Acknowledgements

The Animal Health in Australia 2004 report draws together information provided primarily by the Australian Government Department of Agriculture, Fisheries and Forestry, and state and territory government agencies. Animal Health Australia maintains responsibility for production of the report for the Australian Chief Veterinary Officer as part of the National Animal Health Information System (NAHIS).

Animal Health Australia would like to acknowledge the efforts of all contributors to this project including the Animal Health in Australia Editorial Panel. Appreciation is also extended to the national and state coordinators for the NAHIS and the organisations and individuals who contributed photos and materials for the report.

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Technical editing by Biotext, Canberra.

Designed and Typeset by Angela Speeding Graphic Design.

Printed by Goanna Print.

Produced by Animal Health Australia.

Feedback

Feedback, comments and suggestions regarding the Animal Health in Australia 2004 report are welcomed.

Please forward all correspondence to the Manager, Communications and Member Services - Animal Health Australia via email at aahc@aahc.com.au or visit our website at http://www.aahc.com.au
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Animal Health in Australia 2004 provides an insight into national animal health activities that have occurred across Australia’s diverse animal production systems during the year 2004. The report contains details of new and ongoing animal health programs as well as information about Australia’s animal disease status and regional initiatives. I would like to draw attention to some features of Australia’s animal health situation that were particularly significant in 2004.

As Australia remained free of major emergency animal disease outbreaks during 2004, government and industry groups were able to consolidate Australia’s high standard of animal health. Constructive linkages between animal and human health agencies, industry, and other parties were further strengthened, to facilitate joint involvement in decision-making processes and implementation of decisions.

Emergency management and preparedness activities continued to be of particular importance, as zoonotic avian influenza emerged in Asia. The Australian Government responded to this outbreak in our region in a number of ways. Within Australia, government departments responsible for animal health, human health, the environment and foreign affairs worked together closely to address the issues. The Australian Quarantine and Inspection Service increased border protection activities. Australia cooperated with international organisations to provide technical assistance, scientific research and training on highly pathogenic avian influenza in the Asian region. Industry and government conducted awareness-raising campaigns and took steps to enhance biosecurity at every level.

Bovine Spongiform Encephalopathy (BSE) remains a disease of international concern, and there is no evidence of BSE in clinical or pre-clinical forms in Australia. This has been achieved and maintained through strict controls on imports of live animals and animal feeds containing meat and bone meal, a ruminant feed ban and a national targeted surveillance program that meets the standards of the World Organisation for Animal Health (OIE). These and other TSE-related activities have been integrated into the Transmissible Spongiform Encephalopathies Freedom Assurance Program (TSEFAP). During 2004 more than 1150 operations (from renderers to end-users) were audited by state and territory authorities, who also conduct education programs to ensure that the various industry sectors are fully aware of their obligations and responsibilities regarding animal feeds.

Animal health authorities are continuing to work closely with their human health counterparts to ensure Australia’s TSE prevention measures are fully effective.

As an integral part of the Australian Wildlife Health Network’s strategic plan, a major milestone review of performance was completed in December. The Network has made outstanding progress in a short time. It provides a much-needed national source of information on wildlife health, communication systems to provide early alerts on emerging wildlife health issues and a national network of wildlife health workers with flow-on benefits to human and animal health and wildlife conservation.

The Australian Biosecurity Cooperative Research Centre for Emerging Infectious Disease (AB-CRC) completed its first year of operation in 2004. The CRC brings together animal health and public health expertise from a range of organisations in a long-term cooperative arrangement. Through its research and education programs, it is focusing on the impact of emerging infectious diseases on the livestock industries, public health and the environment. The research programs are in three main areas: technologies to enhance detection, ecology of emerging infectious diseases and advanced surveillance systems.

Australia continues to contribute strongly to the work of international organisations such as the World Organisation for Animal Health (OIE). Australia currently chairs the OIE Regional Commission for Asia, the Far East and Oceania and the OIE Sub-Commission for FMD in Southeast Asia. Australia also chairs the OIE Aquatic Animal Health Standards Commission.

Key issues for 2005 will be emerging and re-emerging threats, strengthening linkages with human health and environmental authorities, and consultation with overseas countries on issues of regional and global importance.

I commend this report as a valuable source of information on Australia’s animal health system. The website of Animal Health Australia provides further information and links to related sites. Details of other websites that contain additional information on subjects of interest are included throughout this report.

Gardner Murray
Australian Chief Veterinary Officer

1 http://www.aahc.com.au
Australia maintains its high standard of animal health through cooperative approaches and partnerships between all levels of government and the livestock industries.

This report describes the surveillance activities, specific disease control programs and other activities that protect animal health in Australia, and highlights the major developments of 2004.

Organisation of the animal health system in Australia

Government veterinary services in Australia are provided by national, state, territory and local governments. Consultative committees ensure that these elements work with industry to provide an integrated national animal health system. The Australian Government is responsible for quarantine and international animal health matters, whereas disease control and eradication programs are the responsibility of state and territory governments.

A peak body, Animal Health Australia (AHA), oversees the national system of animal health services. It facilitates and manages national animal health programs, and develops appropriate and sustainable strategies and data collection from nongovernment sources, such as private practitioners.

Emergency animal disease preparedness

In late 2003 and early 2004, several Asian countries experienced a major epidemic of highly pathogenic avian influenza in poultry. In response to such threats, Australia has in place a whole of government support arrangement to facilitate responses to such incidents.

To increase preparedness for emergencies in animal diseases, various Australian Veterinary Emergency Plan (AUSVETPLAN) manuals were developed or modified in 2004. Major outputs included the endorsement by the relevant parties to the Emergency Animal Disease Response Agreement of AUSVETPLAN manuals for bovine brucellosis, anthrax, bee diseases and pests, and porcine respiratory and reproductive syndrome.

The contract for production, storage and supply of foot-and-mouth disease (FMD) vaccine was finalised in October 2004 between Animal Health Australia and Merial, an international animal health pharmaceutical company. The contract provides for the rapid supply of antigen for a range of FMD strains.

The Frawley Report

In 2003, the Australian Government conducted a Review of Rural Veterinary Services1 (The Frawley Report) to explore concerns about supply and demand challenges facing rural veterinary practitioners.

Implementation of the Government’s response to the review intensified during 2004. Three steering committees have been formed to progress the Government’s response with respect to surveillance, use of diagnostic laboratories, and integration of nongovernment veterinarians.

In May 2004, the Australian Veterinary Reserve was launched. It will consist of 100 trained private veterinary practitioners, and will be used by state and territory government jurisdictions during a major emergency disease outbreak.

In late 2004, the Australasian Veterinary Boards Council conducted a review of veterinary science education and registration requirements entitled Review of Veterinary Science Education and Training2. Other initiatives are in progress to develop an enhanced animal health surveillance system, including wildlife surveillance strategies and data collection from nongovernment sources.

Animal welfare

The Australian Animal Welfare Strategy (AAWS) was endorsed by the Primary Industries Standing Committee in May 2004. It was developed under the auspices of the National Consultative Committee on Animal Welfare, based on broad stakeholder and community consultation. It provides a framework for sustainable, scientifically-based improvements in animal welfare outcomes and applies to animals used for the production of food and fibre and other products, animals used in research and teaching, companion and guide animals, animals used for recreation, entertainment and display, native and introduced wildlife, and feral animals.

The Australian Government has committed $6 million over four years to assist the implementation of the AAWS.

The initial Australian Standards for the Export of Livestock were finalised during 2004. They cover the six major steps along the export chain for cattle, sheep, goats, buffalo, deer and camelds.

These steps are:
> sourcing of livestock and their preparation for transport by sea
> land transportation of livestock for export
> livestock management at pre-embarkation registered premises
> vessel preparation and loading of livestock onto ships
> livestock management onboard sea vessels
> air transportation of livestock.
The standards will be used by livestock exporters to meet the requirements for an Export Licence. The new arrangements came into effect on 1 December 2004.

In 2004, a Review of the Australian Model Animal Welfare Codes of Practice was commenced. The review developed options for the purpose, structure, production and review process, and funding arrangements for animal welfare codes and standards in Australia.

**Animal disease control programs**

In 2004, state-based programs, guided by nationally agreed standard operating procedures, continued to effectively control the animal diseases that are regionally distributed in Australia. Under the new national approaches to bovine Johne’s disease and ovine Johne’s disease, risk assessment and assurance schemes were developed by the Australian livestock industries and governments for dairy cattle herds, pure beef cattle herds and sheep flocks. A new National Dairy Score for rating dairy herds for Johne’s disease was also endorsed in 2004.

The National Newcastle Disease Management Plan, managed by Animal Health Australia, was developed and implemented following incidences of the disease in New South Wales and Victoria in 2002. This national approach will minimise the risk of Newcastle disease outbreaks from Australian-origin virulent viruses, protect the status of noninfected flocks and regions, and reduce the social, economic and trade impact of Newcastle disease at farm, regional and national levels.

**Consumer protection**

Many of the programs that protect consumers in Australia and overseas by assuring the safety of both locally produced and imported foods are administered by the Australian Quarantine and Inspection Service (AQIS). In 2004, the Australian Government continued reforms to ensure that food standards are integrated nationally, and developed policy guidelines on various food regulatory matters, such as food safety programs.

During 2004, Australia continued to participate in the development of international science-based food standards through the Codex Alimentarius Commission (Codex) and its subsidiary bodies. The Codex Committee on Food Import and Export Inspection and Certification Systems started work on a number of proposed draft standards relating to food inspection and certification systems in areas including equivalence traceability/product tracing, risk-based inspection of imported foods, and principles for electronic certification.

The Department of Agriculture, Fisheries and Forestry (DAFF) continued to focus on the monitoring and surveillance aspects of antimicrobial resistance management, as part of the Strategy for Antimicrobial Resistance Surveillance in Australia.

**Aquatic animal health**

During 2004, Australia’s second national strategic plan for aquatic animal health (AQUAPLAN) was developed through a series of workshops, with input from a large and diverse group of stakeholders.

The Aquatic Animal Veterinary Diseases Emergency Plan (AQUAVETPLAN) Disease Strategy: Viral encephalopathy and retinopathy was endorsed. This fish disease has been reported from a number of Australian states.

In September 2004, the Primary Industries Standing Committee (PISC) endorsed changes to Australia’s National List of Reportable Disease of Aquatic Animals. European catfish virus (ECV) and European sea trout virus (ESV) were removed from their listing as part of the epizootic haematopoietic necrosis (EHN) complex and listed separately, but under one entry. ECV and ESV are indistinguishable from each other, but different from the EHN virus. Grouper iridoviral disease (GID) and infection with koi herpes virus (KHV) were added to the national list.

In 2004, advances in diagnostic technology allowed the definitive identification of an apparently avirulent prawn virus, and an endemic disease was reported for the first time in a native Australian fish species. Also, importation of live barramundi cod for the ornamental fish industry was suspended.

**Imports and exports**

Biosecurity Australia and AQIS maintain Australia’s animal health status by managing potential pest and disease threats posed by imports, and expanding the country’s access to export markets.

On 1 December 2004, new arrangements were instigated to establish Biosecurity Australia as an independent agency within DAFF, to improve stakeholder confidence in the import risk analysis process for assessing and managing pest and disease risks associated with agricultural imports. The new arrangements also clarified Biosecurity Australia’s role in providing technical and scientific input for Australia’s export market access requests for animals and their genetic products.

The Eminent Scientists Group was established in 2004, playing a key role in assessing the way in which stakeholder comments on draft Import Risk Analysis (IRA) reports are addressed. This is an additional step in the IRA process to assure stakeholders that the valid scientific evidence in the submissions is adequately considered by the risk analysis teams.

Biosecurity Australia is currently conducting 24 animal and aquatic animal IRAs, including ones for prawns and prawn products, nonviable bivalve molluscs, uncooked chicken meat, edible eggs and egg products, pig semen, horses and cats, and a range of zoo animals. During 2004, a major milestone was the completion of the pigmeat IRA.

AQIS provides quarantine inspection services for the arrival of international passengers, cargo, mail, animals and plants or their products. The service also provides inspection and certification for a range of animal and plant products exported from Australia. During 2004, AQIS commenced screening 100% of flights, passengers, baggage and mail from countries considered high risk for avian influenza.
Australia is fortunate to be free from all major epidemic diseases of livestock, and relatively free from other serious livestock pests and diseases. Historically, this can be attributed to Australia’s geographical isolation from other livestock-raising countries. In the early colonial period, the long sea voyage was itself an effective quarantine barrier. Today, Australia remains free from many major animal diseases through the continued application of scientifically based biosecurity measures. In addition, a range of surveillance activities, together with specific disease control programs, operate to maintain the excellent health status of Australia’s animal populations.

**Status of significant animal diseases listed by the OIE**

The veterinary services of member countries of the World Organisation for Animal Health (OIE), the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO) submit responses to an annual questionnaire from the OIE. In 2004, this process gathered information on the List A and B diseases of the OIE, and the List C diseases of the FAO (these disease classifications are explained below).

