Volume 6 Issue 1

Animal Health Surveillance

1 January to 31 March 2001

QUARTERLY REPORT

Preface

Australian livestock producers and animal health authorities have long recognised the threat posed by the introduction of foot-and-mouth disease (FMD), a serious problem in many parts of the world. The recent outbreak in the United Kingdom with its lesser spread into other European countries and the re-emergence of the disease in South America show more than ever the importance of remaining vigilant. This issue reports on some of the actions taken by Australia to reduce this increased risk.

Animal Health Surveillance Quarterly includes highlights of disease surveillance activities, items of interest from States and Territories, and summaries of disease surveillance and monitoring programs that report 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

CONTENTS

Australian response to United Kingdom foot-and-mouth epidemic

The outbreak of foot-and-mouth disease (FMD) in the United Kingdom in February with its subsequent spread to other European countries and the re-emergence of FMD in several South American countries indicate yet again the devastating effect an outbreak of FMD would have for Australia.

Australia responded immediately to the UK outbreak by tightening border security and offering assistance to UK authorities if needed.

The Australian Quarantine and Inspection Service (AQIS) boosted its border surveillance operations at airports and seaports with big increases in staff, x-ray machines and dog teams. Permits for all animals and their products and other animals and commodities that could carry the FMD virus were temporarily suspended. Since then, AQIS has assessed the import conditions for the suspended imports, reviewed the compliance procedures, and progressively lifted the suspensions where appropriate import conditions can be applied to manage the risks.

Australia (and other countries) sent veterinary officers, epidemiologists and stock inspectors drawn from AFFA and State and Territory departments to assist United Kingdom authorities to control the outbreak. Such secondments are made under an existing arrangement for supplying veterinarians to assist in the control of outbreaks. In addition, a

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significant number of private veterinarians have funded themselves or participated in an Australia Veterinary Association Scheme and secured contracts with the UK authorities to assist the control measures for this large FMD outbreak. The international participants both contribute to disease control and gain valuable experience working with emergency animal diseases, not just in identifying the symptoms of the disease, but also in observing how the government and industry responded to the technical and social pressures created by such an emergency.

Two major factors that contributed to the extent of the UK epidemic — the significant role of sheep and the large amount of movement of livestock and livestock products — need to be carefully considered in an Australian context. Other factors included changes in industry practices, illicit activities, failure to report suspect FMD cases, and the characteristics of the particular strain of FMD involved. There are many lessons to be learned from the recent UK epidemic and experiences with FMD in other countries including:

- the need for planning to encompass the whole of government and industry;
- a clear definition of roles and responsibilities;
- ensuring compliance with regulations; and
- improving and enhancing risk communication activities.

Australia has well-developed emergency planning and response arrangements and a well-deserved reputation for its ability to manage emergency situations. Many countries use AUSVETPLAN documents (available on the Internet at http://www.aahc.com.au/ausvetplan/) as a basis for their planning systems. However, the potential scale and economic impacts of an FMD outbreak in Australia, as shown by the UK outbreak, has reinforced the need for a constant evaluation of Australia's contingency planning arrangements.

Accordingly the Agricultural Resource Management Council of Australia and New Zealand (ARMCANZ) established a National Management Group (NMG) in March this year to review both FMD and bovine spongiform encephalopathy (BSE) preparedness activities. In response to an NMG report, ARMCANZ decided in May to:

- endorse finalisation of a BSE and FMD strategic plan to be considered at the August 2001 meeting of ARMCANZ;
- develop a risk management framework to analyse all identified and emerging high-priority, animal health threats and provide it to the Council of Australian Governments (COAG);
- develop a whole-of-government approach to managing major disease emergencies;
- enhance Australia's capabilities in epidemiology, emergency response communications, international animal health standard-setting, diagnostics and technology, field resources such as veterinarians in remote areas, and training; and
- initiate detailed preparations for a full scale simulation of a foot-and-mouth disease outbreak to be conducted in early 2002 and subjected to third party oversight by appropriate international observers.

These decisions are being progressed as a matter of urgency. At the same time Australia is working with a number of overseas countries to examine a range of international standards in areas such as zoning, vaccination, and diagnostic tests.

The Commonwealth Budget in May committed further funding to ensure that Australia remains free of exotic pests and diseases by boosting quarantine enforcement by AQIS and strengthening risk management and preparedness arrangements for FMD and BSE. The additional resources (personnel, detector dogs and X-ray machines) will enable increased inspection of baggage and cargo at air and sea ports, greater surveillance at mail exchanges and more quarantine public awareness activities.

FMD outbreaks this year (in Ireland, France and the Netherlands) and last year (in Japan and Korea) showed that early identification followed by fast and efficient implementation of controls can contain the disease. These outbreaks demonstrate how important it is for all people working with livestock to be aware of the risks of exotic disease and to quickly report any suspicious cases — to a veterinarian, a stock inspector, or the Emergency Disease Watch Hotline number on 1800 675 888.

Australia must learn from the UK epidemic and continue to update its existing emergency plans. It is essential that this involves not just those responsible for animal health — farmers, industry and government — but also other organisations to provide a comprehensive approach to the prevention and management of such a national emergency.

Contributed by: Gardner Murray,
Australian Chief Veterinary Officer

International campaign against FMD in South-East Asia

In February, a meeting in Yangon, Myanmar on the internationally coordinated campaign against FMD in South-East Asia was organised by a regional sub-commission of the Office International des Epizooties (OIE). The countries involved in the campaign are Cambodia, Laos, Malaysia, Myanmar, the Philippines, Thailand, and Vietnam. Although free of FMD, Indonesia has recently requested membership.

The campaign has been running since the early 1990s and aims to alleviate poverty by enhancing food security and the ability to trade. A regional approach to livestock development and the control (and ultimate eradication) of FMD is necessary because the disease readily crosses national borders. In December 1999, an international review team evaluated progress of the initial phase of the campaign and made recommendations regarding FMD diagnosis, surveillance, and strategies to strengthen control of livestock movement and to improve animal health systems. The meeting in Myanmar considered a strategic plan for FMD for the region for the next three years, including ways to implement the recommendations of the review team.

Contact: Gardner Murray,
Australian Chief Veterinary Officer

Epidemiology of foot-and-mouth disease

Foot-and-mouth disease (FMD) is an acute, highly contagious viral disease of cloven-hoofed animals and is endemic throughout the Middle East, Africa, South America, and Asia. FMD has not occurred in Australia for more than 120 years (after possible minor outbreaks in 1801, 1804, 1871 and 1872).

NATURAL HOSTS

Of the domestic animals susceptible to FMD (cattle, buffaloes, pigs, sheep, goats and deer), the disease is generally most severe in cattle and pigs. Most wild cloven-hoofed species are susceptible, as are elephants, hedgehogs and some rodents. Horses are resistant to FMD, but like many other animals can transmit the disease mechanically

People are rarely affected by FMD virus. However, healthy people may harbour the virus in their nasal passages and throat for up to 36 hours, and the capacity to infect susceptible animals by such people has been shown experimentally.

SIGNS AND CONSEQUENCES

The characteristic signs of the disease are the formation of vesicles and erosions in the mouth, nostrils, on the teats, and on the skin between and above the hoofs. Signs in sheep can often be very mild and this can make recognition of the disease difficult in sheep. (This was often the case in the 2001 epidemic in the UK where the presence of the disease was often revealed only by very close examination of all sheep in a flock.)

The appearance of FMD lesions on the tongue of cattle and the feet of pigs may provide a guide to lesion age and hence to how long infection has been present in a herd. Lesions in sheep are too transient to be used for ageing lesions.

FMD may cause serious production losses, the death of young animals and is a major constraint to international trade in livestock and their products.

EPIDEMIOLOGY

Animals are infected via inhalation, ingestion and by artificial or natural breeding. The primary method of transmission is by direct contact, via respiratory aerosols. Cattle are mainly infected by inhaling infected aerosols. Pigs are also infected by close contact, but are particularly susceptible to the ingestion of contaminated feed. Compared to cattle, pigs excrete more than 1000 times the amount of virus in respiratory aerosols and, as the main amplifying hosts, are extremely important in disease spread. Infected sheep and goats may show mild or almost no signs and consequently can be important in the maintenance and spread of disease.

The clinical signs of FMD are usually seen in the exposed animals within 3–5 days for cattle and sheep and 4–9 days for pigs, depending on the strain of FMD, and the route of infection. Clinically-affected animals shed large quantities of virus. More importantly, large amounts of virus are excreted by infected animals before clinical signs are evident (up to 5 days for cattle and sheep and 10 days for pigs). Field observation and computer models show that the size of an epidemic will be greatly reduced by pre-emptive actions to slaughter apparently healthy animals that have been in contact with infection.

TRANSMISSION TO OTHER FARMS

Once an animal in a herd is infected, the disease will spread rapidly through the herd. Transmission occurs most readily when animals are in close proximity, such as at watering and feeding points, stockyards and

milking sheds. The spread to neighbouring properties by close contact of infected animals is highly likely.

The movement of infected animals is a very common way FMD is spread over long distances — not just to the destination herd, but to other animals encountered en route. Contaminated vehicles, equipment, people and products can move FMD virus long distances. People can readily transfer infection to animals on contaminated boots, hands and clothing. Spread has been associated with veterinarians and rodent exterminators. Dogs, cats, rodents, poultry and other birds can spread the virus mechanically. Effluent from infected premises, particularly piggeries and dairies, that drains onto roads, stock routes, pastures or into creeks can infect or contaminate animals, vehicles, equipment and people coming into contact with it.

It is not uncommon that winds carrying infected aerosols spread the disease to neighbouring and nearby properties (within a couple of kilometres). Less frequently, winds have been known to carry virus for much greater distances (more than ten km) but this requires suitable environmental and climatic conditions.

PERSISTENCE OF VIRUS

Although viral excretion in animals ceases in most animals within six days of the appearance of vesicles, some recovered cattle, buffalo and sheep, but not pigs, remain long-term carriers — cattle may harbour virus for more than two years and sheep for nine months.

