	0	9	0	0	0	7	0	3	0	0	0	5	0	3	0	27
sheep	0	47	0	0	0	2	0	26	0	0	0	23	0	19	0	117
other	0	8	0	0	0	16	0	7	0	0	0	6	0	7	0	44
Total	0	110	0	2	0	89	0	45	0	4	0	72	0	41	0	363
Antimicrobials																
cattle	0	66	0	2	0	108	0	10	0	4	0	90	0	12	0	292
pigs	0	34	0	0	1	25	0	6	0	0	0	26	0	9	1	100
poultry	0	9	0	0	0	11	0	1	0	1	0	21	0	0	0	43
sheep	0	183	0	0	0	11	0	131	0	5	0	74	0	78	0	482
other	0	3	0	0	0	0	0	1	0	0	0	17	0	4	0	25
Total	0	295	0	2	1	155	0	149	0	10	0	228	0	103	1	942
Growth promotants																
cattle	1	116	0	4	0	147	2	13	0	12	0	48	0	10	3	350
pigs	0	16	0	0	0	7	0	10	0	0	0	12	0	8	0	53
poultry	0	5	0	0	0	4	0	0	0	0	0	6	0	0	0	15
sheep	1	92	0	0	0	7	0	62	0	1	0	39	0	32	1	233
other	0	2	0	0	0	1	0	1	0	0	0	9	0	5	0	18
Total	2	231	0	4	0	166	2	86	0	13	0	114	0	55	4	669
Insecticides																
cattle	0	113	0	3	0	123	0	16	0	6	0	93	0	22	0	376
pigs	0	7	0	0	0	5	0	5	0	0	0	5	0	3	0	25
sheep	0	83	0	0	0	11	0	68	0	3	0	34	0	38	0	237
other	0	26	0	3	0	38	0	13	0	0	0	12	0	4	0	96
Total	0	229	0	6	0	177	0	102	0	9	0	144	0	67	0	734
Metals																
cattle	0	23	0	2	0	29	0	3	0	1	0	21	0	2	0	81
pigs	0	7	0	0	0	5	0	2	0	0	0	7	0	3	0	24
sheep	0	24	0	0	0	1	0	6	0	2	0	20	1	11	1	64
other	0	4	0	0	0	11	0	4	0	0	1	10	1	3	2	32
Total	0	58	0	2	0	46	0	15	0	3	1	58	2	19	3	201
Miscellaneous																
cattle	0	38	0	2	0	69	0	5	0	4	0	35	0	12	0	165
pigs	0	15	0	0	0	10	0	8	0	0	0	15	0	4	0	52
sheep	0	24	0	0	0	5	0	18	0	2	0	14	0	8	0	71
other	0	0	0	0	0	1	0	0	0	0	0	2	0	1	0	4
Total	0	77	0	2	0	85	0	31	0	6	0	66	0	25	0	292

SUSPECT EXOTIC OR EMERGENCY DISEASE INVESTIGATIONS

There were 43 investigations of diseases suspected to be either exotic or a possible emergency reported during the quarter, as shown in Table 15. More details about some of these investigations can be found in State reports.

Table 15: Exotic or emergency disease investigations reported from 1 April to 30 June 2003

DISEASE	SPECIES	STATE	MONTH	RESPONSE	FINDING
Australian bat lyssavirus	chiroptera	Vic	May	3	2 animals, see AWHN p. 5
Australian bat lyssavirus	chiroptera	NSW	Mar*/Apr/Jun	3	negative; 3 investigations
African swine fever	porcine	NSW	May	3	negative
Anthrax	bovine	VIC	Apr	1	negative; 3 investigations
Anthrax	bovine	VIC	Apr	2	negative; 2 investigations
Anthrax	bovine	VIC	May	1	negative; 2 investigations
Anthrax	bovine	VIC	May	2	negative; 2 investigations
Anthrax	bovine	VIC	Jun	1	negative; 2 investigations
Anthrax	equine	QLD	Jun	3	*Staphylococcus* and *Clostridia* spp.
Bovine brucellosis	bovine	VIC	Apr	2	neospora abortions
Bovine brucellosis	bovine	NSW	Apr	2	negative
Canine brucellosis	canine	QLD	Apr	3	negative
Classical swine fever	porcine	NSW	May	3	negative
Contagious bovine pleuropneumonia	bovine	QLD	Apr	3	negative
Contagious equine metritis	equine	NSW	May	2	negative
Foot-and-mouth disease	ovine	TAS	Jun	2	contagious pustular dermatitis
Foot-and-mouth disease	bovine	VIC	Jun	2	infectious bovine rhinotracheitis
Foot-and-mouth disease	porcine	QLD	Apr	1	dermatitis
Newcastle disease	avian	SA	Apr	2	fowl cholera
Newcastle disease	avian	NSW	Apr	2	organophosphate toxicity
Newcastle disease	avian	QLD	Apr	3	ND V4 vaccine strain
Newcastle disease	avian	WA	Apr	3	negative
Newcastle disease	avian	WA	Apr	3	negative
Newcastle disease	avian	TAS	Apr	3	negative
Newcastle disease	avian	WA	Apr	3	negative
Newcastle disease	avian	NSW	May	3	spondylolisthesis
Newcastle disease	avian	NSW	May	2	Marek's Disease
Newcastle disease	avian	VIC	May	2	infectious laryngotracheitis
Newcastle disease	avian	NSW	May	2	Marek's Disease
Rabies	canine	WA	Jun	3	negative
Screw-worm fly	bovine	NT	May	2	negative, *Chrysomya* spp.
Screw-worm fly	canine	NT	May	2	negative, *Lucilia* spp.
Vesicular disease	porcine	VIC	May	1	dermatitis
Vesicular disease	porcine	QLD	Jun	1	pig pox
West Nile virus	equine	WA	Mar*	3	negative