From 1 January 2005, Lists A and B will be combined into a single list of notifiable terrestrial animal diseases. These diseases and other events of epidemiological significance must be notified to the OIE within 24 hours. The changes have been introduced to improve the OIE early warning system.

Australia’s animal disease status for Lists A, B and C diseases for 2004 are shown in the tables that follow.
OIE List A diseases

Diseases recognised internationally as being of significant importance to trade are defined by the OIE as ‘List A diseases’. These diseases can spread rapidly and can have serious socioeconomic or public health consequences. Table 1.1 shows Australia’s status for List A diseases.

Table 1.1  Australia’s status for OIE List A diseases

<table>
<thead>
<tr>
<th>DISEASE</th>
<th>STATUS</th>
<th>DATE OF LAST OCCURRENCE/NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foot-and-mouth disease</td>
<td>Free</td>
<td>1872</td>
</tr>
<tr>
<td>Vesicular stomatitis</td>
<td>Free</td>
<td>Never occurred</td>
</tr>
<tr>
<td>Swine vesicular disease</td>
<td>Free</td>
<td>Never occurred</td>
</tr>
<tr>
<td>Rinderpest</td>
<td>Free</td>
<td>1923</td>
</tr>
<tr>
<td>Peste des petits ruminants</td>
<td>Free</td>
<td>Never occurred</td>
</tr>
<tr>
<td>Contagious bovine pleuropneumonia</td>
<td>Free</td>
<td>1967; Australia declared freedom in 1973</td>
</tr>
<tr>
<td>Lumpy skin disease</td>
<td>Free</td>
<td>Never occurred</td>
</tr>
<tr>
<td>Rift Valley fever</td>
<td>Free</td>
<td>Never occurred</td>
</tr>
<tr>
<td>Bluetongue</td>
<td>Viruses present</td>
<td>Restricted to specific areas (northern part of the country); sentinel program</td>
</tr>
<tr>
<td>Sheep pox and goat pox</td>
<td>Free</td>
<td>Never occurred</td>
</tr>
<tr>
<td>African horse sickness</td>
<td>Free</td>
<td>Never occurred</td>
</tr>
<tr>
<td>African swine fever</td>
<td>Free</td>
<td>Never occurred</td>
</tr>
<tr>
<td>Classical swine fever</td>
<td>Free</td>
<td>1962</td>
</tr>
<tr>
<td>Highly pathogenic avian influenza</td>
<td>Free</td>
<td>1997</td>
</tr>
<tr>
<td>Newcastle disease</td>
<td>Viruses present</td>
<td>Sporadic outbreaks occur; last reported 2002</td>
</tr>
</tbody>
</table>
**OIE List B diseases**

The OIE defines a second group of diseases (List B diseases) that are considered to be of socioeconomic or public health importance within infected countries and significant in international trade. Table 1.2 shows Australia’s status for List B diseases.

<table>
<thead>
<tr>
<th>DISEASE</th>
<th>STATUS</th>
<th>DATE OF LAST OCCURRENCE/NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Multiple species diseases</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anthrax</td>
<td>Present</td>
<td>Limited distribution</td>
</tr>
<tr>
<td>Aujeszky’s disease</td>
<td>Free</td>
<td>Never occurred</td>
</tr>
<tr>
<td>Echinococcosis/hydatidosis</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Heartwater</td>
<td>Free</td>
<td>Never occurred</td>
</tr>
<tr>
<td>Leptospirosis</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>New World screw-worm fly (Cochliomyia hominivorax)</td>
<td>Free</td>
<td>Never occurred</td>
</tr>
<tr>
<td>Old World screw-worm fly (Chrysomya bezziana)</td>
<td>Free</td>
<td>Never occurred</td>
</tr>
<tr>
<td>Paratuberculosis</td>
<td>Present</td>
<td>National control/management programs</td>
</tr>
<tr>
<td>Q fever</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Rabies</td>
<td>Free</td>
<td>1867; two human cases in 1987 and 1990 were acquired overseas</td>
</tr>
<tr>
<td>Trichinelliosis</td>
<td>Not reported</td>
<td>T. spiralis not present; T. pseudospiralis present in wildlife</td>
</tr>
<tr>
<td><strong>Cattle diseases</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bovine anaplasmosis</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Bovine babesiosis</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Bovine brucellosis</td>
<td>Free</td>
<td>Australia declared freedom in 1989</td>
</tr>
<tr>
<td>Bovine cysticercosis</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Bovine genital campylobacteriosis</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Bovine spongiform encephalopathy</td>
<td>Free</td>
<td>Never occurred; National Transmissible Spongiform Encephalopathies Freedom Assurance Program includes surveillance</td>
</tr>
<tr>
<td>Bovine tuberculosis</td>
<td>Free</td>
<td>Australia declared freedom in 1997; because of the nature of the disease, sporadic residual cases are reported</td>
</tr>
<tr>
<td>Dermatophilosis</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Enzootic bovine leucosis</td>
<td>Present</td>
<td>Voluntary accreditation and testing programs in place; very low prevalence</td>
</tr>
<tr>
<td>Haemorrhagic septicaemia</td>
<td>Free</td>
<td>Never occurred; strains of Pasteurella multocida present, but not the 6b or 6e strains that cause haemorrhagic septicaemia</td>
</tr>
<tr>
<td>Infectious bovine rhinotracheitis/infectious pustular vulvovaginitis</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Malignant catarrhal fever</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Theileriosis</td>
<td>Free</td>
<td>Nonpathogenic T. buffeli only; T. parva and T. annulata not present</td>
</tr>
<tr>
<td>Trichomonosis</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Trypanosomosis (tsetse-borne)</td>
<td>Free</td>
<td>Never occurred</td>
</tr>
<tr>
<td>Disease Status</td>
<td>Disease</td>
<td>Disease Description</td>
</tr>
<tr>
<td>----------------</td>
<td>---------</td>
<td>---------------------</td>
</tr>
<tr>
<td><strong>Sheep and goat diseases</strong></td>
<td>Caprine and ovine brucellosis (excluding <em>Brucella ovis</em>)</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Caprine arthritis/encephalitis</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td>Contagious agalactia</td>
<td>Not reported</td>
</tr>
<tr>
<td></td>
<td>Contagious caprine pleuropneumonia</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Enzootic abortion of ewes (ovine chlamydiosis)</td>
<td>Not reported</td>
</tr>
<tr>
<td></td>
<td>Maedi-visna</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Nairobi sheep disease</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Ovine epididymitis (<em>Brucella ovis</em>)</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td>Ovine pulmonary adenomatosis</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Salmonellosis (<em>Salmonella abortusovis</em>)</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Scrapie</td>
<td>Free</td>
</tr>
<tr>
<td><strong>Equine diseases</strong></td>
<td>Contagious equine metritis</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Dourine</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Epizootic lymphangitis</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Equine encephalomyelitis (Eastern and Western)</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Equine infectious anaemia</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td>Equine influenza</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Equine piroplasmosis</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Equine rhinopneumonitis</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td>Equine viral arteritis</td>
<td>Serological evidence</td>
</tr>
<tr>
<td></td>
<td>Glanders</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Horse mange</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Horse pox</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Japanese encephalitis</td>
<td>Serological evidence</td>
</tr>
<tr>
<td></td>
<td>Surra (<em>Trypanosoma evansi</em>)</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Venezuelan equine encephalomyelitis</td>
<td>Free</td>
</tr>
<tr>
<td><strong>Swine diseases</strong></td>
<td>Atrophic rhinitis of swine</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td>Enterovirus encephalomyelitis</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Porcine brucellosis</td>
<td>Serological evidence</td>
</tr>
<tr>
<td></td>
<td>Porcine cysticercosis</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Porcine reproductive and respiratory syndrome</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Transmissible gastroenteritis</td>
<td>Free</td>
</tr>
</tbody>
</table>
Table 1.2  Australia’s status for OIE List B diseases (terrestrial)  cont.

<table>
<thead>
<tr>
<th>DISEASE</th>
<th>STATUS</th>
<th>DATE OF LAST OCCURRENCE/NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Avian diseases</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avian chlamydiosis</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Avian infectious bronchitis</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Avian infectious laryngotracheitis</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Avian mycoplasmosis (Mycoplasma gallisepticum)</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Avian tuberculosis</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Duck virus enteritis</td>
<td>Free</td>
<td>Never occurred</td>
</tr>
<tr>
<td>Duck virus hepatitis</td>
<td>Free</td>
<td>Never occurred</td>
</tr>
<tr>
<td>Fowl cholera</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Fowl pox</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Fowl typhoid</td>
<td>Free</td>
<td>Last reported in 1952</td>
</tr>
<tr>
<td>Infectious bursal disease (Gumboro disease)</td>
<td>Present</td>
<td>Infectious bursal disease occurs in a mild form; Gumboro disease does not occur</td>
</tr>
<tr>
<td>Marek’s disease</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Pullorum disease</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td><strong>Lagomorph diseases</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Myxomatosis</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Rabbit haemorrhagic disease</td>
<td>Present</td>
<td>Used as a biological control agent for wild rabbits</td>
</tr>
<tr>
<td>Tularaemia</td>
<td>Free</td>
<td>Never occurred</td>
</tr>
<tr>
<td><strong>Bee diseases</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acariosis of bees</td>
<td>Free</td>
<td>Never occurred</td>
</tr>
<tr>
<td>American foulbrood</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>European foulbrood</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Nosemosis of bees</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Varroosis</td>
<td>Not reported</td>
<td>Varroa jacobsoni last reported in 1997 in the Torres Strait; does not occur on mainland Australia</td>
</tr>
<tr>
<td><strong>Other List B diseases</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leishmaniosis</td>
<td>Atypical organism found</td>
<td>A new Leishmania species has been isolated from skin lesions in a group of captive red kangaroos. Mild lesions developed when the animals were moved away from their natural habitat to a hot, humid climate. Human health authorities have been notified but no human cases have been detected. Investigations are continuing.</td>
</tr>
</tbody>
</table>
**FAO List C diseases**

The FAO defines a third group of animal diseases that are of socioeconomic or sanitary importance at the local level. The OIE includes List C diseases in its reporting requirements. Table 1.3 shows Australia's status for List C diseases.

### Table 1.3  Australia’s status for FAO List C diseases

<table>
<thead>
<tr>
<th>DISEASE</th>
<th>STATUS</th>
<th>DATE OF LAST OCCURRENCE/NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listeriosis</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Toxoplasmosis</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Melioidosis</td>
<td>Present</td>
<td>Restricted distribution</td>
</tr>
<tr>
<td>Blackleg</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Botulism</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Other clostridial infections</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Other pasteurelloses</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Actinomycosis</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Intestinal <em>Salmonella</em> infections</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Coccidiosis</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Distomatosis (liver fluke)</td>
<td>Present</td>
<td>Restricted distribution</td>
</tr>
<tr>
<td>Filarisis</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Mucosal disease/bovine virus diarrhoea</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Vibronic dysentery</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Warble infestation</td>
<td>Free</td>
<td>Never reported</td>
</tr>
<tr>
<td>Contagious pustular dermatitis</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Footrot</td>
<td>Present</td>
<td>Restricted distribution</td>
</tr>
<tr>
<td>Contagious ophthalmia</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Enterotoxaemia</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Caseous lymphadenitis</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Sheep mange</td>
<td>Free</td>
<td>1896</td>
</tr>
<tr>
<td>Equine coital exanthema</td>
<td>Free</td>
<td>Never reported</td>
</tr>
<tr>
<td>Ulcerative lymphangitis</td>
<td>Free</td>
<td>Never reported</td>
</tr>
<tr>
<td>Strangles</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Salmonellosis (<em>Salmonella abortus-equi</em>)</td>
<td>Free</td>
<td>Never reported</td>
</tr>
<tr>
<td>Swine erysipelas</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Infectious coryza</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Avian encephalomyelitis</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Avian spirochaetosis</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Avian salmonellosis (excluding fowl typhoid and pullorum disease)</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Avian leucosis</td>
<td>Present</td>
<td></td>
</tr>
</tbody>
</table>

Further information on Australia’s annual health status can be found on the National Animal Health Information System (NAHIS) website.4

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National reporting system for animal diseases in Australia

Information on animal health in Australia is available from national, state and territory government agencies, and from the private sector. NAHIS provides timely and accurate information from various sources about Australia’s animal health status. This information supports trade in animal commodities and meets Australia’s international animal health reporting obligations. Chapter 2 provides further information on NAHIS.

Status of aquatic animal diseases in Australia

In 2004, the OIE listed 16 fish diseases, 11 mollusc diseases and eight crustacean diseases in its Aquatic Animal Health Code. Australia is free of most of these diseases. Table 1.4 shows the status of each OIE-listed disease in 2004, and Figure 1.1 shows the geographical distribution of each locally present disease of that list, based on state-by-state reporting.