FMD virus can remain infective in the environment outside an animal for several weeks. The period can be shorter or longer (several months to more than a year) depending on factors such as temperature and pH, and the type of material (soil, manure, dried animal secretions, straw, hair and leather)

The virus can survive for a considerable time in meat and dairy products. In most carcasses, FMD virus is inactivated within three days if normal post-slaughter acidification occurs, but if it doesn't (e.g. from rapid chilling) there can be prolonged survival of FMD virus. The virus can also survive for months in other chilled or frozen animals parts. FMD virus can survive for a long time in salted and cured meats (e.g. up to 190 days in bacon) and dairy products (e.g. up to two years in dried skim milk).

In other animal products such as wool and hides the survival time of FMD virus depends on many factors (e.g. presence of organic material or faeces, temperature, relative humidity and amount of sunlight) and is typically of the order of weeks, but can be much longer.

VACCINATION

Inactivated vaccines have been successfully used in many parts of the world, but vaccination must be repeated regularly because resistance wanes rapidly after 4–6 months. Although protected against disease, vaccinated animals are not totally resistant and can still become infected with FMD virus, shed the virus and become transient carriers.

FURTHER INFORMATION

The AUSVETPLAN (www.aahc.com.au/ausvetplan on the Internet) has further information about FMD and outlines Australia's response in the event of an outbreak.

AUSVETPLAN

The Australian Animal Diseases Emergency Plan (AUSVETPLAN) is the nationally agreed arrangement for responding in a consistent manner to an outbreak, or suspected outbreak, of an exotic animal disease anywhere in Australia. AUSVETPLAN has been developed by the Commonwealth Government and State and Territory governments, in consultation with industry to ensure that a prompt, efficient and effective response can be implemented with minimal delay.

The States and Territories have responsibility for and are pivotal to the planning and provision of resources to combat an exotic disease outbreak. However, the impact of a major animal disease emergency would be of immediate national significance.

DEVELOPMENT HISTORY

The development of national emergency disease control plans was first recommended in 1976, and most of these precursors to AUSVETPLAN were written by 1979. In 1980, the need for a more comprehensive system of national disease eradication planning was recognised: one that linked exotic animal disease eradication plans with counter-disaster support plans. In 1985, after such plans had been prepared, animal health authorities began to revise animal disease plans to provide a statement of strategic fundamentals and operational procedures for eradication of major disease incursions. By 1988 the concept had emerged for a series of documents — the Australian Veterinary Emergency Plan (AUSVETPLAN) manuals — that would outline the

Australian approach to an occurrence of any of the serious exotic animal diseases. The first edition of AUSVETPLAN was published in 1991 and the second edition in 1996.

The Exotic Animal Disease Preparedness Consultative Council (EXANDIS) was established in 1990 (with a five-year life) to provide a mechanism for industry consultation and advice on Australia's exotic disease preparedness. EXANDIS contributed significantly (in both funds and information) to the second edition of AUSVETPLAN.

Animal Health Australia (established in 1996 as the Australian Animal Health Council Ltd) is the peak animal health body and one of its key programs covers exotic animal disease preparedness. More information about the program can be found on the Internet at www.aahc.com.au/preparedness/ .

CONTENTS OF AUSVETPLAN

AUSVETPLAN has detailed control strategies for 25 major diseases. These emergency operations manuals provide information on procedures needed during an outbreak and cover subjects such as valuation and compensation, disposal and decontamination, public relations, and wild animal control. There are 10 'enterprise manuals' that provide instructions on how to deal with an incursion of an exotic disease affecting specific high-risk enterprises. In addition there are 11 other manuals that cover various operational requirements that are applicable to any type of outbreak. The list below gives the titles of the entire AUSVETPLAN, which are freely available as pdf files from the Animal Health Australia website at www.aahc.com.au/ausvetplan .

SUMMARY

AUSVETPLAN is a comprehensive package of agreed documentation that sets out the roles, responsibilities, coordination arrangements, financial arrangements (where applicable), policies (based on detailed technical support) and procedures that will be followed by all agencies in any exotic animal disease response. The production of AUSVETPLAN was the result of close collaboration and consultation between many organisations. This close cooperation continues as the manuals are tested and further developed to ensure they remain relevant.

Contact: Chris Bunn,
Office of the Chief Veterinary Officer, AFFA

List of AUSVETPLAN manuals

Summary

- Summary

Disease strategies

- African horse sickness
- African swine fever
- Aujeszky's disease
- Australian bat lyssavirus
- Avian influenza
- Bee diseases and pests
- Bluetongue
- Bovine spongiform encephalopathy
- Classical swine fever
- Equine influenza
- Foot-and-mouth disease
- Japanese encephalitis
- Lumpy skin disease
- Newcastle disease
- Peste des petits ruminants
- Rabies
- Rift Valley fever
- Rinderpest
- Scrapie
- Screw-worm fly
- Sheep and goat pox
- Swine vesicular disease
- Transmissible gastroenteritis
- Vesicular exanthema
- Vesicular stomatitis

Operational procedures

- Decontamination
- Destruction of animals
- Disposal procedures
- Public relations
- Valuation and compensation
- Wild animal management

Enterprise

- Animal quarantine stations
- Artificial breeding centres
- Aviaries and Pet shops
- Dairy processing
- Feedlots
- Meat processing
- Poultry industry
- Saleyards and transport
- Veterinary practices
- Zoos

Management

- Animal Health Emergency Information System
- Control centres part 1
- Control centres part 2
- Laboratory preparedness
- Mapping

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.

Contact: Chris Bunn, Office of the Chief Veterinary Officer, AFFA.

Aquatic animal health

NATIONAL SURVEY FOR WHITE SPOT SYNDROME VIRUS IN WILD CRUSTACEANS

In November 2000, the Northern Territory Department of Primary Industry and Fisheries identified that green prawns supplied for feeding aquaculture stock in two experimental stations in Darwin were of imported origin (*AHSQ* Vol.5 No.4). Although testing by PCR had detected traces of whitespot syndrome virus (WSSV) DNA in samples of crustaceans from the two research facilities in November, subsequent testing in December did not detect any such traces. As a precautionary measure, and in the absence of clinical disease, all crustaceans at both facilities were immediately slaughtered and the facilities disinfected.

Because of the incident, the Consultative Committee on Emergency Animal Diseases agreed to conduct a survey of wild crustaceans to determine if WSSV was in Australia, and if so, provide information on its distribution and prevalence. Each State/Territory conducted its own survey design and sample collection. WSSV testing is being conducted at several laboratories including CSIRO Long Pocket Laboratories, Queensland Department of Primary Industries laboratory at Oonoomba and the Western Australia Department of Fisheries laboratory in Perth.

In Western Australia, a total of 400 prawns/crabs from 16 sites around the State have been tested for WSSV as part of this survey. The testing of high risk sites in this State has now been completed, including all aquaculture sites where crustaceans are involved. On-going testing is now targeting prawns from sites around the metropolitan area (Perth), as well as seeking more samples from the commercial fisheries (the 2001 prawn-fishing season is to commence soon). So far all samples have tested negative for WSSV.

In the Northern Territory 102 shore crabs and 60 mangrove crabs from four sites in Darwin Harbour and one site in the Blackmore River were tested in the survey. All 162 crabs tested were negative for WSSV.

In New South Wales, all coastal estuaries including Sydney Harbour and off-shore prawn fishing areas are being systematically surveyed with sampling strategies designed to give a high likelihood of detecting the virus if it is present.

AQUAPLAN ZONING POLICY GUIDELINES

In January, the AQUAPLAN Disease Zoning Policy Guidelines were released. The Guidelines — part of AQUAPLAN, Australia's National Strategy for Managing Aquatic Animal Health 1998–2003 — were prepared by the AQUAPLAN Disease Zoning Policy Project Team. The Zoning Policy Guidelines incorporated comments by stakeholders such as the Commonwealth and State/Territory governments as well as the private sector.

The AQUAPLAN Disease Zoning Policy Guidelines explain the generic principles of zoning based on pathogen distribution, the movement principles between zones, and international relevance of national zoning. The Guidelines are based on those developed by the OIE and provide principles that may be used to develop disease zoning policies that are beneficial to both export and import from both an international and domestic trade perspective. Effective zoning policies can help minimise the spread of disease throughout the country and enable trade to continue in disease free areas.

Contact Linda Walker for copies of the AQUAPLAN Zoning Policy Guidelines by phone (02 6272 5306) or by e-mail (linda.walker@affa.gov.au).

AQUATIC ANIMAL DISEASE ZONING WORKSHOP

Disease zoning is the process of delineating free and infected areas within a country or group of countries. It is a tool that can facilitate domestic and international trade whilst reducing the risk of spread of disease from the infected area.

A *National Workshop on Aquatic Animal Disease Zoning* was held in Canberra in January. The Workshop, convened under the title *Putting Principle to Purpose*, followed the recent endorsement of the AQUAPLAN Zoning Policy Guidelines by Australian governments and the commercial fishing sectors. There were 22 participants from the Commonwealth, States and Territories and the private sector.

The workshop was held to examine all of the issues that need to be considered prior to setting up zones; to develop the process of setting up and obtaining recognition of free zones; and to consider the requirements to establish and maintain zones particularly with regards to surveillance and monitoring to OIE standards. Examples of existing aquatic animal disease zoning programs in Australia as well as plans to develop such programs were discussed in depth, considering implications of such programs for Australia domestically as well as internationally. The Workshop agreed on a strategy to develop, endorse and implement aquatic animal disease zoning programs, consistent with current arrangements in the terrestrial animal sectors.

Contributed by: Eva-Maria Bernoth,
Office of the Chief Veterinary Officer, AFFA

Protect Australian Livestock Week

Protect Australian Livestock Week (PALW) represents the major public awareness activity under Animal Health Australia's Emergency Animal Disease Preparedness (EADP) program.

This year's week (25–31 March) was extremely timely because of the public interest surrounding the current United Kingdom FMD crisis, something that was utilised by the campaign. Greater use was made of community service announcements on regional radio, along with enlisting the support of the Hon Warren Truss MP to officially launch the campaign.

The campaign had almost 300 advocates from across the country working with regional and metropolitan media to increase awareness. The message 'Think the worst first' was revised to 'Look, check and ask a vet'. Media interest this year was the highest it had ever been.