KEY to highest level of response:

1 Field investigation by Government Officer
2 Investigation by State or Territory government veterinary laboratory
3 Specimens sent to the Australian Animal Health Laboratory (or CSIRO Division of Entomology)
4 Specimens sent to reference laboratories overseas
5 Regulatory action taken (quarantine or police)
6 Alert or standby
7 Eradication
* Investigated in April

AUSVETPLAN manuals available on the internet

Effective responses to emergency disease outbreaks require emergency disease planning (at national, state/ Territory and district levels) and the involvement of both animal health authorities and emergency management organisations. The basis for this planning is contained in the Australian Veterinary Emergency Plan, AUSVETPLAN.

AUSVETPLAN is a series of technical response plans that describe the Australian approach to any emergency animal disease incident. The documents provide guidance based on sound analysis, linking policy, strategies, implementation, coordination and emergency-management plans. These documents are available (in Acrobat PDF format) from the internet (at www.aahc.com.au/ausvetplan/index.htm).

The manuals are divided into five categories:

- Summary;
- Disease Strategies;
- Operational Procedures;
- Enterprise Manuals;
- Management Manuals;
- Wild Animals.

Manual Name	Version	Date Released
Summary		
Summary Document	3.0	2002
Operational procedures		
Decontamination	2.1	2000
Destruction of animals	2.0	1996
Disposal procedures	2.0	1996
Public relations	2.0	1996
Valuation and compensation	2.0	1996
Enterprise manuals		
Animal quarantine stations	2.1	1999
Artificial breeding centres	2.1	1999
Aviaries and pet shops	2.1	1998
Dairy processing	2.0	1996
Feedlots	2.1	1998
Meat processing	2.1	1998
Poultry industry	2.0	1996
Saleyards and transport	2.1	1999
Veterinary practices	2.0	1996
Zoos	2.1	1998
Management manuals		
Animal Health Emergency Information System	2.1	2000
Control centres part 1	2.0	1996
Control centres part 2	2.0	1996
Laboratory preparedness	2.0	1996
Mapping	2.1	1999
Wild Animals		
Wild Animal Management	2.1	2000

Manual Name	Version	Date Released
Disease strategies		
African horse sickness	2.0	1996
African swine fever	2.0	1996
Anthrax — interim draft	3.0	2003
Aujeszky's disease	2.0	1996
Australian bat lyssavirus	2.1	1999
Bee diseases and pests	2.0	1996
Bluetongue	2.0	1996
Bovine spongiform encephalopathy	3.0	2003
Contagious equine metritis	3.0	2002
Classical swine fever	2.0	1996
Equine influenza	2.0	1996
Foot-and-mouth disease	3.0	2002
Highly pathogenic avian influenza	3.0	2002
Japanese encephalitis	2.0	1998
Lumpy skin disease	2.0	1996
Newcastle disease	2.1	2000
Peste des petits ruminants	2.0	1996
Rabies	2.0	1996
Rift Valley fever	2.0	1996
Rinderpest	2.0	1996
Scrapie	2.1	1998
Screw-worm fly	2.0	1996
Sheep and goat pox	2.0	1996
Swine vesicular disease	2.0	1996
Transmissible gastroenteritis	2.0	1996
Vesicular exanthema	2.0	1996
Vesicular stomatitis	2.0	1996

NAHIS contacts

The National Animal Health Information System (NAHIS) collects summaries of animal health information from many sources. NAHIS is on the internet (at www.aahc.com.au/nahis). Because NAHIS does not duplicate the data in those systems, the person indicated below should be contacted if further details are required.

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AnimalHealth Surveillance

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