Table 1.4  Australia’s status for OIE-listed diseases of aquatic animals

<table>
<thead>
<tr>
<th>DISEASE/AGENT</th>
<th>STATUS IN AUSTRALIA IN 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Finfish diseases</strong></td>
<td></td>
</tr>
<tr>
<td>Epizootic haematopoietic necrosis - EHN virus</td>
<td>Locally present</td>
</tr>
<tr>
<td>Epizootic haematopoietic necrosis - European catfish virus/ European sheatfish virus</td>
<td>Exotic</td>
</tr>
<tr>
<td>Infectious haematopoietic necrosis</td>
<td>Exotic</td>
</tr>
<tr>
<td><em>Oncorhynchus masou</em> virus disease</td>
<td>Exotic</td>
</tr>
<tr>
<td>Spring viraemia of carp</td>
<td>Exotic</td>
</tr>
<tr>
<td>Viral haemorrhagic septicaemia</td>
<td>Exotic</td>
</tr>
<tr>
<td>Channel catfish virus disease</td>
<td>Exotic</td>
</tr>
<tr>
<td>Viral encephalopathy and retinopathy</td>
<td>Locally present</td>
</tr>
<tr>
<td>Infectious pancreatic necrosis</td>
<td>Exotic</td>
</tr>
<tr>
<td>Infectious salmon anaemia</td>
<td>Exotic</td>
</tr>
<tr>
<td>Epizootic ulcerative syndrome (<em>Aphanomyces invadans</em>)</td>
<td>Locally present</td>
</tr>
<tr>
<td>Bacterial kidney disease (<em>Renibacterium salmoninarum</em>)</td>
<td>Exotic</td>
</tr>
<tr>
<td>Enteric septicaemia of catfish (<em>Edwardsiella ictaluri</em>)</td>
<td>Not reported in 2004. One isolated case in 2001 in zebrafish in a secure laboratory.</td>
</tr>
<tr>
<td>Piscirickettsiosis (<em>Piscirickettsia salmonis</em>)</td>
<td>Exotic</td>
</tr>
<tr>
<td>Gyrodactylsis (<em>Gyrodactylus salaris</em>)</td>
<td>Exotic</td>
</tr>
<tr>
<td>Red sea bream iridoviral disease</td>
<td>Exotic</td>
</tr>
<tr>
<td>White sturgeon iridoviral disease</td>
<td>Exotic</td>
</tr>
</tbody>
</table>
Table 1.4  Australia’s status for OIE-listed diseases of aquatic animals cont.

<table>
<thead>
<tr>
<th>DISEASE/AGENT</th>
<th>STATUS IN AUSTRALIA IN 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mollusc diseases</strong></td>
<td></td>
</tr>
<tr>
<td>Infection with <em>Bonamia ostreae</em></td>
<td>Exotic</td>
</tr>
<tr>
<td>Infection with <em>Bonamia exitiosa</em></td>
<td>Exotic</td>
</tr>
<tr>
<td>Infection with <em>Mikrocytos roughleyi</em></td>
<td>Locally present</td>
</tr>
<tr>
<td>Infection with <em>Haplosporidium nelsoni</em></td>
<td>Exotic</td>
</tr>
<tr>
<td>Infection with <em>Marteilia refringens</em></td>
<td>Exotic</td>
</tr>
<tr>
<td>Infection with <em>Marteilia sydneyi</em></td>
<td>Locally present</td>
</tr>
<tr>
<td>Infection with <em>Mikrocytos mackini</em></td>
<td>Exotic</td>
</tr>
<tr>
<td>Infection with <em>Perkinsus marinus</em></td>
<td>Exotic</td>
</tr>
<tr>
<td>Infection with <em>Perkinsus olseni/atlanticus</em></td>
<td>Locally present</td>
</tr>
<tr>
<td>Infection with <em>Haplosporidium costale</em></td>
<td>Exotic</td>
</tr>
<tr>
<td>Infection with <em>Candidatus Xenohaliotis californiensis</em></td>
<td>Exotic</td>
</tr>
<tr>
<td><strong>Crustacean disease</strong></td>
<td></td>
</tr>
<tr>
<td>Yellowhead disease</td>
<td>Yellowhead virus exotic, but gill-associated virus locally present</td>
</tr>
<tr>
<td>White spot disease</td>
<td>Exotic</td>
</tr>
<tr>
<td>Taura syndrome</td>
<td>Exotic</td>
</tr>
<tr>
<td>Tetrahedral baculovirosis (<em>Baculovirus penaei</em>)</td>
<td>Exotic</td>
</tr>
<tr>
<td>Spherical baculovirosis (<em>Penaeus monodon-type baculovirus</em>)</td>
<td>Locally present</td>
</tr>
<tr>
<td>Infectious hypodermal and haematopoietic necrosis</td>
<td>Avirulent strain locally present</td>
</tr>
<tr>
<td>Crayfish plague</td>
<td>Exotic</td>
</tr>
<tr>
<td>Spawner-isolated mortality virus disease</td>
<td>Suspected but not confirmed; confirmation is hampered by the lack of readily available detection tests and the lack of a clear case definition.</td>
</tr>
</tbody>
</table>

Photograph courtesy of Fisheries Research and Development Corporation (2004).
Figure 1.1  Distribution of OIE-listed aquatic animal diseases within Australia

A  1992  2003  2004
B  2004  2004  2004
C  2004  2004  2004

D  1994  2004  2004
E  1996  2004  2004
F  2003  2004  2004

G  2003  2004  2004
H  2002  2004  2004
I  2004  2004  2004

J  2003  2004

- States reporting the occurrence of the specific disease.
- States reporting that the specific disease has never occurred within their jurisdictional boundaries.
- States where the pathogen is believed to be exotic but insufficient evidence of distribution is available.

Dates indicate the year that the disease last occurred in that jurisdiction.

A  Epizootic haematopoietic necrosis
B  Viral encephalopathy and retinopathy
C  Epizootic ulcerative syndrome
D  Infection with *Markeia sydneyi*
E  Infection with *Micrococcus rougheyi*
F  Infection with *Perkinsus solenostomatis*
G  Spawner-isolated mortality virus disease
H  Spherical Baculovirus
I  Gill-associated virus
J  Infectious hypodermal and haematopoietic necrosis (avian strain)
National reporting system for aquatic animal diseases in Australia

Australia has a national reporting system for aquatic animal diseases of national significance that includes all the diseases listed by the OIE in the Aquatic Animal Health Code.

In September 2004, the Primary Industries Standing Committee (PISC) endorsed the following changes to Australia’s National List of Reportable Disease of Aquatic Animals:

> European catfish virus (ECV) and European sheatfish virus (ESV) were removed from their listing as part of the epizootic haematopoietic necrosis (EHN) complex and listed separately, but under one entry. ECV and ESV are indistinguishable from each other, but different from the EHN virus. ECV/ESV are exotic, while EHN virus occurs locally in Australia.

> Grouper iridoviral disease (GID) was added to the national list.

> Infection with koi herpes virus (KHV) was added to the national list.

These changes were recommended by PISC’s Aquatic Animal Health Committee (AAHC), based on advice by AAHC’s National Aquatic Animal Health Technical Working Group. Unlike EHN, GID and infection with KHV were not listed by the OIE in 2004. Reporting on GID and infection with KHV in Australia started in October 2004; both diseases are considered exotic to Australia.

Table 1.5 shows the 2004 status of each non OIE-listed disease of aquatic concern covered by the reporting system.

Table 1.5  Australia’s status for non OIE-listed diseases of aquatic animals

<table>
<thead>
<tr>
<th>DISEASE/AGENT</th>
<th>STATUS IN AUSTRALIA IN 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Finfish</strong></td>
<td></td>
</tr>
<tr>
<td>Furunculosis (Aeromonas salmonicida subsp. salmonicida)</td>
<td>Exotic</td>
</tr>
<tr>
<td>Aeromonas salmonicida atypical strains</td>
<td>Locally present</td>
</tr>
<tr>
<td>Whirling disease (Myxobolus cerebralis)</td>
<td>Exotic</td>
</tr>
<tr>
<td>Enteric redmouth disease (Yersinia ruckeri - Hagerman strain)</td>
<td>Exotic</td>
</tr>
<tr>
<td>Koi mass mortality</td>
<td>Exotic</td>
</tr>
<tr>
<td><strong>Crustaceans</strong></td>
<td></td>
</tr>
<tr>
<td>Necrotising hepatopancreatitis</td>
<td>Exotic</td>
</tr>
<tr>
<td>Baculoviral midgut gland necrosis</td>
<td>Exotic</td>
</tr>
<tr>
<td><strong>Molluscs</strong></td>
<td></td>
</tr>
<tr>
<td>Iridoviruses</td>
<td>Exotic</td>
</tr>
<tr>
<td>Akoya oyster disease</td>
<td>Exotic</td>
</tr>
</tbody>
</table>
CHAPTER 2
ANIMAL DISEASE SURVEILLANCE

Introduction

Australia’s national, state and territory governments see disease surveillance as a major function of their animal health services. This chapter describes government and nongovernment programs that contribute to disease surveillance and control at national, regional and local levels. The main national programs are summarised in Box 2.1, and are described in detail below.

Box 2.1 Animal disease surveillance programs

National programs managed under the Animal Disease Surveillance Program of Animal Health Australia:

- National Arbovirus Monitoring Program
- Transmissible Spongiform Encephalopathies Freedom Assurance Program
- Tuberculosis Freedom Assurance Program

Other national livestock disease surveillance programs:

- Pig Health Monitoring Scheme
- National Sentinel Hive Program
- National Livestock Identification System

National wildlife disease surveillance:

- Australian Wildlife Health Network

Disease surveillance in northern Australia:

- Northern Australian Quarantine Strategy
- Northwatch

Initiatives for surveillance for zoonotic diseases in humans:

- National Notifiable Diseases Surveillance System
- National Enteric Pathogen Surveillance Scheme
- Japanese encephalitis surveillance

‘Central to the protection of Australia’s livestock is the Animal Disease Surveillance Program, which ... gives Australia’s livestock industries a competitive advantage...’
Animal Disease Surveillance Program

Central to the protection of Australia’s livestock is the Animal Disease Surveillance Program (ADSP), which was established in 2000 and is managed by Animal Health Australia (AHA). This program gives Australia’s livestock industries a competitive advantage by managing national surveillance programs to provide credible animal health information.

The ADSP includes the National Animal Health Information System (NAHIS) and three major national operational programs – the National Arbovirus Monitoring Program (NAMP), the Transmissible Spongiform Encephalopathies Freedom Assurance Program (TSEFAP) and the Tuberculosis Freedom Assurance Program (TFAP). These initiatives are described in detail below.

National Animal Health Information System

NAHIS collates data from a wide range of government and nongovernment programs to provide an overview of animal health, disease surveillance and disease control. The information collected by NAHIS is essential for supporting trade in animal commodities and meeting Australia’s international reporting obligations.

Data for NAHIS are provided by:

- Australian national, state and territory animal health authorities
- diagnostic laboratories
- disease surveillance programs
- disease control and accreditation programs
- universities
- research programs.

Figure 2.1 shows the sources of data for diseases and conditions targeted under NAHIS. The sources are organised according to whether they are based on existing control programs, laboratory test results, or national surveillance programs or activities (these categories are similar to those used by reporting agencies in providing data to NAHIS).
The main national disease surveillance, control and accreditation programs are summarised in this chapter and in Chapter 3.

Information from NAHIS is routinely reported in newsletters (Animal Health Surveillance Quarterly) and in Australia’s returns for the World Organisation for Animal Health (OIE), the Food and Agriculture Organization of the United Nations, and the World Health Organization.

NAHIS also collects and stores summary information on:
- animal diseases and their control in Australia
- livestock numbers and slaughter statistics
- residue surveillance data
- exotic disease investigations
- animal health regulations
- exotic disease contingency plans
- key animal health contacts.

Some of these data can be accessed via the NAHIS website, which also provides maps, graphs and tables.

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National Arbovirus Monitoring Program

National Arbovirus Monitoring Program (NAMP) is an integrated national program to monitor the distribution of economically important insect-borne viruses (arboviruses) of livestock – including bluetongue, Akabane and bovine ephemeral fever viruses – and their vectors. NAMP is jointly funded by industry and governments and is managed by AHA. More information on this program can be found at the AHA website.

NAMP provides data to help Australian and international regulatory agencies assess the nature and distribution of arboviral infections in Australia. Some countries use these data to develop practical import protocols for Australian cattle, thereby increasing the numbers of animals available by accurately defining the geographical areas from which they may be sourced.

Data for NAMP are gathered mainly by monitoring cattle in sentinel herds throughout the country. At sentinel locations, groups of 10 or more young cattle previously unexposed to arboviral infections are given blood tests at regular intervals to detect any infection. Sampling is more frequent in areas where arboviral activity is more likely to occur. Insect traps located near the sentinel animals indicate whether Culicoides arbovirus vectors are present during the testing period.