While PALW remains a critical part of Animal Health Australia's awareness effort, general materials are being designed to promote awareness at other times during the year under the umbrella of EADP. For more information see Animal Health Australia's website at: http://www.aahc.com.au/palw

Contact: Jamie Penrose, Animal Health Australia

Animal disease surveillance baseline study

A consultancy has been commissioned to describe the present surveillance system for the Animal Disease Surveillance Program, one of the core program of Animal Health Australia.

The Program started in September 2000 (*AHSQ* Vol. 5 No. 3) with a workshop of all of Animal Health Australia's Members to identify key priorities. Following the workshop a Program Advisory Committee was formed with representatives of the Commonwealth Government, State governments, livestock industries and Animal Health Australia to provide guidance on development of the program.

One of the first priorities identified was the need to describe the present surveillance system, both qualitatively and quantitatively, and to identify present weaknesses in the national system. This will allow the Committee to better understand where resources need to be focused to enhance the present system.

It is expected that the consultant's report will be finalised in May 2001. Following consideration by the Board, the report will be made available to Company Members.

Contact: Simon Winter, Animal Health Australia

On rainbow wings

A novel approach to monitoring for Asian bees has been used by Glenn Bellis, a Northern Australia Quarantine Strategy (NAQS) entomologist based in Darwin.

After public awareness helped eradicate the exotic Asian honey bee in Darwin in 1998 (*AHSQ* Vol. 4 No. 2), the local beekeepers were of further assistance. They suggested that the rainbow bee eater, a migratory bird that eats a huge number of bees during the dry season, could possibly be used to monitor bee species.

The bee eaters can't digest parts of the insect, like the wings, and regurgitate these as pellets. In an AQIS-funded trial, the pellets were examined to determine the birds' diet and whether the pellets contained parts of honey bees that could be detected and identified. Under a microscope it was possible to identify the wings of different types of bees.

There are many large colonies of bee eaters in Darwin and no shortage of pellets available beneath the birds' roosts. The only problem is that these large numbers are only present between March and September — at other times of the year, more traditional methods of finding bees must be used to handle an incursion of exotic bees.

Exotic honey bees, present in Indonesia, East Timor and Papua New Guinea, carry the varroa and the tropilaelaps mites that attack European honey bees, causing the hives to sicken and die. No country has yet been able to eradicate the bees or the mites once they've become established.

Further information: Glenn Bellis, 08 8999 2345

Emergency management training in Indonesia

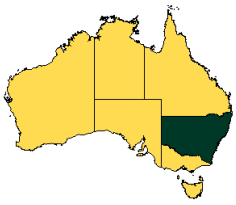
In February, Australia conducted a five-day workshop to provide training in emergency animal disease management for Indonesian government officials. The training program was the third collaboration of its type between the Australian and Indonesian governments, and enabled national and regional Indonesian animal health officials to gain an understanding of both the management and technical aspects of disease outbreaks.

Through case studies, field trips and group discussions, the training aimed to improve the ability, knowledge and skills of Indonesian animal health officials to respond to an outbreak of an emergency animal disease. During the last five years, Indonesia has experienced outbreaks of classical swine fever, rabies and Newcastle disease. The workshop was of particular interest to Indonesian veterinarians who have recently been dealing with the outbreak of rabies on the island of Flores.

Contact: Chris Bunn,
Office of the Chief Veterinary Officer, AFFA

State and Territory Reports

New South Wales



Contributed by:
Catherine Taragel
NSW Agriculture

ANTHRAX

During the quarter there were eight submissions for anthrax of which three were positive, all occurring within the anthrax belt. One case in which 138 lambing ewes died occurred after sheep grazed a stubble paddock containing an old creek bed. Anthrax had been confirmed on the property on two occasions in 1935–36. All remaining stock were vaccinated and there have been no further losses.

The two other cases occurred on separate properties in Narrandera Rural Lands Protection Board (RLPB). On one of the properties, 33 sheep and one calf died. This property was part of an old stock route and anthrax had previously been diagnosed on the property. The second case, involving the death of one cow, occurred on a property with no known history of the disease. The producer had lost a few heifers 12 months previously, but the deaths were not investigated. Anthrax had occurred on neighbouring properties. Both infected properties have vaccinated and have reported no further losses.

EXOTIC DISEASE EXCLUSIONS

Virulent Newcastle disease virus and avian influenza virus were excluded in several disease incidents during the quarter as the cause of mortalities and clinical signs in chickens exhibiting respiratory difficulties, depression or neurological signs.

Lyssavirus was excluded in four grey-headed flying foxes, two of which had bitten adults and one which had bitten and scratched a child.

Foot and mouth disease was excluded in a three-year-old Angus cow from Tamworth RLPB. The animals had profuse salivation, nasal discharge, and areas of ulceration and necrosis were present on the muzzle, tongue, palate and oral mucosa. The cow was positive for pestivirus (by ELISA) and had lesions histologically consistent with bovine papular stomatitis.

A dog that died after a sudden onset of respiratory difficulties with subacute interstitial pneumonia was negative for both Hendra and Nipah viruses.

BOVINE TUBERCULOSIS

As a result of bovine tuberculosis (TB) being detected on a Queensland property (see Queensland State report), 747 cattle were traced to 26 destinations (excluding abattoirs) in NSW. Where identified, the cattle have been quarantined, valued for compensation purposes and sent direct to slaughter. By mid-April, 527 had been slaughtered either under the program or before Departmental contact with the owner, 189 were still to be destocked under the program and tracing was not yet fully complete on the remaining 31.

Histologically positive TB lesions were found in seven of the slaughtered cattle from four properties. No culture results are available yet. Approved property programs have been developed for these four properties. The programs involve total destocking of three properties (two under compensation while the third had already destocked) and testing of the cattle on the remaining property. At risk cattle in neighbouring herds will be tested.

TRICHOMONIASIS

An outbreak of trichomoniasis occurred in the Gunnedah region involving a 'Rent-a-Bull' scheme. Two of the three such bulls have tested positive for *Trichomonas* sp. Bulls owned by the same person had

previously spread vibriosis around the district in the same manner, although the owner has since vaccinated for that disease. There currently appears to be a greater awareness of reproductive diseases in cattle in the area, with vibriosis, leptospirosis, pestivirus and trichomoniasis being diagnosed. This is evident by the increase in vibrio positive herds, and that veterinary practitioners are now using the In Pouch system for the diagnosis of trichomoniasis.

INTERNAL PARASITES OF SHEEP

Problems with haemonchosis were encountered not only in the *Haemonchus*-endemic areas (New England and nearby areas), but also in the pastoral zones of the State due to storm activity over summer/autumn. High worm egg counts and scattered losses due to haemonchosis were encountered in the Bourke district.

Resistance in *Haemonchus* sp. to macrocyclic lactone-based drenches (ML) is no longer a rarity in the New England region. However, in southern NSW where ML-resistance (in *Ostertagia* sp.) has been considered a possibility in the last few years, at least two tests gave faecal egg count reduction (FECR) results consistent with ML-resistance in *Ostertagia* sp. In one case, the ML group of animals had a strongyle FECR of 18% (estimated *Ostertagia* FECR was 7%); and the '1/2 dose ML' group had a strongyle FECR of 10%. In the other case, the estimated FECR for *Ostertagia* in the ½ dose ML group was 61%.

Although further work needs to be done, producers in southern NSW or elsewhere should no longer assume that there is little or no resistance to MLs on their farm or in their district.

NEWCASTLE DISEASE

By the end of the quarter all properties that were infected with Newcastle disease in early 2000 had been depopulated and cleaned. Movement permits are being issued following veterinary risk assessment for poultry and products out of the area. Sentinel programs on all quarantined farms are almost complete and quarantines will soon be lifted.

In the Gunnedah region, the permit system for poultry and poultry products moving from the Designated Restricted Area (DRA) for Newcastle disease is starting to run more smoothly, though industry have been slow to adopt the practice of taking monthly serology samples that are required for some movements.

Mangrove Mountain groundwater monitoring has been undertaken during the quarter, with all results to date negative for Newcastle disease virus.

ARBOVIRUSES

During the quarter, sampling for the National Arbovirus Monitoring Program (NAMP) was conducted at all coastal sites in NSW as scheduled. Most inland sites have been sampled according to schedule. The extensive flooding that occurred late last year in the north west of the State has been followed by another period of above average rainfall during February and March. This led to some flooding in the north west and severe flooding along the north coast south to the Manning and Lower Hunter Valley.

Despite favourable weather at the start to the season with some evidence of early Akabane transmission along the coast in December, transmission has probably been later than usual with a lower than usual incidence. There were Akabane seroconversions on the far North Coast and south to the Manning region during March but there has been no Akabane transmission in the Hunter Valley to the end of March. There has been extensive transmission of one of the other Simbu viruses, with seroconversions as far south as Camden by early March and possibly this has created interference with Akabane transmission.

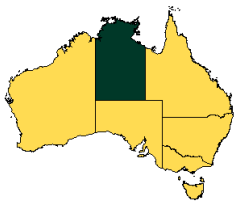
No seroconversions for bluetongue virus were recorded anywhere in the State.

Although no seroconversions for bovine ephemeral fever (BEF) virus were recorded during this sampling period for NAMP, there has been an outbreak of moderately severe BEF in the Lower Hunter and in the Camden and surrounding districts during March.

As well, a small area of the Narrabri RLPB north-west of Wee Waa suffered a severe BEF epidemic in late February following severe localised flooding. BEF generally occurs in the Narrabri district as epidemics every 4–5 years following suitable rain in late summer or autumn if there is a sufficiently large immuno-naïve bovine population. Deaths are limited to large animals (bulls mostly) that die of exposure when trapped in the open away from shade and water.

The current epidemic has been mostly limited to the flooded area with a few sporadic cases elsewhere. One major feature of this epidemic is the number of deaths involved. Most herds affected have had approximately 15% of cattle showing clinical signs of BEF. Of these clinically affected animals, there has been a 12% mortality rate, with more than 60 deaths being reported from three herds. The mortalities have been unusual in that they have involved younger adults (predominantly yearlings), clinical signs have included nervous signs, temperatures have been mild, and access to water was not restricted.

Northern Territory



Contributed by:
Helen Parkes
NT DPIF

CATTLE

Calf losses (particularly in neonatal and young calves) on a property in the Tennant Creek region were investigated. Most of the observed losses had occurred during an outbreak of three day sickness (bovine ephemeral fever — BEF) in mature breeders a month before. During the two days of the investigation four animals were sampled, but only two were representative of the problem. One fresh stillborn calf was sampled for known abortive agents, but cultures were negative.

Bluetongue virus, serotype 16, (BTV 16) has been isolated from sentinel cattle held at Beatrice Hill farm (BHF), east of Darwin. Seroconversions to BTV 16 have occurred in sentinel cattle herds from Darwin (Berrimah), BHF and Douglas Daly Research Farm (DDRF) but had not been seen in the NT since 1992.

BEF virus has been isolated from an animal at Katherine. Clinical BEF was seen in the sentinel herd at DDRF, and most of the sentinel cattle in that herd seroconverted during February/March.

SHEEP

Clinical bluetongue disease was seen in a small flock of 16 sheep recently introduced to the Adelaide River area, south of Darwin. Four sheep died, of which three were confirmed with bluetongue infection. All the remaining sheep have seroconverted to BTV. BTV 16 was isolated from both sick and dead sheep. Continuing surveillance has not detected any other clinical cases in the 100 or so sheep in the NT.

GOATS

Burkholderia pseudomallei infections (melioidosis) are common in goats during the wet season in the Top End, and this year has been no exception. Cases have included two deaths and three serological reactors from a property in the Darwin rural area, and the isolation of *B. pseudomallei* from the milk of goats with mastitis.

Enterotoxaemia (pulpy kidney) was suspected as the cause of sudden death in two 3-month-old goats on one property.

PIGS

Eperythrozoon suis was detected in pale, jaundiced pigs from a piggery in the Darwin area. *E. suis* is a parasite of red blood cells that has not previously been detected in Australian pigs. DPIF have developed an ELISA that will be used to test the NT serum bank in an effort to determine the length of time the organism has been present and its distribution.

Several cases of melioidosis were detected in pigs. In a small, backyard piggery in the Darwin rural area, pigs were detected at slaughter with skin lesions that grew *B. pseudomallei* on culture. Several baby pigs in the group had systemic melioidosis. All the remaining pigs (five sows and five piglets) were euthanased. One sow was found to have chronic abscesses from which *B. pseudomallei* was isolated, and this sow plus a second one were serological reactors.

Streptococcus suis type II was cultured from the lung, pericardial fluid and heart valve of a pig with severe fibrinous pneumonia, pleuritis, valvular endocarditis and pericarditis. Another pig from the same property showed similar lesions at post mortem examination.

Grower pigs at the Berrimah Research Farm showed skin lesions typical of swine pox.

POULTRY

Botulism continues to cause deaths in chickens and ducks, with 20% mortalities over four days in ducks and chickens from one property in the Darwin region. Botulism type C was confirmed by laboratory testing.

HORSES

More cases of Birdsville disease (*Indigophera* toxicity) were suspected on clinical signs and the absence of pathological findings from serum biochemistry, haematology and post-mortem examinations of horses from the Tennant Creek area.

CROCODILES

A syndrome of severe pneumonias in captive adult crocodiles kept in a particular pond is being investigated. A variety of bacterial and fungal organisms has been isolated, and acid-fast bacilli were detected in one animal (but not cultured).

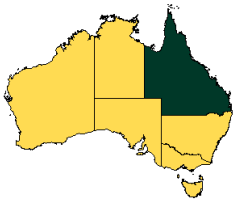
OTHER SPECIES

There has been serological evidence of canine leptospirosis in the Darwin region again this season, with a four-fold rise in titre over five days to *Leptospira australis*, in a dog with clinical signs of acute renal failure and hepatitis.

Apart from the cases already mentioned, melioidosis has caused deaths in a variety of species this year, including a puma, a parrot and a cat.

Systemic cryptococcosis was diagnosed in a cotton top tamarin that died unexpectedly. *Cryptococcus neoformans* var *neoformans* was isolated.

Queensland



Contributed by:
Janet Berry
QDPI

BOTULISM

Several suspected cases of botulism toxicity occurred during the quarter. Thirty milking cows died in the south-east of the State soon after arriving from New South Wales. Contaminated feed was suspected of causing the outbreak but testing for botulism was negative. Botulism was suspected when twelve 2-year-old Brahman steers died from a group of 400 cattle in the south-west. They were showing hindlimb ataxia, excitability, abnormal head carriage and knuckling. Botulism toxin could not be isolated from stomach and intestinal contents. Three 10-month-old Brahman cattle in Sarina shire were found dead and intestinal samples were positive for *Clostridium botulinum* toxin. Twenty-six mixed species birds (ducks, geese, chickens, and turkeys) were found dead or with generalised paresis on a property in the south-east. The birds had access to a dam that contained dying eels. Two hens submitted for autopsy had no significant gross histological abnormalities and botulism toxin was found in the stomach contents of one hen.

HAEMONCHOSIS

Infection with *Haemonchus contortus* was diagnosed in sheep of different breeds and classes throughout the south-west of the State during the quarter. There were many reports of emaciated and anaemic sheep that were unwilling to walk any distance. Many deaths occurred. Faecal worm egg counts of up to 18 000 eggs per gram were often recorded. The high rainfall early in the summer was thought to be a predisposing cause.

CONTAGIOUS OVINE ECTHYMA

Two properties in the Blackall area experienced extensive outbreaks of contagious ovine ecthyma. Neither of the two properties had been vaccinating against the disease. On one Merino stud property about 400 weaner rams from a mob of 3000 were found to have scabs on the mouth, legs and coronary bands. In some rams, the whole scrotum was swollen and inflamed with thickening and ulceration of the scrotal skin. On histological examination, scrotum sections were oedematous and showed a severe diffuse proliferative and exudative dermatitis. Sections of testicle, epididymis, and seminal vesicle were normal, although inguinal lymph nodes showed diffuse hyperplasia. Parapox virus was found on examination by electron microscope. Crutching had been performed about three weeks previously and had probably introduced the infection. On a second property, 1500 wethers were affected with large areas of scab and scaly lesions on the legs and around the mouth. Affected sheep showed severe pruritus, rubbing and biting the affected areas. The lesions were consistent with contagious ovine ecthyma although no virus could be isolated.

BOVINE PESTIVIRUS INFECTION

Bovine pestivirus was isolated from unthrifty and chronically scouring calves on two properties in the Banana and Fitzroy shires that had experienced higher than normal calf losses. In one herd, eight poor-doing or scouring calves were tested and four were positive for pestivirus on the polymerase chain reaction (PCR) test for virus. In the other case, one animal tested positive on the PCR test for bovine pestivirus and was seronegative on the serum neutralization test.

FACIAL PARALYSIS SYNDROME

Unilateral facial paralysis in cattle is common in central Queensland and usually results in death due to an inability to eat and other complications. Investigation of a three-year-old steer in the Calliope shire with paralysis of the left side of the face involving the ear, eye and lips revealed that the steer had vacuolar degeneration of both the left and right facial nerves. The left facial nerve was visibly different to the right and more severely affected. The steer had undergone a rapid loss of condition over the previous two months, presumably due to an inability to eat. The animal had hind limb ataxia and would fall down if pushed. Unfortunately, samples of peripheral nerves from elsewhere in the body were not collected to determine if the steer had a generalised neuropathy. Investigation of a heifer in the Emerald shire with the same clinical syndrome revealed evidence of encephalitis. There was evidence of bony lesions in the base of the skull suggestive of osteomyelitis but no agents could be isolated from the lesions. Investigation of previous cases in central Queensland has found osteomyelitis affecting bones of the middle ear and base of the skull, with associated unilateral nerve damage. Affected animals were also tested as part of the National Transmissible Spongiform Surveillance Program with negative findings for BSE.

STEATOSIS

A three-year-old bovine from the Atherton Tablelands was diagnosed with steatosis. From birth the animal had displayed incoordination and weakness. It had been reared separately from the mob and was well nourished and healthy. Tissue sections showed normal skeletal muscle intersected and replaced by normal adipose tissue. The condition was affecting a range of

muscles including skeletal, hind limb and brisket. There was no associated lymph node enlargement. The cause of this condition is not known.

MELIOIDOSIS

Near Townsville two deaths in a group of 30 Saanen and feral does of mixed ages were attributed to melioidosis. Several of the goats showed weight loss and coughing. At autopsy of an 8-month-old goat, the lung showed thickened and oedematous alveolar septa and early fibrosis. The alveoli contained large numbers of alveolar macrophages, lymphocytes, plasma cells and neutrophils and purulent plugs occurred in the bronchioles. Focal areas of necrosis and early abscessation were visible in the lung parenchyma.

SWINEPOX

Swinepox was diagnosed on a 30-sow piggery near Ayr. Sows and 3- to 4-week-old pigs were affected. They showed typical pox lesions and the young sucking pigs had anaemia, diarrhoea and pneumonia. The animals had been treated with tetracycline antibiotics but two of the sows died. Histological examination revealed focal areas of necrosis and ulceration of epidermis with hydropic degeneration of cells in *stratum corneum* and vacuolation of nuclei in *stratum spinosum*. Ulcerated areas were overlain with exudate containing numerous colonies of coccoid bacteria and fungal hyphae. The skin changes were consistent with advanced swinepox lesions. Marked anaemia, evident on necropsy, may have indicated an iron deficiency. There were large numbers of mosquitoes present, which may have transmitted the virus.

CEREBELLAR CORTICAL ABIOTROPHY

A syndrome affecting weaner pigs, 4–10 weeks of age, was investigated on a property in the Brisbane Valley. The syndrome began in November 2000 when affected weaners showed staggering (involving all limbs), progressing to sitting on their hindquarters and, finally, lateral recumbency. Only six of the weaners were affected at any one time with the rest being healthy. The changes observed in the cerebellum of affected pigs were consistent with cortical abiotrophy. The clinical signs observed and the case history were consistent with the progressive nature of cerebellar cortical abiotrophy. However, scattered vacuolation observed elsewhere, especially in the optic nerves, medulla and cerebral white matter, was not consistent and the cause of this lesion was not determined.