To allow the distribution of infections to be mapped, most sentinel sites are positioned somewhere along the border between areas expected to be infected and areas expected to be either uninfected or irregularly infected. Areas expected to be free from infection are monitored to verify their status. Known infected areas are sampled to assess the seasonal intensity of infection of each virus. To detect incursions of viruses from overseas, virus isolation is conducted at one site in the Northern Territory. Table 2.1 shows the number of sites monitored and the number of collections in 2003–04.

---

Table 2.1 National Arbovirus Monitoring Program: numbers of sentinel sites and collections, July 2003 – June 2004

<table>
<thead>
<tr>
<th>STATE</th>
<th>Insect traps</th>
<th>SEROLOGY AND/OR VIROLOGY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sites</td>
<td>Collections</td>
</tr>
<tr>
<td>NSW</td>
<td>38</td>
<td>426</td>
</tr>
<tr>
<td>NT</td>
<td>16</td>
<td>104</td>
</tr>
<tr>
<td>Qld</td>
<td>19</td>
<td>139</td>
</tr>
<tr>
<td>SA</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Tas</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Vic</td>
<td>3</td>
<td>17</td>
</tr>
<tr>
<td>WA</td>
<td>23</td>
<td>120</td>
</tr>
</tbody>
</table>

---

6 Formerly known as the Office International des Epizooties
8 http://www.aahc.com.au
Transmission patterns in 2003–04

In 2003–04, in the tropical regions of Western Australia, the Northern Territory and Queensland, there was an early start to the wet season followed by a period of above average rainfall, especially in the Northern Territory. Drought conditions prevailed, or rainfall was low, in most districts in inland central and southern Queensland. There was severe drought in most of New South Wales throughout the year. From January until March there was above average rainfall on the north coast and northern tablelands and slopes of NSW. In most of Australia, temperatures during summer were often above average, autumn had a late onset, and winter was generally milder than usual. Frosts in temperate regions were less frequent and minimum temperatures were not as cold as usual.

In the 2003–04 arbovirus season, the patterns of vector activity and the limits of virus distribution that define the free areas for the key agents were as described below.

Bluetongue viruses

Transmission of bluetongue viruses was observed in the endemic areas of far northern Australia and along coastal Queensland. There was evidence of continuing activity in the focus of bluetongue transmission in the Pilbara region of northwestern Western Australia, with some transmission to the north. There was also further southwards spread in the Northern Territory and adjacent regions in far central western Queensland. In the Northern Territory, types 1 and 21 were the only serotypes identified. There was no evidence of movement of more pathogenic viruses out of the far northern ‘high risk’ zone and no evidence of the incursion of any new virus serotypes into Australia. There was no evidence of bluetongue viruses near any of the major sheep populations. In New South Wales, the Hunter region remains free of bluetongue infection. Nationally, the areas free of bluetongue virus are slightly smaller this year (see Figure 2.2), returning to limits observed in past years. However, all regions in southern Australia and most pastoral regions in eastern Australia remain free.

Figure 2.2 Change in limits of bluetongue virus in Australia, 2001–02 to 2003–04

Akabane virus

Akabane activity was detected throughout the established vector areas in both northern and eastern Australia (Figure 2.3). In the Northern Territory, infection appeared to be less widespread and at a lower incidence, probably because of the extensive high-incidence transmission during the previous year. In northern Western Australia and the Northern Territory, transmission was more common during the dry season. In Queensland, virus transmission occurred along the coastal strip from the far north at Normanton and Cooktown but only as far south as Rockhampton. Transmission was delayed and suppressed at sites further south, probably as a result of the prevailing drought conditions. However, late transmission was eventually detected in the far south, on both the coast at Beaudesert, and at inland areas in southern central Queensland. In New South Wales, transmission of Akabane virus was also influenced by the drought, with high levels of virus activity, mostly in the endemic region. Infection was, however, detected on the northern New England Tablelands near the Queensland border and there was a low incidence on the northern slopes at Glen Innes. In the Hunter Valley, infection was less expansive than usual, with no evidence of transmission in the Upper Hunter region. There have been few clinical cases reported, because most areas experienced a high incidence during the previous year.

Figure 2.3 Change in limits of akabane virus in Australia, 2001–02 to 2003–04
**Bovine ephemeral fever virus**

Ephemeral fever infections have been relatively patchy this year (Figure 2.4). There was normal spread at most locations in the endemic areas of northern Australia but the adverse weather conditions affected spread elsewhere. In Western Australia, infection was detected in the Kimberley region and in the west of the Pilbara. In the Northern Territory, there was activity in all sentinel herds except for the southern-most herd at Alice Springs and the herd at Rockhampton Downs. Seroconversions were restricted to coastal sites in north Queensland but late in the year there was activity at inland sites in central and southern central Queensland. In New South Wales, although the incidence was only moderate to low, infection was detected along the entire coastal plain south to Camden, in the northern New England region and across most of the northwest slopes as far west as Walgett. This spread in northwest New South Wales and adjacent areas in Queensland is a consequence of the above average rainfall in this area in the late summer. No seroconversions were recorded in the southern states.

Vector monitoring

In 2004, the distribution of vectors followed the normal pattern in most of Australia (Figure 2.5). In the eastern and western coastal areas of non-tropical and southern Australia, the main vector of interest, *Culicoides brevitarsis*, and to a lesser extent, *C. wadai*. *Culicoides brevitarsis*, was found throughout the endemic area, even in areas that were drought affected, although populations were reduced in size. *Culicoides wadai* was generally found less frequently than in previous years. In northern Australia, no new vector species were detected.

There was, again, a close relationship between the arbovirus-free and vector-free areas of southern Australia, with the viruses less widely distributed than their vectors. The vector-free areas continue to undergo minor fluctuations, with a slight reduction in western Queensland and in the Pilbara region of Western Australia.
Transmissible Spongiform Encephalopathies Freedom Assurance Program

In December 2004, the Transmissible Spongiform Encephalopathies Freedom Assurance Program (TSEFAP) completed its first year of operation. The program commenced following agreement by the Australian national, state and territory governments and the relevant livestock industries to bring all national TSE-related projects within the management of one program. TSEFAP aims to enhance market confidence that Australian animals and animal products are free from TSEs through the structured and nationally integrated management of animal-related TSE activities.

The program addresses:
- active TSE surveillance
- ruminant feeding restrictions, including audit and testing
- imported animal surveillance, including trace-back schemes for certain imported cattle
- communication, including the production of advisory material for industry, etc
- research and development.

National Transmissible Spongiform Encephalopathy Surveillance Program

Australian cattle and sheep are free of bovine spongiform encephalopathy (BSE) and scrapie, which are both members of the group of transmissible spongiform encephalopathies (TSEs). However, the OIE Terrestrial Animal Health Code requires countries that claim to be free of TSEs to have a surveillance system to detect BSE and scrapie.

The National Transmissible Spongiform Encephalopathy Surveillance Program (NTSESP) aims to demonstrate Australia’s ongoing freedom from BSE and scrapie, and provide early detection of those diseases should they occur. The program commenced in 1998 and is managed by AHA with funding from industry and governments. It targets onfarm animals with eligible clinical signs according to the OIE Terrestrial Animal Health Code, and provides assurance to countries that import cattle and sheep commodities that Australia remains free of these diseases.

Table 2.2 shows the results from NTSESP for 2004. Further information is available from Animal Health Australia’s website, which includes the Australian National Guidelines for Field Operations for TSE Surveillance; the Australian and New Zealand Standard Diagnostic Protocols; and training and support materials.

### Table 2.2  National Transmissible Spongiform Encephalopathy Surveillance Program: summary of results, 2004

<table>
<thead>
<tr>
<th></th>
<th>NSW</th>
<th>NT</th>
<th>QLD</th>
<th>SA</th>
<th>TAS</th>
<th>VIC</th>
<th>WA</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cattle</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- no. examined</td>
<td>123</td>
<td>19</td>
<td>149</td>
<td>22</td>
<td>12</td>
<td>80</td>
<td>44</td>
<td>449</td>
</tr>
<tr>
<td>- no. positive</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Sheep</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- no. examined</td>
<td>147</td>
<td>0</td>
<td>25</td>
<td>54</td>
<td>13</td>
<td>104</td>
<td>123</td>
<td>466</td>
</tr>
<tr>
<td>- no. positive</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*a There are no commercial sheep farms in the Northern Territory

**Australian Ruminant Feed Ban Scheme**

Since 1997, Australia has had an inclusive ban on the feeding to all ruminants of animal proteins, including meat and bone meal derived from all vertebrates (including fish and birds). The ban is enforced using common statutory laws in each of Australia’s jurisdictions, underpinned by a uniform approach by state and territory authorities to compliance inspection and auditing of all parts of the ruminant production chain. All facets of auditing, sampling and testing are focused on a risk-based methodology, and therefore target those facilities that have a higher risk of not meeting the appropriate legislation. Using the latest laboratory techniques to detect mammalian protein in ruminant feeds/precursor components ensures compliance with regulatory controls.

In 2004, approximately 1150 operations were audited (from renderers to end-users), resulting in 71 minor non-compliances, none of which required prosecution. The largest reason for non-compliance was the mislabelling of products. As a result, a concerted education process has been incorporated into the activities of state and territory authorities, ensuring that the different industry sectors understand their responsibilities.
**Imported animal tracing**

BSE and chronic wasting disease have never been recorded in Australia. Scrapie has occurred once, in imported sheep on a single property in 1952. It was promptly eradicated and a case has never been recorded since. Two cases of feline spongiform encephalopathy have been diagnosed in imported animals in Australian zoos in 1992 (cheetah) and 2002 (Asiatic golden cat). In both instances, there were effective responses.

To ensure Australia maintains its favourable TSE free status, all TSE-susceptible animals (cattle and zoo animals of certain species) that have been imported from Europe, Japan, Canada and the US (before those countries reported a BSE case) are traced by Australian state and territory authorities on a six-monthly basis. The Australian cattle industry has funded a scheme for removing such cattle originating from these countries, the latest being for those cattle from the US. The nominated cattle are slaughtered and tested for BSE as part of the NTSESP. These animals are not allowed to enter the human or animal feed chain.

Those cattle that remain alive are placed under lifetime quarantine and electronically tagged as a part of the National Livestock Identification System (see below) and, if sold through saleyards or to an abattoir, will flag that special procedures are to be performed. These animals will also be sampled at death.

All zoo animals are listed on an Australia-wide database used by the various zoological societies. These animals also have a high level of surveillance and do not enter the human or animal food chain when they die.

**Research and development portfolio**

A research and development program operates over a number of areas relevant to different aspects of animal TSEs. Some specific projects include:

- maintenance of a national capability to undertake rapid BSE tests
- identification and critical analysis of suitable collection points for downer animals by state and territory authorities
- transfer of testing capability from one jurisdiction to another in a short period of time, therefore expanding the national capability.

**Program communication**

The major focus of the communication component of the TSEFAP has been designing and posting Australia’s definitive animal TSE website. This is currently near finalisation.

Additionally, a number of industry-orientated extension items have been written and produced for agricultural newspapers and relevant industry publications. A series of extension material is being developed to support the ruminant feed ban.

**Tuberculosis Freedom Assurance Program**

The Brucellosis and Tuberculosis Eradication Campaign, which began in 1970, was a successful 27-year campaign that resulted in Australia being declared free from tuberculosis (TB) and brucellosis. Costing more than $1 billion, and funded by government and the cattle industry, the campaign was the cornerstone of future government and industry partnerships to address animal health.

In 1998, the Tuberculosis Freedom Assurance Program (TFAP) was launched to maintain Australia’s favourable TB status and provide the capability to respond to detections of the disease. In 2002, the program was extended to December 2006, and it is now known as TFAP2.

Meat inspection has always been the main surveillance tool for the detection of TB, but it became particularly important during the final stages of TB eradication. The National Granuloma Submission Program (NGSP) was an abattoir-based, TB surveillance program which started in 1992 and aimed to maximise the number of granulomas submitted from cattle, buffalo and deer detected during postmortem inspection for laboratory analysis to preclude the possibility of TB. In 2001, the NGSP became a risk-based program (NGSP2) aimed at improving the efficiency of abattoir-based TB surveillance. It targeted the submission of granulomas found in the head and thorax of older animals from herds considered to have a higher risk of a residual infection. The final stage of the program, termed ‘inspector discretion’, required the submission of granulomas by inspectors if they were unsure as to the cause of the lesion or if they suspected that the cause was TB.

During TFAP and TFAP2, abattoir surveillance for TB was supplemented by targeted field-testing of herds that were considered to have had insufficient surveillance through meat inspection.
In 2004, 4865 granulomas were submitted for testing and 50 000 field tests were conducted. No cases of TB were detected.

Table 2.3 shows the numbers of animals inspected at abattoirs and granulomas submitted.