BOVINE TUBERCULOSIS IN SOUTH EAST QUEENSLAND

In December, bovine tuberculosis (TB) was suspected in a sample taken as part of the National Granuloma Submission Program (NGSP) from a Santa Gertrudis heifer slaughtered at Coominya Abattoir, Qld. Culture confirmed the diagnosis in early February. The heifer was purchased from a property at Wandoan, but originated from another Queensland property at Bollon. This property had been sold in September 2000 and a whole-herd dispersal occurred prior to sale, mainly in July and August 2000, and mostly via saleyards at Roma and Goondiwindi. Of the 1349 cattle sold to 56 destinations in Qld and NSW, 191 went to slaughter, 165 to feedlots and 993 were sold to properties. Tracing of these cattle has been a complex task. In addition, prior to the sales in 2000, 1817 cattle were sold on 24 occasions in the period 1994–99 through Goondiwindi, Toowoomba and Oakey saleyards, to 80 properties. Tracing is continuing for these movements with many of these cattle already slaughtered with no positive findings. There are an estimated 4500 cattle on case properties or surrounding properties where contact may have occurred that will require confirmatory testing programs.

Tuberculosis has been detected in seven additional trace-forward properties, four of these in NSW. The finding of a total of 12 positive animals on these properties has triggered further destocking, tracing and testing activity. At least one generalised case has been found suggesting this animal may have been a potent source of spread of disease. Culture positive results have been obtained from a number of these animals. In total more than 1000 cattle have been destocked from traceforward properties.

The source of infection for this TB outbreak is still being investigated. It may have been present in cattle on the property or introduced in purchased stock from Queensland or Northern Territory.

TB PROGRAMS IN NORTH-WEST QUEENSLAND

Activities during the quarter, in relation to the case detected in August 2000 from a property at Normanton (*AHSQ* Vol. 5 No. 3), have been on traceforward and neighbouring properties. These properties are undertaking selective culling, area clean-outs and tuberculin testing of cattle considered to be at risk of exposure to TB. The resource demands for these programs are going to be considerable, particularly when activities on the index properties commence later in the year. Evidence to date indicates that while the level of TB on the index properties is not high, the age of the infected animals means that a considerable proportion of the herd may have been exposed. This will require a rigorous program to ensure that any residual infection is eradicated.

South Australia

Contributed by:
Kim Critchley
PISA

OVINE JOHNE'S DISEASE

Most of the properties known to be infected with ovine Johne's disease (OJD) on Kangaroo Island have now voluntarily destocked with only four deciding to retain their flocks. Two studs in the SheepMAP scheme have been detected with infection at their second test, and this has generated a considerable amount of work in tracing movements.

Early results from the marsupial survey are suggesting that *Mycobacterium paratuberculosis* is present in the intestines of animals feeding on heavily contaminated pasture.

Pt Pirie abattoir is now included in the State's surveillance program, making three export plants inspecting sheep for OJD. So far 3600 lines of sheep have been inspected at these plants with eight positives detected, seven from Kangaroo Island and one from a market line. Pt Pirie also slaughters goats and these have been included in the JD inspection regime.

Three SheepMAP flocks returned positive results on the Pooled Faecal Screening test. Follow up testing to resolve these flocks' status is being undertaken. In one of these flocks, testing has confirmed infection with the cattle strain of JD.

TUBERCULOSIS

A case of tuberculosis was detected at slaughter in local cattle. The animal was from a feedlot but traced back to a property in the south-east of the State. Immediate action was taken to restrict movement on the property and forward and back tracing was instigated. However, culture and typing of the organism confirmed it to be an avian strain.

RECENT PROBLEMS

There were a number of reports of annual rye grass staggers on Eyre Peninsula in the west of the state.

Extensive hatchings of locust led to a major control program being conducted with Animal Health staff involved in insecticide residue monitoring from sprays. The product used has a 14-day withholding period and sampling has been conducted in control areas to ensure this is being observed.

Samples from a sheep flock showing jaundice with a tentative diagnosis of pyrrolizidine poisoning confirmed liver damage but histology indicated it to be more likely that caltrop (*Tribulus terestris*) poisoning was the problem. Both heliotrope and caltrop flourished in many areas, particularly those with some summer rains.

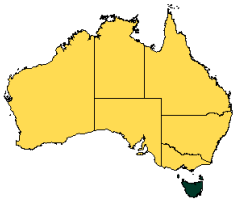
POSSIBLE FACIAL ECZEMA IN DAIRY CATTLE

A dairy farm in the south-est of the State with centre pivot irrigated pastures had a sudden mortality problem with about 60 cattle lost and 40 more sick. Some of the sick animals were sent to slaughter and found to be severely jaundiced. Examination of dead animals indicated the presence of severe hepatic damage with a tentative diagnosis of Pithomyces toxicity. Spore counts were done on the pasture and although spores were found, the levels were lower than those normally reported in an outbreak. There was considerable media interest in the incident.

BARRAMUNDI NODAVIRUS INFECTION

About 10 days after the arrival of 100 000 eleven-day-old barramundi larvae into an aquaculture premises, approximately 10% of the fish were seen swimming erratically near the surface, often on their sides or backs. There was blotchy pigment loss and microscopic examination revealed changes in the retina and nervous tissues typical of noda virus. All the fish were destroyed and thorough decontamination of the premises carried out.

Tasmania



Contributed by:
John Elliott
DPIWE, Tasmania

CYANOBACTERIAL TOXICITY

There were two probable outbreaks of cyanobacterial ('blue-green algal') toxicity during the quarter. In both instances microcystin-LR was confirmed (by Analytical Services Tasmania) in available drinking water. On one farm three animals died and 30 were ill in a mob of 500 nine-month-old calves. Hepatopathy, with marked fatty change and cytosegrosome formation was observed but there was no massive necrosis — as is expected in this condition. Such necrosis was however observed and was pronounced in the second outbreak, in which 20 first-calf heifers died suddenly and another 15 were ill. Clinical pathology revealed marked elevation of hepatic enzymes, and thrombocytopaenia indicative of disseminated intravascular coagulation. Gross findings and histopathology were typical of cyanobacterial toxicity.

WEANER MORTALITIES

Submissions from several properties experiencing ill-thrift and mortalities in weaner lambs were examined at Mt Pleasant Laboratories. Necropsies and laboratory tests revealed a suspected mycotoxicosis on one property. On the other properties several causes had contributed to the ill-thrift problem. These causes included nematode parasitism (especially *Nematodirus* spp), coccidia and nutritional hypoproteinaemia.

NODAVIRUS IN STRIPED TRUMPETER

Paraffin sections of Striped Trumpeter larvae (*Latris lineata)* from which nodavirus like particles were previously reported (*AHSQ* Vol. 5 No 4, State report) submitted to an OIE reference laboratory were reported to be strongly positive to betanodavirus by IFAT using antisera to anti-SJNNV (striped jack nervous necrosis virus).

Nodaviruses affect larval sea fish and are included in the OIE list of other significant diseases for aquatic species.

In 1989, a piscine nodavirus was identified as causing mortalities in 15-, 17- and 18- day-old barramundi larvae from a hatchery in North Queensland. The clinical signs of this disease include uncoordinated darting, corkscrew swimming, pale colouration, anorexia and wasting.

RICKETTSIA-LIKE ORGANISMS IN SALMONIDS

Rickettsia-like organisms (RLO) were detected in January in salmon from a sea cage that had experienced elevated but low level mortality for approximately two weeks. Similar organisms, sometimes associated with typical gross and histological lesions of Piscirickettsiosis, have subsequently been seen in several cages within the same limited geographic area of south-eastern Tasmania. Overall mortality has been low (< 5%). Subsequent PCR testing showed 99% agreement with *Piscirickettia salmonis* sequence obtained from GenBank. It was noted that a similar high level of agreement with this sequence has been seen with other (RLO) strains of low pathogenicity for salmonids.

Piscirickettsia salmonis is the first of the previously unrecognized rickettsial pathogens of fish to be fully characterized. Since the recognition of *P. salmonis* in 1989, the impact of rickettsial pathogens in fish has become increasingly apparent. Growing awareness of these organisms has led to the discovery of rickettsial diseases among diverse species of fish from different geographic locations and aquatic environments. The source, reservoir, and mode of transmission of these agents as well as appropriate methods of disease prevention and control remain to be established.

Death rates associated with piscirickettsiosis in salmonids range from a high of 90% among coho salmon in Chile to a low of 0.06% in Canada and Norway. All species of salmonids are affected by this disease, but the highest death rates occur in coho salmon cultured in salt water. A variety of clinical signs are associated with *P. salmonis* infection, but few are specific to piscirickettsiosis.

MACQUARIE HARBOUR SURVEY

Aeromonas salmonicida salmonicida is an important pathogen of farmed salmonids that causes the disease known as furunculosis. This strain does not occur in Tasmania. Atypical strains have been isolated on four occasions: 1981, 1989, 1993 and most recently in 2000. The first three isolations were in goldfish or farmed greenback flounder and, in 2000 from wild fish in close proximity to salmonid farms in Macquarie Harbour.

A survey of Macquarie Harbour has just been completed in which 80 fish from each farm site were examined using enrichment culture and PCR techniques developed at Mt Pleasant Laboratories. No evidence of infection was detected.

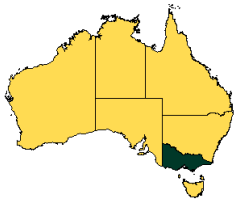
NOTIFIABLE DISEASES

The number of accessions during the quarter, and the results, for suspected notifiable diseases in Tasmania are summarised in the following table:

Disease	Animals	Accessions	
Species	Tested	Number	Positive
Chalkbrood, American and European Brood			
Bee	1	1	0
Hydatids			
Bovine	1	1	0
Ovine	3	2	1
Leptospirosis			
Bovine	6	3	2
Human	10	10	0
Q fever			
Ovine	10	6	0
Salmonellosis			
Avian	13	3	1
Bovine	23	16	1
Caprine	2	2	0
Equine	1	1	0
Ovine	21	14	0
Porcine	1	1	0
Wildlife	5	5	0

Victoria

Contributed by:
Tristan Jubb
DNRE, Victoria



ROSS RIVER VIRUS IN HORSES

High Ross River virus IgG antibody titres have been detected at VIAS Attwood for many years. Because IgG antibody titres to the virus may remain high for a long period, often years, following infection, interpretation of antibody titres and accompanying clinical signs has been difficult.