**Table 2.3 National Granuloma Submission Program, 2004**

<table>
<thead>
<tr>
<th>State</th>
<th>Animals inspected</th>
<th>Granulomas submitted</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
<td>1 837 100</td>
<td>384</td>
</tr>
<tr>
<td>NT</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Qld</td>
<td>3 693 800</td>
<td>3539</td>
</tr>
<tr>
<td>SA</td>
<td>305 300</td>
<td>384</td>
</tr>
<tr>
<td>Tas</td>
<td>252 000</td>
<td>47</td>
</tr>
<tr>
<td>Vic</td>
<td>2 216 700</td>
<td>138</td>
</tr>
<tr>
<td>WA</td>
<td>467 600</td>
<td>470</td>
</tr>
<tr>
<td>Australia (total)</td>
<td>8 772 500</td>
<td>4865</td>
</tr>
</tbody>
</table>

By December 2004, the program had achieved its aims. Since its inception in 1992, the NGSP and its successor the NGSP2 has identified 67 cases of TB. The last case in cattle was detected in August 2000 and in buffalo in January 2002. Since January 2005, the submission of granulomas has continued at the inspectors’ discretion in accordance with the Australian standard meat inspection procedures and relevant instructions from AQIS.

### Other national surveillance programs and monitoring activities

**Pig Health Monitoring Scheme**

The Pig Health Monitoring Scheme involves examining pig carcases and organs at slaughter for the presence of diseases such as mange, pleurisy and pneumonia. Five states are participating and it is estimated that the scheme covers 50% of Australia’s pig production. Disease reports validating disease management practices are then generated by Pigmon©3 software and sent to producers and their veterinarians. A national database has been established to collate the information from participating states. Annual quality assurance exercises ensure the compatibility of the data collated from the different jurisdictions.

**National Sentinel Hive Program**

The National Sentinel Hive Program was established in 2000 to enhance surveillance for exotic bee parasites and bees around seaports. This program is currently being reviewed to strengthen its capacity.

The exotic parasites of primary concern to the Australian apiary industry are the varroa, tropilaelaps and tracheal mites. The principal exotic bee of concern is the Asian honey bee, *(Apis cerana)*, which exists in many countries north of Australia.

Experience in other countries has demonstrated that delayed detection of *Varroa Destructor* will negate a country’s ability to eradicate this parasite. Therefore the emphasis is placed on early detection of varroa.

The National Sentinel Hive Program operates at 27 ports that receive a significant volume of cargo. Cargo vessels present an opportunity for the transportation of feral bees (and associated parasites) either in containers or in their holds. The Asian honey bee (*Apis cerana*) has been detected in several port areas between 1995 and 2004. The giant honey bee (*Apis dorsata*) was detected in Brisbane in 2000 and, more recently, on vessels off northern Australia. These events confirm the potential for incursions by exotic bees via ocean-going cargo vessels that enter Australian ports.

Sentinel hives, located near ports, are provided by the Australian Honey Bee Industry Council and cooperating beekeepers. For detection of varroa and tropilaelaps mites, acaricides and adhesive entomological strips are placed in hives for one to two days, and then submitted to diagnostic laboratories and examined for the presence of exotic bee parasites. For detection of tracheal mites, whole adult bees are also submitted for dissection and examination. In selected sites in the north, log traps in conjunction with pheromone baits are used to detect the Asian honey bee.

Surveillance is conducted quarterly in each state or territory under the supervision of apiary officers. The results are summarised and published as part of NAHIS.

As well as providing earlier detection, the port surveillance program supplies additional data to support health certification for live bee exports. Data for 2004 are in Tables 2.4 and 2.5.
Table 2.4  Samples monitored for bee pests (by state/territory)

<table>
<thead>
<tr>
<th>State/territory</th>
<th>Samples examined in 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>New South Wales</td>
<td>38</td>
</tr>
<tr>
<td>Victoria</td>
<td>20</td>
</tr>
<tr>
<td>Queensland</td>
<td>37</td>
</tr>
<tr>
<td>South Australia</td>
<td>21</td>
</tr>
<tr>
<td>Western Australia</td>
<td>54</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>59</td>
</tr>
<tr>
<td>Tasmania</td>
<td>18</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>247</strong></td>
</tr>
</tbody>
</table>

Table 2.5  Samples monitored for bee pests (by agent)

<table>
<thead>
<tr>
<th>Agent</th>
<th>Samples examined in 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tracheal mite</td>
<td>94</td>
</tr>
<tr>
<td>Varroa/tropilaelaps mite</td>
<td>96</td>
</tr>
<tr>
<td>Apis cerana</td>
<td>57</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>247</strong></td>
</tr>
</tbody>
</table>

National Livestock Identification System

Traceability continues to be a critical issue for livestock industries around the world. The impact of BSE in North America during 2004 has highlighted how critical fast and accurate traceability systems are. Because Australia is highly dependent on export markets, industry and governments have ensured that the Australian beef industry is a world leader in livestock tracing systems. Since the 1960s, Australia has operated a tracing system for cattle movements, with the introduction of the tail-tag and property identification code (PIC) system. More recently, industry and governments have introduced the National Livestock Identification System (NLIS).

NLIS allows for the identification and tracing of cattle and sheep using a range of identification devices to cope with the complexity of tracing individual animal or flock and herd-based movements. Depending on state jurisdictions, the use of a transaction ear tag or tail tags for low-risk movements may be allowed, while higher risk movements require the application of an approved NLIS radio frequency device and recording of animal movements in the NLIS database.

During 2004, AHA and SAFEMEAT developed the National Traceability Performance Standards, which provide a benchmark for NLIS. These standards have now been endorsed by industry and government for implementation and stipulate that:

- an animal and its cohorts be traceable to properties of residence over the past 30 days in 24 hours
- all properties of residence for cattle and the current location of all cohorts be identified in 48 hours
- all properties of residence for other species be identified in 14 days
- the current location of all cohorts be identified in 21 days.

The NLIS database (see below) provides the mechanism for accurately receiving, holding and processing cattle movement data submitted by producers, saleyard operators, agents and processors. Once property-to-property recording is in place, a life record of an animal’s residency and of those animals it has interacted with will exist in the NLIS database, allowing rapid and accurate tracing.

A number of tests and audits conducted to date have confirmed the value of NLIS in responding to a disease or residue incident. Tracing individual cattle to their property of birth has been shown to be more reliable, efficient and rapid where the animals were identified with NLIS devices.

Audit plans are being developed by state governments to test NLIS, once fully implemented, against the National Traceability Performance Standards.
State implementation of the National Livestock Identification System

State governments are responsible for legislating rules that govern animal movements for the purpose of animal disease control, and are therefore responsible for implementing NLIS. National issues are raised and resolved in regular industry–government working group meetings, which ensures that a national approach is taken during the phase-in period.

Each state government now has implementation and communication plans for the rollout of NLIS in their jurisdiction. Implementation during 2004 was on track, with key developments shown in Table 2.6.

<table>
<thead>
<tr>
<th>STATE</th>
<th>DATE</th>
<th>STATE GOVERNMENT NLIS IMPLEMENTATION DURING 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT</td>
<td>1 March 2004</td>
<td>Mandatory waybill system introduced, requiring full description of brands and categories of stock, and the commencement of movement recording in the NT Waybill database.</td>
</tr>
<tr>
<td>Vic</td>
<td>1 January 2004</td>
<td>Saleyards commenced reading store cattle and recording movements on the NLIS database.</td>
</tr>
<tr>
<td>SA</td>
<td>1 January 2004</td>
<td>Requirement for cattle born after 1 January 2004 to be identified with an NLIS device before leaving property of birth introduced.</td>
</tr>
<tr>
<td>NSW</td>
<td>1 July 2004</td>
<td>Requirement for cattle born after 1 July 2004 to be identified with an NLIS device before leaving property of birth introduced.</td>
</tr>
<tr>
<td>WA</td>
<td>1 July 2004</td>
<td>Saleyards and abattoirs commenced reading NLIS identified cattle and recording movements on the NLIS database.</td>
</tr>
<tr>
<td>SA</td>
<td>1 July 2004</td>
<td>Requirement for all transactions, including saleyards, abattoirs and property-to-property movements, to be read and recorded on the NLIS database.</td>
</tr>
</tbody>
</table>

The year 2005 will be critical, with major state governments starting the rollout of their NLIS legislation (see Table 2.7).

<table>
<thead>
<tr>
<th>STATES</th>
<th>DATE</th>
<th>STATE GOVERNMENT NLIS IMPLEMENTATION PLANS FOR 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qld</td>
<td>1 July 2005</td>
<td>Mandatory NLIS commences.</td>
</tr>
<tr>
<td>WA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vic</td>
<td>1 July 2005</td>
<td>Property-to-property transfers are to be recorded on the database.</td>
</tr>
<tr>
<td>Qld</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NSW</td>
<td>1 July 2005</td>
<td>Saleyard and abattoir recording of transfers commences.</td>
</tr>
<tr>
<td>Qld</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tas</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The National Livestock Identification System database

The NLIS database, the central repository for animal movements, is administered by Meat and Livestock Australia (MLA) on behalf of industry and government. During 2004, the MLA team responsible for managing the database became ISO 9001:2000 certified. As part of this certification, MLA has implemented a formal procedure to make changes to the NLIS database and deliver improvements to users.

MLA also commissioned Deloittes Touche Tohmatsu to independently review the NLIS database to assess its ability to accurately receive, hold, and process animal movement data submitted by users. Deloittes concluded that the NLIS system accurately records animal movements.

More than 60 000 properties were registered on the NLIS database at the end of 2004. These properties have used more than 12 million NLIS-approved radio frequency identification devices since the introduction of the system in 1999.
Wildlife disease surveillance is coordinated nationally through the Australian Wildlife Health Network (AWHN). The network, which began operating on 1 July 2002, is managed by a national coordinator and management committee. It is jointly hosted by the Zoological Parks Board of New South Wales and New South Wales Agriculture, and is based at Taronga Zoo (Sydney) and the Elizabeth Macarthur Agricultural Institute (Camden). The network’s aim is to promote and facilitate collaborative links in the investigation and management of wildlife health in support of human and animal health, biodiversity and trade.

The network better prepares Australia for serious disease outbreaks in its wild and feral animal populations, by working in five key theme areas:

> surveillance and investigation
> research
> communications and marketing
> emergency animal disease preparedness and response
> education and training.

State and territory coordinators capture and report wildlife disease events and information, which is moderated and entered into the purpose-built National Wildlife Disease Surveillance database. Reports are generated for the *Animal Health Surveillance Quarterly*, the Wildlife Diseases Association, the National Enteric Pathogen Surveillance Scheme, the World Conservation Union (also known as the IUCN) Veterinary Specialists Group, and the AWHN. They are also generated annually for AHA and the OIE. The database is linked to that of the Australian Registry of Wildlife Health, and online access to summary data is available to network members. The database was developed in close consultation with the NAHIS committee and uses national standards.

The basis for general surveillance is formed by six disease categories, which include OIE list diseases, bat viral diseases, mass or unusual mortality events, salmonella cases, arboviral infection cases and diseases that state or territory coordinators consider interesting or unusual.

In 2004, the focus of activities for the network was supporting the work of the NAHIS and National Animal Health Surveillance System Steering Committee, and identifying and presenting priorities for future work to providers. These priorities include:

> research
  - reviewing existing models and mechanisms for prioritising research and adapting optimal models for wildlife health
  - running a series of workshops to identify the current level of knowledge, prioritise research questions and identify policy shortfalls for selected diseases that include wildlife as part of their ecology
  - running specific projects exploring ecology, epidemiology and management of diseases of interest (for example West Nile virus, avian influenza, Japanese encephalitis, surra)
  - supporting a research Master’s and quality assurance program in wildlife pathology

> education and training
  - supporting development and provision of a wildlife health communication and education package, which could be used to provide material for other providers
  - encouraging digitisation, web-enablement and dissemination of material contained within the Australian Registry of Wildlife Health

> capacity building
  - supporting development of a real-time wildlife health surveillance system that includes the ability to detect emerging diseases (this has been identified as the highest priority)
  - developing a mechanism for emerging and emergency wildlife disease management
  - supporting a feasibility study on the development of a National Wildlife Research Centre
  - supporting development and implementation of a management strategy and succession plan for the Australian parasitology catalogue and database and the Australian National Insect Collection.

### Northern Australia Quarantine Strategy

The Northern Australia Quarantine Strategy (NAQS) monitors the emergence and movement of animal diseases throughout the world and assesses the risk of their entry and establishment in Northern Australia. The role of NAQS is as vital now as at any time in its 14-year history. The report of the spread of highly pathogenic avian influenza east of Bali, and the finding of Nipah virus exposure in Pteropid bats through much of Southeast Asia highlight increased risk from animal diseases to Australia’s north. Further away, but on the move, are Rift Valley fever and West Nile fever.

NAQS has strengthened quarantine protection in Torres Strait in response to the outbreaks of highly pathogenic avian influenza. Public awareness campaigns have informed island communities of signs of disease and reporting procedures, while quarantine officers have received detailed information and work instructions.

Area risk ratings are used as a guide to determine the frequency of NAQS visits and surveys required in various areas. During 2004, NAQS reviewed these ratings to check the validity of their decision-making processes. The review was endorsed, and the results accepted, by the NAQS Consultative Committee. The review assessed, recorded and compared the risks of various diseases being established in Australia, by allocating a score for several factors associated with organism, consequences, entry and establishment for each zone, and processing the scores to rank the zones. The method relied on both expert opinion and scientific data, applied by senior NAQS scientists and external authorities.

The results led to a slight change in survey frequency, with the highest risk rankings moving from zones closest to exotic disease to ones with more hosts and less intervention.
For example, while the risk of entry of classical swine fever is highest in Torres Strait, the risk of establishment is higher on the west coast of Cape York due to dense contiguous host populations and a lower chance of early reporting. NAQS will review its surveillance strategy in 2005 to ensure an optimum balance of field surveys, sentinel herd testing, vector trapping and public awareness. New techniques, especially those being researched by the Australian Biosecurity Cooperative Research Centre for Emerging Infectious Disease, will be assessed.

Onshore surveillance in 2004 detected Japanese encephalitis on Badu Island and, for the first time since 1998, on the mainland of Australia. The sentinel herd at Bamaga seroconverted and the virus was isolated. Later in the year, feral pigs sampled from south of Mapoon showed a pattern of serology consistent with exposure to Japanese encephalitis virus, but the time of exposure was undetermined.

Offshore surveillance in 2004 took place in East Timor and PNG. The results from East Timor surveys in March, June and September combined with results from previous surveys provided a clear indication of the current animal health status. No new target list diseases were detected, evidence of freedom from highly pathogenic avian influenza was documented, and NAQS gained valuable experience from detection of classical swine fever, surra and virulent Newcastle disease. The September survey of western border areas of PNG and the quarterly animal health monitoring program provided evidence of freedom from target list diseases but failed to determine the cause of reported pig mortalities in the Bula Plain area of Western Province. A more recent outbreak of disease with high mortality east of Kiunga was investigated during the survey, with clinical and epidemiological evidence indicating anthrax as the most probable cause. Laboratory tests on the few pigs that could be found and sampled during the survey were negative for target list diseases.

Capacity-building activities in 2004 continued to provide overseas counterparts with skills in surveillance. NAQS and East Timorese veterinarians trained village animal health workers from throughout East Timor in clinical examination, autopsy and sample collection with emphasis on avian influenza. The PNG Chief Stock Inspector participated in a survey of wild waterfowl in northern Australia using cannon netting. Twelve overseas veterinarians trained in recognition of serious livestock disease at Australian Animal Health Laboratories and one veterinarian from East Timor participated in a NAQS onshore survey.

Northwatch

The proximity of Australia to PNG and Indonesia means Queensland is particularly vulnerable to exotic pests and diseases that occur in those countries. Northwatch was established in 1997 by the Queensland Government to coordinate efforts to protect north Queensland from such threats to animal and plant health. The program prepares for, and responds to, exotic pests and diseases in Cape York Peninsula, the Torres Strait and the Gulf of Carpentaria, tackling them before they reach the intensive production zones to the south.

Preparedness

Expertise within Northwatch is used to train government and nongovernment personnel in a broad range of subjects, including:

> radio tracking of feral cattle
> workplace health and safety issues relating to zoonotic disease
> animal welfare and animal ethics
> exotic animal disease response, decontamination, movement controls and sample collection
> identification and reporting of disease signs in cattle.

Surveillance

Northwatch scientists survey Cape York Peninsula and the Gulf of Carpentaria, as well as urban areas as far south as Mackay, for a range of animal and plant pests and diseases. Surveillance operations are also carried out at the live cattle export yards at Karumba, Weipa, Townsville and Mourilyan. The program provides funds for activities that contribute to many national disease surveillance programs, including:

> the National Arbovirus Monitoring Program
> the National Transmissible Spongiform Encephalopathy Surveillance Program
> monitoring of dump and landfill sites to ensure compliance with legislation banning the feeding of animal matter, such as food scraps, to domestic livestock and feral animals
> the National Sentinel Hive Program
> risk-management program development, where necessary.

The remote areas are notionally divided between Northwatch and NAQS, but they overlap, with successful joint surveys and data being shared. Northwatch also lends its resources and skills to surveillance programs conducted by other agencies, such as AQIS and Queensland Health.

Response

While a key activity for Northwatch officers is investigating outbreaks of disease in livestock and losses in wild animals, they also participate in subsequent responses to disease and pest incursions in their operational area. In the Torres Strait, Northwatch officers work closely with NAQS personnel on many projects.

Awareness

The Coen Information and Inspection Centre (22 kilometres north of Coen township) provides information on significant pests and diseases and on quarantine restrictions on animals, plants and products to the people of Cape York Peninsula and to visitors to the region. Northwatch and NAQS jointly fund the centre.

Travellers passing north through the centre are provided with an information kit with details of legal requirements relating to 19 different agencies. Visitors can make use of comprehensive information centre facilities, including internet links. These facilities are being developed for use as a ‘forward command post’ during responses to pest and disease incursions in Cape York.
Southbound travellers are stopped and interviewed before being allowed to proceed so that potentially diseased or pest-infested material is not transported into major commercial livestock and agricultural production areas further south. Because of the extensive area covered by the program, field officers cannot visit all areas in the region regularly, so they rely heavily on input from an informed public.

During 2004, the main topics for animal health extension work included:

- foot-and-mouth disease
- classical swine fever
- transmissible spongiform encephalopathies
- drought
- identifying and reporting disease signs in cattle
- animal welfare

Information on these topics was disseminated to producers, supporting agencies and the general public through field days, the media, posters and handouts.

**Bovine brucellosis surveillance**

After an eradication campaign that started in 1970, Australia was declared free from bovine brucellosis (caused by *Brucella abortus*) in July 1989, and has remained free since then. Targeted serological surveillance, through collection of blood samples from all adult female cattle at slaughter, continued until the end of 1993. Since then, extensive general surveillance data has demonstrated ongoing freedom from bovine brucellosis. Table 2.8 shows the number of serological tests for bovine brucellosis carried out at state veterinary laboratories as part of abortion investigations and for all other reasons, such as export requirements.

### Table 2.8 Number of serological tests for *Brucella abortus* in cattle in Australia, 1999-2004

<table>
<thead>
<tr>
<th>REASON FOR TEST</th>
<th>NUMBER OF TESTS PERFORMED IN DIFFERENT YEARS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2000</td>
</tr>
<tr>
<td>Abortion serology</td>
<td>829</td>
</tr>
<tr>
<td>Other serology</td>
<td>16 016</td>
</tr>
</tbody>
</table>

*a All test results were negative for *Brucella abortus*

---

**Surveillance for bat viruses**

Surveillance of flying foxes (*Pteropus* spp.) and associated research continued to focus on henipaviruses in 2004. The re-emergence of Hendra virus in horses and humans in two north Queensland locations, and the repeated outbreaks of Nipah virus-associated encephalitis in humans in Bangladesh underline our still-limited understanding of the ecology of these agents, and the need to maintain surveillance and research efforts.

Current henipavirus surveillance is concentrated in northern Australia in two projects – an international collaboration funded by the US National Institutes of Health, *Risk factors for the emergence of henipaviruses*, (project officer Raina Plowright, University of California, Davis) and the Australian Biosecurity CRC funded *Assessment of the risk of introduction of Nipah virus to Australia by flying foxes* (project officer Andrew Breed, University of Queensland).

The former incorporates disease and landscape ecology data to develop and test alternative models for the maintenance of Hendra virus infection in flying foxes, and thus predictive models for spillover events. This study follows preliminary modelling\(^{11}\) that suggests infection may not be endemic in all flying fox populations continuously, but rather maintain in a dynamic spatial and temporal mosaic in sub-populations within the greater metapopulation. The second project incorporates serologic, virologic, genetic and satellite telemetry studies to quantify contact between flying foxes pre- and post-border, and thus assess the risk of introduction of Nipah virus to Australia by flying foxes. Preliminary satellite telemetry shows seasonal movement of black flying foxes between Cape York and New Guinea (Figures 2.6 & 2.7).

Surveillance for zoonotic diseases in humans

National Notifiable Diseases Surveillance System
The Communicable Diseases Network Australia monitors the incidence of an agreed list of human communicable diseases through notifications to state and territory health authorities (see Chapter 7). Data are regularly updated on the National Notifiable Diseases Surveillance System (NNDSS) website and published in Communicable Diseases Intelligence. Commentary on some zoonotic disease episodes in 2004 is provided below.

Provisional data show that in 2004, 40 cases of brucellosis were reported nationally and probably stemmed from contact with feral pigs. Q fever occurred in most states, but most of the 418 cases were recorded in New South Wales and Queensland. Leptospirosis notifications increased from 122 in 2003 to 169 in 2004. Arboviral infections reported in humans included Barmah forest (1069 cases), dengue (347 cases), Kunjin (9 cases), and Ross River (4160 cases). There were 217 cases of ornithosis (psittacosis).

National Enteric Pathogen Surveillance Scheme
The National Enteric Pathogen Surveillance Scheme (NEPPS) monitors the burden of human disease caused by enteric pathogens, by collecting, analysing and disseminating data on diagnoses of enteric foodborne and waterborne infections.

Data are included on pathogens of both humans and animals, such as Salmonella spp., pathogenic Escherichia coli, Yersinia spp., and Campylobacter spp. NEPSS data for human notifications are reported within NNDSS.

Provisional data show that, as in recent years, the most common foodborne infections in 2004 were campylobacteriosis (15,352 cases) and salmonellosis (7617 cases). For animals, the most common isolates were Salmonella typhimurium in cattle.

Japanese encephalitis surveillance
NAQS monitors for incursion of Japanese encephalitis (JE). Detection of JE virus by molecular genetic techniques on pools of trapped mosquitoes is being trialled (with sentinel herd testing) for another season to provide more confidence in the method’s sensitivity. If this method is shown to be sensitive enough, it will replace sampling of sentinel pig herds. In addition to these activities, feral pigs from the NAQS area are tested for exposure to JE, and limited numbers of domestic pigs are surveyed.

In 2004, sentinel pigs were located on Badu Island and at Bamaga on the mainland. Both herds seroconverted and JE virus was isolated from each location. This was the first detection of JE on the mainland since 1998. Subsequently, feral pigs from south of Mapoon showed a pattern of serology consistent with exposure to JE virus, although the time of exposure is undetermined.
Introduction

Many of the animal diseases that are present in Australia are regionally distributed. Therefore, most disease control activities are managed at the state level, guided by nationally agreed standard operating procedures. However, for some diseases (e.g., Johne’s disease, mastitis), government and industry have agreed that a nationally coordinated program is necessary, in addition to the state programs, to reduce the risk of disease spread. This chapter describes control activities undertaken during 2004 for diseases of national significance.

Johne’s disease

Under the new national approaches to bovine Johne’s disease and ovine Johne’s disease, risk assessment and assurance schemes were developed by the Australian livestock industries and governments for dairy cattle herds, pure beef cattle herds and sheep flocks during 2004. These are designed to help stock owners better manage risk.

Beef cattle

The pure beef sector of the Australian cattle population has low levels of Johne’s disease. A new low-risk category of beef herds, called Beef Only, was trialled and endorsed in 2004 as a standard for assuring beef cattle for movements between herds and into protected zones. Beef Only herds have little or no recent contact with known infected animals or with dairy cattle. Cattle can be sold from these herds with a written owner declaration that the herd satisfies the relevant criteria. These declarations are subject to audit. Breeder cattle sales in southern Australia have been successfully using the new assurance category for several months.

To further encourage beef producers to act on Johne’s disease, financial and non-financial assistance is available. Funds collected by the national Cattle Transaction Levy are being used to help owners of infected herds assess their business situation and, where appropriate in Beef Only herds, put in place a plan to eliminate the infection from the herd.
Dairy

A new National Dairy Score for rating dairy herds for Johne’s disease was also endorsed in 2004. This scoring scheme ranks herds (with a score between 0 and 10) on the estimated level of infection in the herd, based mainly on herd testing but also on background prevalence in protected and free zones and on participation in the Australian Johne’s Disease Market Assurance Program for Cattle (CattleMAP). Calves reared under an audited calf management program get additional points.

As well as providing a means of managing risk when buying cattle, a written declaration of the herd’s score provides a way for infected herds to improve their score. Untested herds in infected regions will initially be scored at three but it is proposed that they will drop to the lowest score (zero) if they do not test in the near future. As part of its commitment to managing Johne’s disease, the dairy industry is currently funding research into a test for bulk tank milk to identify high-risk herds.

Sheep

The six-year National Ovine Johne’s Disease Control and Evaluation Program ended on 30 June 2004. The next day, the National Approach to Ovine Johne’s Disease, developed by the sheep industry and governments, began.

This approach recognises that the infection has spread more widely in parts of southern Australia than had been previously appreciated and that individual producers can be more effective than a regulatory program in managing the risk of infection and losses. The evaluation component of the earlier program had been successful and led to better knowledge of the disease and its control in Australia and the availability of tools, such as vaccination and abattoir surveillance.