A new test has been developed at VIAS Attwood to differentiate between IgG and IgM antibodies to Ross River Virus. The presence of IgM antibodies in serum indicates recent infection. High levels of IgM are most likely to be caused by recent exposure to the virus.

Between January and April of this year, private practitioners from the Tatura and Echuca districts have seen more than 30 clinically ill horses test positive to Ross River IgM antibodies. Practitioners from Geelong and Ballarat have also seen a number of animals displaying clinical signs such as lethargy, poor performance, stiffness and varying degrees of polyarthritis that have returned high positive IgM antibody titres. Some animals have been quite severely debilitated.

While IgM antibody titres in six horses from the Tatura/Echuca region were greater than 1:81 920, two horses from the Ballarat region, and one from the Geelong region returned similar results. Animals affected by clinical signs and high IgM titres ranged from 4 to 20 years of age and both males and females were affected. Most have responded well to oral anti-inflammatory treatment.

KUNJIN VIRUS TITRES IN A HORSE.

A 16-year-old gelding from the Goulburn Valley was observed to have ataxia in mid March. The horse was circumducting and weak with a hypermetric gait and was hypersensitive to noise and touch. The animal responded to treatment with anti-inflammatory drugs. Haematology and serum biochemistry parameters were within normal limits. Antibody titres for Ross River Virus and Murray Valley Encephalitis were negative, but titres of 1:640 IgM and 1:5120 IgG were found to Kunjin virus. A follow up blood sample submitted five days later revealed an increase in IgG to 1:20480, indicating a five fold increase in antibody levels. Victoria has been screening all submissions where horses are noted as ataxic for flaviviruses and this is the first positive to date.

OTHER NERVOUS DISEASE INCIDENTS IN HORSES

Two horses on widely separate premises showed clinical symptoms suggestive of botulism — one recovered, the other died. The one that recovered had been fed chaff containing bits of minced rodent.

On a stud farm in northern Victoria, five mares in a group of eleven developed central nervous system signs including swaying of the hind limbs and urinary incontinence. Three of these mares have been destroyed on humane grounds and submitted for autopsy. The remaining two mares are in a stable condition. Clinical signs and post mortem findings are highly suggestive of EHV1 infection. EHV1 virus has been isolated from the respiratory tract of a foal from the same group. Arbovirus infection has been ruled out and there is no obvious source of pasture or chemical toxins.

All four horses on a property in outer Melbourne developed severe slobbering and blackening of the epithelium of the dorsal surface of the tongue. No oral lesions were apparent. All made an uneventful recovery when removed from the paddock but signs recurred when horses were reintroduced. Feed samples were negative for the fungal toxin slaframine, and sera were negative for vesicular stomatitis.

Four of 14 riding horses on a property in south western Victoria developed deep punctate ulcers of the oral mucosa. Surprisingly, the horses did not suffer inappetence, slobbering or bad breath. Serum neutralisation tests were negative for vesicular stomatitis antibodies. Recovery was uneventful.

ULCERATIVE ENTERITIS/ COLITIS CAUSING SUDDEN DEATH IN PIGLETS

An 1100-sow extensive piggery has experienced problems with sudden deaths in suckling pigs that were previously undiagnosed. The syndrome has occurred intermittently since the enterprise was established 6 years ago. In February and March, eight 5–10-day-old piglets died from this condition. Two of four piglets had segmental mucosal necrosis of the small intestine and the other two had perforated ulcers in the large intestine with thrombosis in associated blood vessels. Marked haemorrhage was present in the small intestinal wall of one piglet. *E. coli* endotoxaemia was diagnosed on the basis of heavy, almost pure growth of *E. coli* from the duodenum to the colon of all piglets, with no evidence of yersiniosis, coccidiosis or swine dysentery. A similar pathological picture was found in cases examined two months earlier.

PTYALISM IN DAIRY CATTLE

Over a two week period, eight cows died and four became sick in a 195 cow dairy herd. The average interval between onset of signs and death was five days. The cows became very weak and recumbent and then died or were destroyed when the farmer considered their condition hopeless. A common feature was an inability to swallow and profuse salivation. Gross and microscopic changes in tissues were unremarkable. Botulism was among the differential diagnoses considered but an ELISA for types C and D botulism antibodies (performed by Agriculture Western Australia's Animal Health Laboratory) on samples from recovered and unaffected cows were negative. A consumed roll of mouldy silage is considered a possible source of the problem.

SUSPECTED FACIAL ECZEMA IN DAIRY CATTLE IN WESTERN VICTORIA

A farmer moved 23 Angus and Murray Grey cows from a mob of 38 cows, to a new paddock. Over the next 3 days, 7 of these cows died. The cows that were not moved showed no signs of illness. Of the 16 remaining, nine were displaying signs of photosensitisation. The dead cows displayed haemorrhage from the rectum, and nostrils. Post mortems conducted on 2 cows, showed severe liver disease and intestinal haemorrhage. The farm is situated on the coast and thus has a moderate climate with few temperature extremes. The paddock into which the cows had been moved consisted of mixed grass species, including a significant quantity of Rough Dog's Tail, with copious amounts of trash. A *Pithomyces chartarum* spore count on one of three pasture samples was 125 000 spores per gm. Further investigations are to be completed, but the provisional diagnosis at this stage is facial eczema.

MALADMINISTRATION OF CONTROLLED RELEASE RUMEN BOLUSES IN SHEEP

In two separate incidents, sheep were found to have died due to inadvertent misadministration of controlled release rumen boluses. In both cases, boluses had lodged into the pharynx instead of being swallowed by the animal. Pharyngeal abscesses and necrosis causing septicaemia, and pharyngeal abscessation leading to severe mediastenitis, pericarditis, pleuritis and pneumonia were the consequences. One farmer lost 20 of 110 first cross ewes due to misplaced boluses. The ewes died over a two week period. The owner reported that in the 24 hours prior to death, the sheep became lethargic and some had a bloody nasal discharge. Copper rumen boluses were administered a week before the deaths started.

SUNBURN IN DAMARA EWES

Large patches of dead skin on the backs of first cross Damara ewes were attributed to severe sunburn. Predisposing factors included recent shearing, hot January temperatures, no shade and a relatively open fleece. Sunburn in British breed sheep occurs occasionally in Victoria when summer shorn. This is the first report of sunburn in this emerging breed of Middle Eastern origin.

ACIDOSIS ASSOCIATED WITH COPRA MEAL

Three properties in the south west of Victoria experienced significant morbidities and mortalities in weaner sheep. They became inappetent, listless, and some appeared bloated while others developed a brown scour. Many survivors were ill-thrifty for weeks and required extra attention to recover lost condition. The significant post mortem finding was highly acid rumen contents with putrefying debris. The common factor was the feeding of copra meal pellets, which can be very acidifying under some circumstances.

TOXOPLASMA ABORTION IN SHEEP

A 300-ewe Poll Dorset flock in north western Victoria suffered a severe abortion outbreak. The owner noticed large numbers of stillborn, mummified or weak new born lambs that died soon after birth. The maiden Poll Dorset ewes had a 25% lamb marking percentage. Older ewe flocks experienced losses but not to the same extent. Hay was being fed in the pre-lambing period. Feral cats were long term inhabitants of the hay shed. There were no other symptoms of ill-health in the ewes. Diagnosis was based on histopathology of brain sections demonstrating the characteristic pattern of necrosis associated with toxoplasmosis. Toxoplasma titres were higher in sera of aborting ewes than unaffected ewes.

HYPOCALCAEMIA IN NON-PREGNANT, NON-LACTATING EWES

Ataxia and recumbency were the presenting signs in a large number of non-lactating non-pregnant Merino ewes of mixed ages grazing mixed pastures alternating with barley stubble in central Victoria. Blood samples demonstrated hypocalcaemia. Badly affected animals responded to calcium injections and others responded to removal from the barley stubble. It is thought that the hypocalcaemia was induced by the large amount of barley grain in the diet.

LESSER LOOSESTRIFE POISONING

About 50 merino lambs in a mob of 400 died, and many more became sick, in January in the Southern Wimmera. Losses occurred over a 3 to 4 week period, commencing shortly after their introduction to stubble

paddocks containing the weed Lesser loosestrife (*Lythrum hyssopifolia*). Necropsy found light orange coloured livers; microscopically there was nephrosis and mild periacinar fatty change. Lesser Loosestrife is known to affect both liver and kidneys, although the toxic principle is not known.

AMERICAN FOULBROOD

American foulbrood (AFB) was detected by apiary staff or notified by owners in three commercial enterprises during the quarter. In each outbreak a large number of hives were affected and all were destroyed. Beekeepers are permitted to use oxytetracycline hydrochloride to control European Foulbrood, which is endemic in Victoria, but its use can mask field signs of American foulbrood allowing the disease to spread without detection.

A cooperative program between the Natural Resources and the Environment Department (NRE) and the apiary industry to test honey for spores of AFB is in its final stages of planning. The program has been accepted by NRE and the apiary industry, and will be implemented when the first spring honey is extracted in Spring 2001.

SURVEILLANCE FOR VARROA AND TRACHEAL MITES

The detection of varroa mite in New Zealand during 2000 has bought this exotic pest of bees closer to southern Australia. The Port Surveillance project in Victoria coordinated by NRE for AQIS continues at Geelong, Portland and Melbourne where more container traffic comes from New Zealand than to any other port in Australia. Shipping containers are ideal nesting areas for feral swarms of bees to travel from one country to another. The testing of sentinel hives for varroa mites is done with an insecticide strip each 12 weeks, and bees are examined for the presence of tracheal mites.

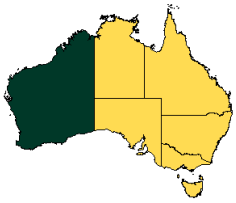
CHLAMYDIOSIS IN AN EASTERN ROSELLA

Examination of a male Eastern Rosella, the fourth bird in an outdoor aviary to die suddenly within a month, found the liver and spleen to both be enlarged.. Liver impression smears revealed elementary bodies consistent with Chlamydia, and antigen testing of both tissue and faeces was positive.

LYSSAVIRUS INFECTION IN A VICTORIAN BAT

A sick grey-headed flying fox (*Pteropus poliocephalus*) from the Melbourne Botanic Gardens had multifocal perivascular cuffing in its brain, as well as Negri bodies and dying neurons. Lyssavirus antigen was detected immunohistochemically and lyssavirus was cultured from the brain.

Western Australia



Contributed by:
Richard Norris
Agriculture WA

LABORATORY INVESTIGATIONS

There were 385 investigations of animal disease requiring laboratory testing during the report period. Of these, 95 were cost-recovery (private benefit) cases and 290 were charge-exempt (public benefit). Thirteen notifiable diseases were reported and there were nine exotic disease alerts.

EXOTIC DISEASE ALERTS

Nine cases where exotic disease was suspected were investigated. Most were excluded quickly as false alerts or were submitted as part of surveillance programs to prove absence of disease. A case of suspect goat pox was reported by a private veterinary laboratory. There were multiple scabby lesions on the udder skin of 20 of a herd of 100 dairy goats at Chidlow. The problem has been present for years and has only now been investigated in depth. No mortalities were reported and younger does only were affected. Two agency veterinarians visited the property and obtained further samples. Differential diagnoses included papilloma, orf and the exotic viral disease, goat pox. Viral cultures are proceeding but tests so far have ruled out the possibility of goat pox, papilloma virus and orf. Histopathological diagnosis was squamous cell carcinoma of the skin and investigations are continuing into the cause.

NOTIFIABLE DISEASES

There were 25 cases submitted as suspect notifiable diseases during the quarter. liver fluke (1 case - eggs found in faecal sample from imported horse). Category C (mandatory notification, discretionary quarantine); fowl cholera (3 cases), malignant catarrhal fever (2 cases), annual ryegrass toxicity (4 cases), epizootic ulcerative syndrome (1 case), mucosal disease (3 cases), bovine genital campylobacteriosis (4 cases), swine dysentery (1 case), echinococcosis (2 cases), infectious bovine rhinotracheitis (1 case), *Brucella ovis* infection (2 cases),

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 1.

Table 1: 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
Jan–Mar 00	1778	741	6436	302	2336	508	1326	0	779	0	445	22
Apr–Jun 00	1345	558	3712	594	1152	162	1734	0	933	6	328	2
Jul–Sep 00	1093	255	4707	654	1596	434	6744	0	1697	11	779	18
Oct–Dec 00	1646	370	5552	393	1937	266	511	0	742	10	388	30
Jan–Mar 01	1143	457	8588	285	1183	182	10812	2	872	11	328	32
NSW	23	3	784	0	28	7	84	0	319	0	131	26
NT	497	241	352	98	430	106	0	0	12	0	0	0
QLD	331	175	3921	150	291	50	114	0	203	11	33	5
SA	2	0	1023	0	0	0	0	0	37	0	3	0
TAS	0	0	8	0	0	0	11	0	0	0	0	0
VIC	68	0	282	0	254	0	296	2	188	0	99	1
WA	222	38	2218	37	180	19	10307	0	113	0	62	0

Control activities

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 139 abortion investigations were performed during the reporting period — all with negative results for bovine brucellosis. The results of recent brucellosis surveillance are shown in Table 2.

Table 2: Surveillance for bovine brucellosis

	Abortion Investigations		Test for other reasons	
	Tests	+ve	Tests	+ve
Jan–Mar 00	143	0	2646	0
Apr–Jun 00	195	0	2509	0
Jul–Sep 00	336	0	9569	0
Oct–Dec 00	155	0	1292	0
Jan–Mar 01	139	0	9100	0
NSW	7	0	84	0
NT	0	0	0	0
QLD	0	0	0	0
SA	4	0	15	0
TAS	2	0	1	0
VIC	0	0	467	0
WA	126	0	8533	0

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 3 shows the number of dairy herds tested free of EBL at the end of the quarter.

Table 3: Dairy herds tested free of enzootic bovine leucosis at 31 March 2001

	NSW	NT	QLD	SA	TAS	VIC	WA	AUS
Free	1516	0	1423	653	679	7874	520	12 665
Herds	1532	0	1438	655	741	8017	520	12 903

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 4 shows the number of accredited flocks at the end of the quarter.

Table 4: Ovine brucellosis accredited-free flocks at 31 March 2001

NSW	NT	QLD	SA	TAS	VIC	WA	AUS
1250	0	69	498	131	670	86	2704

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 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 5 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 2003. Programs for bovine Johne's disease are currently being evaluated. 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) shown in Table 6.

The National Ovine Johne's Disease Control and Evaluation Program (NOJDP) is a six-year program managed by Animal Health Australia to evaluate control of Ovine Johne's disease in Australia. A key component of the Program has been the gathering of surveillance data across many regions to assist in determining the prevalence and spread of the disease. Because of the volume of surveillance data now held by the Program, the Program Advisory Committee recommended that it would be appropriate to carry out an epidemiological analysis of this data to help understand the nature of this disease.

Specifically, the report will provide interpretation of the existing information, review the methodologies being used to carry out surveillance and recommend future, cost effective priorities for surveillance of ovine Johne's disease.

The final report will be presented to the Program Advisory Committee in July. The report will then be considered by the Animal Health Australia Board, prior to release to Company Members. For further information about the report, contact: Peter Thornber of Animal Health Australia.

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 7 summarises results from the program. Activity resulting from the detection of TB in a Queensland property in December 2000 is reported in the NSW and QLD State reports.

Table 5: Herds/flocks with JD at 31 March 2001

STATE	Cattle	Sheep	Goats	Deer	Alpaca	Total
NSW	144	511	9	0	0	664
NT	0	0	0	0	0	0
QLD #	2	0	0	0	0	2
SA	35	33	0	0	0	68
TAS	13	21	3	0	0	37
VIC	1381	14	10	4	6	1415
WA @	0	0	1	0	0	1
AUS	1575	579	23	4	6	2187

The herds in Queensland are in quarantine in response to finding infected animals introduced from an endemic State.

@ JD has been found in only one goat on one property. However a sheep flock also grazes on the same property. The infected property will be destocked of all sheep and goats for a period consistent with SDRs.

Table 6: Herds/flocks with a JDMAP status of at least MN1/TN1 status at 31 March 2001

STATE	Cattle	Sheep	Goats	Alpacas	Total
NSW	896	351	35	88	1370
NT	0	0	0	0	0
QLD	0	8	0	0	8
SA	167	228	3	32	430
TAS	103	32	1	0	136
VIC	161	133	5	25	324
WA	0	0	0	0	0
AUS	1327	752	44	145	2268

Information about components of the National JD Control Program can be obtained from State coordinators and Animal Health Australia's JD coordinators, David Kennedy 02 6365 6016 or Bruce Allworth 02 6036 9233. Lists of beef, dairy and alpaca herds and sheep flocks assessed in the Market Assurance Programs are available on a fax-back service on 1902 940 579 or on the internet (at http://www.aahc.com.au/jdmap).

Table 7: Results of the National Granuloma Submission Program

	Granulomas submitted	TB +ve
Jan–Mar 00	901	0
Apr–Jun 00	1193	0
Jul–Sep 00	1200	1
Oct–Dec 00	1158	1
Jan–Mar 01	962	0
NSW	144	0
NT	0	0
QLD	456	0
SA	78	0
TAS	64	0
VIC	53	0
WA	167	0

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 January to 31 March 2001

Serovars	avian	bovine	canine	equine	feline	ovine	porcine	other	Total
S. bovismorbificans	0	19	1	4	0	1	0	0	25
S. dublin	0	26	0	0	1	0	0	0	27
S. infantis	2	0	0	0	0	0	1	0	3
S. typhimurium	12	20	6	4	0	10	0	20	72
Other	4	13	9	2	5	2	8	15	58
Total	18	78	16	10	6	13	9	35	185

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.

Table 9 summarises recent NAQS activity. Table 10 shows the number of times that the insect trap sites were inspected during a quarter for both screw-worm fly (NAQS) and for screw-worm fly, Asian bees and bee parasites (AQIS's Port Surveillance program).

Contact: David Banks, Biosecurity Australia

Table 9: Summary of recent NAQS activity

	Oct – Dec 99		Jan – Mar 00		Apr – Jun 00		Jul – Sep 00		Oct – Dec 00		Notes
	Tested	+ve	Tested	+ve	Tested	+ve	Tested	+ve	Tested	+ve	
Aujeszky's disease	98	0	16	0	185	0	0	0	183	0	
Avian influenza	0	0	30	0	119	0	0	0	0	0	
Hog cholera	98	0	16	0	181	0	0	0	183	0	
Infectious bursal disease	1	0	0	0	92	0	0	0	0	0	
Japanese encephalitis	234	0	342	18	412	14	22	0	127	0	a
Newcastle disease	0	0	30	0	105	0	0	0	0	0	
Porcine reproductive and respiratory syndrome	98	0	16	0	181	0	0	0	183	0	
Surra	248	0	148	0	275	0	0	0	127	0	
Transmissible gastroenteritis	0	0	0	0	0	0	0	0	0	0	
Tropical canine pancytopaenia	2	0	0	0	16	0	9	0	0	0	

a 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 sentinel sites on islands in the Torres Strait, and for the first time on the mainland at the tip of Cape York Peninsula. During the first half of 2000, sentinel pigs seroconverted on the island of Badu, but no clinical cases were detected in humans or animals.

Table 10: Number of inspections of insect traps

	Oct – Dec 99		Jan – Mar 00		Apr –- Jun 00		Jul – Sep 00		Oct – Dec 00		Notes
	Tested	+ve	Tested	+ve	Tested	+ve	Tested	+ve	Tested	+ve	
NAQS											
Screw-worm fly	146	0	253	0	144	0	30	0	n/a	0	
AQIS port surveillance											
Asian honeybee					21	0	28	0	28	0	
Screw-worm fly			40	0	35	0	36	0	38	0	

NATIONAL TSE SURVEILLENCE PROGRAM

The OIE International Animal Health Code requires that countries (such as Australia) claiming to be free of transmissible spongiform encephalopathies (TSEs) have in place a surveillance system to detect BSE and scrapie should they occur. The National TSE 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 11 summarises the activity of the program over the last five quarters. Specimens from a small number of animals were unsuitable for testing. All specimens tested were negative for TSEs. Information about NTSESP is available on the internet (at http://www.brs.gov.au/aphb/ntsesp).