Under the new approach, trading is based less on regulatory requirements and more on understanding the infection and voluntary written vendor declarations of an assurance score for sheep in a consignment. The Assurance Based Credit (ABC) Scheme scores sheep under four categories to give a credit rating of 0 to 10 for the consignment:

> A. Flock of origin – history of infection or background flock prevalence in the area
> B. Testing – of the flock or by monitoring sheep at slaughter
> C. Vaccination – increasing coverage of the flock over time
> D. Risk assessment of an infected flock.

A standard national Animal Health Statement is being used to declare ABC scores and the use and validity of these statements are being audited by the states. States are also conducting communication and training programs for producers.

Other species

The goat and alpaca industries are also well advanced in developing herd assurance schemes, and a market assurance program for deer has been written pending approval of suitable laboratory tests.

Mastitis

Countdown Downunder was initiated by the dairy industry in 1998 to reduce clinical mastitis and milk cell counts through improved mastitis control on farms.

The initial stages of the project aimed to establish clear, consistent guidelines for mastitis control relevant to the Australian industry (published as the Countdown Downunder Farm Guidelines for Mastitis Control), and to develop a regional advisory capacity to deal with mastitis problems. These elements provide the ongoing local support for the 1648 farmers who have participated in the Countdown Downunder Farmer Short Course and developed mastitis action plans for their herds.

The national learning program is continuing to build the resource, relationships and environment to help farmers improve mastitis control in their herds. Highlights for the past 12 months include:

> continuing to provide the Farmer Short Course to herd managers
> continuing to provide the Countdown Adviser Short Course, encouraging different professions and those new to the industry to work together to investigate mastitis problems on farms
> developing the beta-version of Mastitis Focus, a system that uses routinely collected information to help farmers make decisions about mastitis and milk quality management in their herds and to detect emerging problems
> coordinating the fourth national Milk Quality Awards for dairy herds with the lowest 5% bulk milk cell count
> developing the Countdown Mastitis Model, software that evaluates the milk quality and economic benefits of different mastitis control strategies to help prioritise research and extension efforts for national improvement
> developing Cell Check, a system that enables dairy processing companies to demonstrate consistency with the European Community cell count reporting requirement.
The industry is aiming for the cell count of all milk supply to be below 400,000 cells/mL and for at least 90% of supply to have counts below 250,000 cells/mL. Achieving these goals will lead to an increase in farm profitability (estimated to be $25/cow/year), and the efficient production of high-quality dairy produce to stay competitive in export markets.

Until recently, steady progress was made toward the industry cell count goals. However, this trend reversed in 2003 (see Table 3.1), reflecting the extremely tough times faced by dairy farmers since 2003, following the severe, prolonged ‘1 in 100 year’ drought conditions. High feed prices coupled with reduced farm gate milk prices put many dairy farm managers under intense financial and management pressure.

Table 3.1 Progress toward the dairy industry cell count goals

<table>
<thead>
<tr>
<th>Goal</th>
<th>VATS BELOW 250,000 CELLS/ML</th>
<th>VATS BELOW 400,000 CELLS/ML</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>90%</td>
<td>100%</td>
</tr>
<tr>
<td>2001</td>
<td>64%</td>
<td>91%</td>
</tr>
<tr>
<td>2002</td>
<td>72%</td>
<td>94%</td>
</tr>
<tr>
<td>2003</td>
<td>75%</td>
<td>95%</td>
</tr>
</tbody>
</table>

Table 3.1 Progress toward the dairy industry cell count goals

In contrast to the cell count trend in the national herd, many farmers who participated in the Farmer Short Course were able to reduce their herd’s bulk milk cell count after the course, even during the drought period. This reinforces the value of Countdown’s main objective — to build farmers’ capacity to control mastitis in whatever circumstances they are operating.

Countdown Downunder is supported by Dairy Australia, the Regional Development Programs, state governments in Queensland, New South Wales, Tasmania and South Australia and the Dairy Herd Improvement Fund. More information about this national learning program can be viewed at the website.16

Newcastle disease

The National Newcastle Disease (ND) Management Plan, managed by Animal Health Australia, was developed and implemented following incidences of ND in New South Wales and Victoria in 2002, due to virulent virus of Australian origin. A national approach to ND prevention and management is necessary to reduce the risk of circulating precursor ND viruses mutating into virulent forms resulting in clinical disease. More information on this program can be found on Animal Health Australia’s website.17

The goals of this integrated national approach are to minimise the risk of ND outbreaks from Australian-origin virulent viruses; protect the status of non-infected flocks and regions; and reduce the social, economic and trade impact of ND at farm, regional and national levels.

The current projects in place to deliver these goals include:

- disease risk minimisation by developing and implementing poultry industry biosecurity plans, and implementing and monitoring a vaccination program in all states and territories using live V4 and inactivated vaccine
- surveillance to identify the location of precursor viruses and provide assurance of freedom from virulent ND virus
- an awareness project to improve the early detection of ND and promote agreed risk management approaches
- research and development
- management and evaluation to provide national coordination and to review the implementation of the National ND Management Plan.

To date, outcomes of the plan have included implementation of industry biosecurity plans; separate reporting requirements regarding ND investigations implemented under the NAHIS; revision of the ND vaccination standard operating procedures; implementation of a vaccination program for all commercial flocks in all states and territories; revision of the AUSVETPLAN ND Strategy Manual; and articles produced for relevant publications and extension activities.

Queensland

From early 2005, producers with 500 or more poultry on their farm will be responsible for vaccinating their stock for ND according to the Queensland Standard Operating Procedures (SOPs), under legislation prescribed in the Stock Regulation 1988 – ‘Prevention and Control of Newcastle Disease’. ND vaccination policy has been rolled out across the state at meetings in Cairns, Rockhampton, Maryborough, Cooroy, Brisbane and Toowoomba, and vaccination workshops have been delivered at Cairns, Rockhampton, Brisbane and Toowoomba. A compliance monitoring program is under development and is anticipated to be released in March 2005.

Victoria

All chickens in any commercial poultry flock in Victoria must be vaccinated according to Victorian SOPs. A commercial poultry flock is any managed group of more than 1000 domestic chickens, including meat chickens, laying hens, and chickens used for breeding purposes. Breeder and layer chickens between four and 18 weeks of age are vaccinated with live V4 vaccine followed by inactivated vaccine within six weeks. Alternatively, the parent breeder or layer flock is sometimes tested, and, depending on the average titre of antibodies to ND, offspring may or may not require vaccination or further monitoring.

16 http://www.countdown.org.au
American foulbrood

American foulbrood (AFB) is a brood disease of honey bees caused by the spore-forming bacterium, *Paenibacillus larvae* subsp. *larvae larvae* (formerly *Bacillus larvae*). The disease attacks older larvae and young pupae, and is particularly virulent because the bacteria form spores resistant to heat, desiccation and chemicals. AFB has limited impact on market access and trade, and has no implications for public health. However, the illegal use of antibiotics in attempts to treat AFB could lead to residues in honey. Used correctly, honey testing for AFB spores is an accurate way to screen for AFB disease in beehives. AFB is subject to control programs in several states.

New South Wales

During 2004, 61 beekeepers recorded outbreaks of AFB. This represents 2.0% of registered beekeepers, which is 2.8% lower than for 2003. A total of 508 beehives were recorded as being infected (0.2% of registered beehives, which is 0.33% lower than for 2003). From July 2004 to December 2004, eight beekeepers reported AFB in their apiaries, which had never had a recorded history of AFB.

Northern Territory

No AFB has been detected in the Northern Territory.

Queensland

The incidence of AFB continued to rise slowly in Queensland, with 410 (13.5%) of the 3000 registered beekeepers having some AFB-diagnosed hives (compared with 12.3% at end of 2003). With honey testing no longer compulsory for beekeeper registration, there has been a dramatic decline in the number of beekeepers using this diagnostic tool to manage their AFB problem. However, there has been some increase in submissions of brood samples for disease management. In 2004, 16 new cases of AFB were diagnosed in samples submitted by beekeepers with no previous history of AFB.

South Australia

During 2004, 26 AFB detections were recorded in South Australia; 17 arose from industry honey testing and the rest resulted from apiarists submitting material, or from investigations initiated by the department.

Table 3.2 Results of the AFB Smart program for period 2001–02 to 2003–04

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of apiarists submitting samples</th>
<th>Total no. of samples received</th>
<th>No. of samples with AFB spores</th>
<th>Honey test score and number of samples</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1+ (1-20 spores)</td>
</tr>
<tr>
<td>2001-02a</td>
<td>490</td>
<td>128</td>
<td>93</td>
<td>15</td>
</tr>
<tr>
<td>2002-03b</td>
<td>549</td>
<td>954</td>
<td>202</td>
<td>166</td>
</tr>
<tr>
<td>2003-04b</td>
<td>725</td>
<td>1155</td>
<td>132</td>
<td>99</td>
</tr>
</tbody>
</table>

a Beekeepers with more than 50 hives
b All beekeepers registered at time of mailout of sample kits

Tasmania

AFB is present in Tasmania, but there is no formal control program.

Victoria

The AFB Smart program aims to find AFB before it causes major losses of colonies and honey production in an apiary. Beekeepers who participate in AFB Smart send a sample of honey from each of their apiaries or yards of bees for free testing. If AFB spores are detected in a sample of honey, the laboratory report will indicate the test score and the number of spores present. In general, a high number of spores will indicate a high likelihood of AFB being present in the brood of one or more hives in the yard in which the honey was extracted.

The AFB Smart program began in the 2001–02 honey-producing season, when registered Victorian beekeepers who owned more than 50 hives were invited to submit samples of honey. Since 2002–03, the program has been open to all registered beekeepers.

The number of beekeepers participating in the program has increased each year (see Table 3.2). The apiarist participation rate in 2003–04 increased by 24% compared with the previous year. Although there was an increase in numbers of samples submitted in 2003–04, the number of samples with AFB spores fell by 35%. There has also been a noticeable reduction in the number of infected hives in affected apiaries since AFB Smart started.

Western Australia

AFB is present in Western Australia, where beekeepers are required to register their hives and to report and eradicate the disease in their apiaries. Failure to eradicate may lead to the imposition of quarantine and the requirement to follow a management plan. The Department of Agriculture provides a diagnostic service that allows beekeepers to monitor the AFB status of their apiaries and allows the department to monitor infected apiaries. These measures support a quality assurance program, currently being adopted by the industry.
Anthrax

Anthrax is a notifiable disease subject to compulsory government controls, including quarantine, disposal of carcasses and vaccination. It is present in well-defined areas in the northern and northeastern districts of Victoria and central New South Wales, as shown in Figure 3.1. In these areas, anthrax has a low and decreasing prevalence, and occurs only sporadically. Occasional outbreaks have occurred in other states.

New South Wales

In 2004, 13 cases of anthrax were reported, of which 12 were confirmed by laboratory examination. All confirmed cases occurred in the known anthrax endemic area of NSW. The suspected case occurred in the Wentworth district, west of the usual western boundary for anthrax; however, the property was part of an old stock route. This is the highest number of cases reported since 1995, when there were 21 cases. The increase can be attributed to prolonged drought conditions with exposure of spores in soil. Seven of the cases involved cattle and two of these also lost some sheep. The remaining six cases involved sheep only. Cattle deaths totalled 48 out of a population at risk of 944, and sheep deaths totalled 43 out of a population at risk of 22,992 on the 13 properties. One cow recovered. In all instances, carcasses were burned or buried, the sites disinfected and properties placed in quarantine for at least 42 days. All movements from affected properties were traced and there was no risk of further spread of disease.

During the year, there were 44 investigations, which excluded anthrax as the cause of death. Alternative diagnoses for cattle included toxicoses due to arsenic, *Cestrum parqui* and lead, deficiency of calcium, and enterotoxaemia. Alternative diagnoses in sheep included nitrate toxicity, pasteurellosis, and intestinal torsion.

Northern Territory

No cases of anthrax have been recorded in the Northern Territory.

Queensland

There were no diagnoses of anthrax in Queensland in 2004. Anthrax was diagnosed in Queensland in 1993 and 2002.

South Australia

South Australia last recorded an outbreak of anthrax in 1914. South Australia is now considered to be anthrax-free.

Tasmania

Anthrax has not been reported in Tasmania for more than 67 years. During 2004, anthrax was ruled out in all 19 possible cases that were reported.

Victoria

In 2004, samples from 33 suspect cases (all cattle) were submitted for anthrax testing. Of these, 12 were positive for anthrax on a combination of the rapid immunochromatographic test, blood smears and culture. These cases were restricted to two dairy farms and a lifestyle farm near Tatura.

The first positive diagnosis was in January 2004, on a farm that had multiple deaths in 1997 and sporadic cases since. The animal involved had probably missed vaccination during the previous year, because it was one of a small group away on agistment at the time.

The next 11 cases were diagnosed in March 2004. Ten were from an out-paddock of a dairy farm that had a single case in 1997, and the eleventh was on a neighbouring hobby farm, which did not have a case in 1997. The incident was attributed to extensive earthworks occurring on an irrigation channel between the two farms where large areas of new dirt were exposed and to which the cattle had access.