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

Table 11: Number of animals tested under NTSESP (All were negative for TSE)

	Jan – Mar 00		Apr – Jun 00		Jul – Sep 00		Oct – Dec 00		Jan – Mar 01	
	Cattle	Sheep	Cattle	Sheep	Cattle	Sheep	Cattle	Sheep	Cattle	Sheep
NSW	29	22	39	25	72	30	40	63	18	13
NT	9	0	1	0	12	0	3	0	0	0
QLD	28	7	38	18	51	16	76	5	14	9
SA	2	0	1	0	3	8	11	44	8	9
TAS	1	0	1	1	2	4	10	4	0	0
VIC	9	14	19	19	54	45	18	18	8	16
WA	9	33	10	30	11	28	19	61	11	37
AUS	87	76	109	93	205	131	177	195	59	84

ZOONOSES

The National Notifiable Diseases Surveillance System (NNDSS) of the Communicable Diseases Network Australia New Zealand (CDNANZ) collects statistics about many human diseases. A summary of information about six important zoonoses is submitted to NAHIS each quarter — see Table 12.

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

Table 12: Notifications of zoonotic diseases in humans

Disease	Q1-00	Q2-00	Q3-00	Q4-00	Q1-01	Current quarter						
	Australia				AUST	ACT	NSW	NT	QLD	SA	TAS	VIC	WA
Brucellosis[#]	59	4	7	11	7	0	0	0	5	1	0	1	0
Hydatidosis	44	5	6	8	11	0	nn	0	0	0	2	7	2
Leptospirosis	393	88	34	62	90	0	18	1	56	0	1	12	2
Listeriosis	84	0	0	14	22	0	7	0	7	1	1	6	0
Ornithosis	108	26	23	40	31	0	nn	0	nn	2	0	27	2
Q fever	661	108	147	131	193	0	33	0	150	2	0	5	3

nn disease is not notifiable in these States

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

NATIONAL RESIDUE SURVEY

Of 4106 samples tested during the quarter for agricultural and veterinary chemicals, 15 (0.37 %) had residues above the maximum residue limit (MRL). Only 1 tetracycline contravention was recorded in pigs, but this was not above the Codex and NRA-proposed MRL of 0.6 mg/kg.

One insecticide contravention in beef, a low level of bioresmethrin (for which there is no MRL in cattle) was probably due to contaminated grain treated with a grain protectant, being fed as a supplement. Of the 13 growth promotant detections, none could be attributed to illicit use (nine nortestosterone residues and one boldenone all resulted from endogenous production and three zeranol residues resulted from natural ingestion). Table 13 summarises the results for the quarter.

A testing program for endosulfan residues in beef cattle was conducted in Queensland and NSW targeting cotton growing districts in both States and an area of intensive horticulture production in Queensland. The program was conducted from 1 November 2000 to 23 February 2001. A total of 1532 samples were tested from 746 properties with only one residue above MRL (0.20 mg/kg) and one above half-MRL. The program has been reviewed and testing for next summer's program will be largely based on answers given on the National Vendor Declaration, supplemented by area-based testing as identified from an on-going risk assessment of endosulfan usage.

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

Contributed by: Jonathan Webber, National Residue Survey, AFFA

Table 13: National Residue Survey, 1 January to 31 March 2001

Each pair of figures gives the number of samples above either the maximum residue limit or the maximum permitted concentration and the number of samples tested.

	NSW		NT		QLD		SA		TAS		VIC		WA		AUS	
Anthelmintics																
cattle	0	73	0	0	0	76	0	11	0	3	0	47	0	14	0	224
pigs	0	9	0	1	0	8	0	6	0	0	0	9	0	5	0	38
sheep	0	121	0	0	0	14	0	40	0	16	0	80	0	60	0	331
other	0	11	0	0	0	15	0	8	0	0	0	10	0	1	0	45
Total	0	214	0	1	0	113	0	65	0	19	0	146	0	80	0	638
Antimicrobials																
cattle	0	102	0	0	0	129	0	15	0	9	0	79	0	23	0	357
pigs	0	77	0	0	0	54	0	44	0	4	1	76	0	45	1	300
poultry	0	6	0	0	0	4	0	4	0	0	0	11	0	4	0	29
sheep	0	69	0	0	0	6	0	17	0	10	0	41	0	35	0	178
other	0	9	0	0	0	16	0	12	0	0	0	11	0	2	0	50
Total	0	263	0	0	0	209	0	92	0	23	1	218	0	109	1	914
Growth promotants																
cattle	1	174	0	0	5	255	0	30	0	23	0	65	0	0	6	547
pigs	0	10	0	1	0	9	0	5	0	1	0	15	0	6	0	47
poultry	0	2	0	0	0	1	0	2	0	0	0	0	0	1	0	6
sheep	3	67	0	0	0	7	0	31	0	7	2	46	2	65	7	223
other	0	9	0	0	0	10	0	16	0	0	0	10	0	6	0	51
Total	4	262	0	1	5	282	0	84	0	31	2	136	2	78	13	874
Insecticides																
cattle	0	147	0	0	0	209	1	33	0	22	0	97	0	26	1	534
pigs	0	25	0	0	0	15	0	14	0	3	0	36	0	10	0	103
poultry	0	7	0	0	0	4	0	4	0	0	0	3	0	2	0	20
sheep	0	183	0	0	0	24	0	70	0	30	0	126	0	109	0	542
other	0	33	0	3	0	38	0	27	0	0	0	10	0	1	0	112
Total	0	395	0	3	0	290	1	148	0	55	0	272	0	148	1	1311
Metals																
cattle	0	18	0	0	0	29	0	5	0	2	0	14	0	3	0	71
pigs	0	9	0	0	0	12	0	7	0	0	0	6	0	5	0	39
poultry	0	5	0	0	0	3	0	2	0	0	0	3	0	2	0	15
sheep	0	27	0	0	0	7	0	9	0	5	0	24	2	14	2	86
Total	0	59	0	0	0	51	0	23	0	7	0	47	2	24	2	211
Miscellaneous																
cattle	0	24	0	0	0	32	0	4	0	3	0	12	0	3	0	78
pigs	0	9	0	0	0	5	0	8	0	1	0	13	0	2	0	38
sheep	0	11	0	0	0	2	0	3	0	1	0	4	0	5	0	26
other	0	3	0	0	0	4	0	6	0	0	0	1	0	2	0	16
Total	0	47	0	0	0	43	0	21	0	5	0	30	0	12	0	158

SUSPECT EXOTIC OR EMERGENCY DISEASE INVESTIGATIONS

There were 27 investigations of diseases suspected to be either exotic or a possible emergency reported during the quarter, as shown in Table 14.

Table 14: Exotic or emergency disease investigations reported during 1 January to 31 March 2001

Disease	Species	State	Date	Response (key below)	Finding
Bat lyssavirus	fauna	VIC	Jan	3	Lyssavirus
Bluetongue	porcine	TAS	Mar	3	negative
Bluetongue	ovine	VIC	Feb	2	transport stress
Bluetongue	ovine	QLD	Jan	2	Haemonchus oedema
Bovine spongiform encephalopathy	bovine	WA	Mar	3	negative
Equine morbillivirus	canine	NSW	Feb	3	negative
Equine morbillivirus	equine	QLD	Jan	2	negative
Foot-and-mouth disease	bovine	NSW	Mar	3	negative
Foot-and-mouth disease	bovine	QLD	Mar	1	bovine ephemeral fever
Screw-worm fly	canine	QLD	Mar	2	negative
Screw-worm fly	fauna	QLD	Jan	1	common blowfly
Newcastle disease	avian	NSW	Mar	3	negative
Newcastle disease	avian	NSW	Mar	2	negative
Newcastle disease	avian	NSW	Mar	2	negative
Newcastle disease	avian	NSW	Mar	2	negative
Newcastle disease	avian	NSW	Mar	2	negative
Newcastle disease	avian	NSW	Mar	3	negative
Newcastle disease	avian	NSW	Feb	2	negative
Newcastle disease	avian	NSW	Feb	2	negative
Newcastle disease	avian	NSW	Feb	2	negative
Newcastle disease	avian	NSW	Feb	2	negative
Newcastle disease	avian	WA	Feb	3	negative
Porcine circovirus type 2	porcine	NSW	Jan	3	negative
Scrapie	ovine	WA	Feb	3	negative
Vesicular disease	bovine	QLD	Feb	2	photosentisation
Vesicular stomatitis	equine	VIC	Feb	3	negative
Vesicular stomatitis	equine	VIC	Feb	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

NAHIS contacts

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

Name	Role	Phone	Fax	e-mail
Chris **Baldock**	National NAHIS Coordinator	07 3255 1712	07 3844 5501	chris@ausvet.com.au
David **Banks**	Northern Australia Quarantine Strategy	02 6272 5444	02 6272 3399	David.Banks@affa.gov.au
Janet **Berry**	Qld State Coordinator	07 4658 4414	07 4658 4433	BerryJ@dpi.qld.gov.au
Chris **Bunn**	Emergency Disease Preparedness, AFFA	02 6272 5540	02 6272 3372	Chris.Bunn@affa.gov.au
Kim **Critchley**	SA State Coordinator	08 8207 7908	08 8207 7852	critchley.kim@saugov.sa.gov.au
John **Elliott**	Tas. State Coordinator	03 6336 5334	03 6336 5374	John.Elliott@dpiwe.tas.gov.au
Graeme **Garner**	Commonwealth NAHIS Coordinator	02 6272 5369	02 6272 4533	Graeme.Garner@affa.gov.au
Robert **Harmata**	Acting NT Coordinator	08 8999 2168 08 8999 2094	08 8999 2098	Robert.Harmata@aqis.gov.au
Angela **Merianos**	Communicable Diseases Intelligence	02 6289 1555	02 6289 7791	http://www.health.gov.au
Tristan **Jubb**	Vic. State Coordinator	03 5430 4545	03 5430 4520	tristan.jubb@nre.vic.gov.au
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Animal Health Surveillance

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