The usual protocols of quarantine, disinfection of contaminated ground, carcass incineration, and vaccination of the herd and neighbouring herds were implemented.

Western Australia

The first occurrence of anthrax in Western Australia was near Walpole on the south coast in 1994. The three properties involved were subject to management notices for the control of the disease until July 2002. Two of the three properties remain destocked and have trees planted on them. The third property was grazed by fully vaccinated young dairy stock until mid-2002. Vaccination has ceased on this property. No cases of anthrax have been detected since September 1995, and Western Australia is considered to be anthrax-free outside this area.

Figure 3.1 Areas of Australia where anthrax is known to occur sporadically


Caprine arthritis-encephalitis

Caprine arthritis-encephalitis (CAE) is a multisystemic, inflammatory condition of goats caused by a retrovirus with an almost worldwide distribution. Although there are no regulatory control programs in Australia, there are some voluntary accreditation programs based on serological testing, with removal of reacting animals from the herd. CAE has not been reported in the Northern Territory.

Queensland

Queensland has had a voluntary control program for CAE since 1987, in conjunction with the Dairy Goat Society of Australia (Queensland branch). Most herds in the scheme are small dairy goat herds, with the main reason for testing being the need to attend shows. Another reason for testing is so that goats can be marketed both within Australia and overseas. There are a small number of Boer goat herds in the scheme as well. At the end of 2004, there were 68 herds certified (accredited) free of CAE under the control scheme.

South Australia

The Department of Primary Industries and Resources, South Australia (PIRSA) conducted a limited CAE survey on dairy goats from March to December 2004. Preliminary results indicate approximately 25% of herds tested and more than 5% of goats tested were positive for CAE. The Dairy Goat Society of South Australia runs a voluntary market assurance scheme, which detected no positive herds out of 15 participants in 2004, compared with one positive participant herd detected in 2003.

Tasmania

CAE is present in Tasmania, mainly in dairy breeds. It is no longer subject to any compulsory or voluntary control programs. It is not a notifiable disease.

Victoria

No government or industry control programs for CAE exist in Victoria; however, owners of affected goat herds sometimes engage a private veterinarian to implement a test-and-cull program to eradicate the disease.

Western Australia

Western Australia has had a voluntary CAE accreditation scheme for many years. At the end of 2004, there were 21 herds (186 goats) participating in the scheme, of which four herds were re-accredited (28 goats).

Cattle tick and tick fevers

The cattle tick, *Boophilus microplus*, was first introduced to northern Australia in the late nineteenth century, and spread steadily from Darwin over northern Australia, stabilising at its current geographical distribution by about 1918. The tick mainly infests cattle, but may occasionally infest horses, sheep, deer and water buffalo. Infestations cause damage to hides, loss of production, anaemia and death. The tick also transmits bovine babesiosis, anaplasmosis and spirochaetosis.

The distribution of *B. microplus* is largely determined by climatic factors, as it needs high humidity and ambient temperatures of at least 15-20°c for egg laying and hatching. It persists only in northern and northeastern coastal regions of Australia, see figure 3.2. Tick control by acaricide dipping has been widely used in endemic areas. Acaricides used for this purpose include various synthetic pyrethroids, amitraz and some organophosphates. Spread from endemic areas is restricted by state-managed zoning policies. Dipping is compulsory for cattle leaving defined tick areas in the Northern Territory, Queensland and Western Australia, and from known infected properties in New South Wales. Many producers in the tick endemic area have changed to *Bos indicus* type cattle because of those breeds’ greater resistance to tick infection.

New South Wales

In the last tick season, 37 infestations with ticks were detected (compared with 53 the previous year). A total of 11 infestations were detected as a result of routine saleyard monitoring; three by owner reports and the rest as a result of property inspections due to tracing, neighbours of infested herds, or herd inspections on properties under quarantine.

There were no cases of tick fever during the year.

Northern Territory

The four cattle tick areas gazetted under Northern Territory legislation were revised during 2003. The map of current areas is available on the internet. 18

There were no acaricide-resistant ticks in the Northern Territory before 1999. However, Parkhurst strain ticks (resistant to synthetic pyrethroids) were detected near Darwin in 1999. The Parkhurst strain ticks were probably introduced on cattle imported in 1995.

In 2004, there were nine properties infected with Parkhurst strain ticks. Movement controls are used to reduce the threat of further spread of these ticks and there is an active surveillance program to determine their distribution in the Darwin area. All infected herds can be linked to the initial movement of cattle. No property-to-property spread has been detected.

18 http://www.nt.gov.au/htg/onland.shtml (follow the link to ‘Cattle tick and tick fever’)


Tick fever is not commonly diagnosed in the Northern Territory, although the organisms responsible for babesiosis (Babesia bovis and B. bigemina) and anaplasmosis (Anaplasma marginale) are present. Tick fever is mainly seen in cattle that, although they are in the northern tick-infected areas, have had little or no previous exposure to ticks. Anaplasmosis is diagnosed more frequently than babesiosis.

Queensland

Queensland regulates the movement of stock to control cattle ticks through the declaration of three main areas – infected, free and protected (control). Stock moving from an infected area or from restricted properties in any other area, are inspected and treated before they move. These services have been provided by Biosecurity Stock Inspectors, generally at official clearing dips.

In 2003–04, the Queensland Department of Primary Industries and Fisheries (DPI&F) trialled third party providers (TPPs) to carry out the inspection and treatment services at six clearing dips across the state. The TPPs have been trained, approved and monitored by the department. The system has been reviewed at four centres with the assistance of Agforce representatives. In part, the review report stated:

‘It is considered that the Third Party Provider System provides an efficient operation to industry and it is recommended that it be continued’.

In November 2004, the DPI&F, The University of Queensland and CSIRO Livestock Industries started a project to conduct an intensive survey of acaricide resistance in the cattle tick. This study is jointly funded by the DPI&F and Meat and Livestock Australia and will be the most comprehensive study of its type ever done in Australia. It will include a survey of 1000 properties throughout the state to determine the resistance status of ticks, and a survey of animal management practices to assess possible risk factors for the development and spread of resistance.

Live vaccines produced by DPI&F’s Tick Fever Centre are used to control babesiosis and anaplasmosis. During 2004, 751,875 doses (68% trivalent and 32% bivalent) were sold. The reduction in sales is a result of reduced cattle numbers following drought conditions in the state. Of laboratory-confirmed diagnoses, 73% were due to Babesia bovis, 3% to B. bigemina and 24% to Anaplasma marginale.

South Australia

There were no reports of cattle tick incursions into South Australia during 2004.

Tasmania

No incursions of cattle ticks (Boophilus microplus) or cases of tick fever were reported in Tasmania during 2004.

Victoria

In Victoria, no incursions of cattle ticks (Boophilus microplus) or cases of tick fever were reported during 2004.

Western Australia

Western Australia is divided into two areas – cattle tick-infected and cattle tick-free. The infected area includes the Kimberley in the north of the state, with the southern boundary generally along the line of 20 degrees south. This area varies with the seasons, with the southern boundary moving north in dry years.

There are no regulatory control measures for ticks within the tick-infected area, and little or no strategic treatment is applied. Little or no vaccination is carried out for the tick fevers caused by babesiosis and anaplasmosis. Cattle ticks have also become less of a concern to pastoralists, who have largely changed from Bos taurus to Bos indicus breeds. Cattle moving from the tick-infected area to the tick-free area of the state must be inspected and treated for ticks.

In 2001, cattle ticks were found on two properties in the Pilbara pastoral region. The infestations are thought to be the result of cattle moved from the Kimberley. Both properties were placed in quarantine, and cattle tick eradication programs have been successfully completed and the properties were released from quarantine in 2004. Before 2001, the one reported incursion of cattle tick and tick fever into the tick-free area was in 1979.

Figure 3.2 Distribution of the cattle tick Boophilus microplus in Australia
Enzootic bovine leucosis

Enzootic bovine leucosis (EBL) occurs rarely in Australia. It is a minor cause of production loss and is a potential barrier to trade. It has been found in both beef and dairy cattle, though it remains predominantly a disease of dairy cattle. Queensland has had a voluntary accreditation scheme to eradicate EBL from individual dairy herds since 1983, and other states have since undertaken similar schemes. Deregulation of the Australian dairy industry has seen a steady decrease in the total number of dairy herds and there are no longer any dairy herds in the Northern Territory.

New South Wales

In March, July and November 2004, all active dairy herds in New South Wales were screened for EBL infection using the bulk milk test. The tested herds gave a negative result. At the end of 2004, the EBL statuses of dairy herds were 98.5% (1085 herds) ‘monitored free’, 0.2% (two herds) ‘provisionally clear’, and 1.3% (14 herds) ‘not assessed’ of a total 1101 dairy herds.

The two provisionally clear herds are both quarantined and are now due for the final EBL herd test. The origins of animals assembled in 14 ‘not assessed’ herds are being traced so that the appropriate EBL status can be allocated.

Northern Territory

There is no dairy industry in the Northern Territory.

Queensland

At the end of 2004, six out of 941 commercial dairy herds in Queensland had an ‘infected’ status. During the year, four breakdowns occurred, with the most likely causes being residual infection (in three herds) and an introduced animal from a dealer (in one herd). Herds are monitored by the bulk milk test three times per year.

South Australia

In 2004, bulk milk testing of dairy herds in South Australia detected EBL ELISA (enzyme-linked immunosorbent assay) reactors in two dairy herds in the southeast of the state. There is ongoing investigation of these herds to clarify the source of these reactors. Herds with more than 200 cows continued to be tested (referred to as the Intensive Bulk Milk Test). These herds were monitored by analysing milk samples from milk parameter herd recording organisations. For herds that are not herd recording, sampling was performed by PIRSA staff. For this testing, milk from 30 animals was pooled and then tested. Rounds 3 and 4 of the Intensive Bulk Milk Test were completed without any detections of EBL.

Tasmania

Monitoring of dairy herds continued in 2004. No reactors were detected. Most dairy herds in Tasmania are classified as ‘monitored negative’ or better.

Victoria

The program to eradicate EBL from Victoria’s dairy industry started in 1994. At the end of 2004, 6168 of Victoria’s 6215 dairy herds were free from EBL. Bulk milk test screening of all herds occurs three times each year, and herds that participate in milk recording are further monitored by testing milk samples (pooled from 30–50 cows) collected at herd testing centres. Any herds that return positive screening tests enter a program of whole-herd testing to eradicate the disease.

Western Australia

Milk testing of Western Australian dairy herds continued in 2004, with no cases of EBL detected. Testing for eradication began in 1997, and each herd is bulk milk-tank tested three times per year. In addition, since 2001, herds milking more than 200 head are subject to one round of intensive testing of pooled samples according to national guidelines for EBL. The Western Australian dairy herd has maintained ‘bulk milk tank negative’ status since mid-1998, and met ‘monitored free’ status criteria in 2003.

Equine herpes virus

Equine herpes virus (EHV1) is a notifiable disease, occasionally causes abortion and rarely causes nervous disease in horses. National guidelines for the management of EHV1 abortion have been developed by the Australian Equine Veterinary Association.19 Autopsies and histopathology are performed in both government and private laboratories. The Centre for Equine Virology (CEV), based at the University of Melbourne in Victoria, provides the horse industry with specialist virology services.

New South Wales

There were two cases of EHV1 abortion reported in New South Wales during 2004. In one case, the foetus was submitted to the laboratory. EHV1 was detected by PCR (polymerase chain reaction) in pooled lung and thymus tissue, and the virus was identified in cell culture. In the second case, diagnosis was based on positive serology of the mare following abortion.

Queensland

There were no reports of EHV abortion through Queensland state government laboratories in 2004. There were 24 cases of infectious abortion diagnosed in horses. Sixteen were bacterial, eight were unidentified, but herpes virus was excluded.

South Australia

South Australia had four positive cases of EHV1 reported during 2004.
**Tasmania**

Equine herpes virus was not isolated in Tasmania. Rhinopneumonitis was not reported. One animal that aborted one month after it was imported from Victoria had a positive serum neutralisation test for EHV1.

**Victoria**

EHV1 is a notifiable disease and occasionally causes abortion and rarely causes nervous disease in horses.

**Ovine brucellosis**

Contagious epididymitis, caused by *Brucella ovis*, is endemic in commercial sheep flocks in some states, but its prevalence is low. Well-supported accreditation schemes for stud flocks are managed by state animal health authorities and breed societies.

**New South Wales**

Sero logical surveillance in commercial flocks during 2004 confirmed that infection with brucellosis is not uncommon. At the end of 2004, there were 700 accredited free flocks for ovine brucellosis within New South Wales, with a steady stream of new applications to join the Ovine Brucellosis Accredited Free Flock Scheme. Producers in the scheme are urged to undertake risk management strategies particularly focusing on biosecurity.

**Northern Territory**

There is no sheep industry in the Northern Territory.

**Queensland**

In Queensland, the sheep industry and the DPI&F jointly conduct a voluntary ovine brucellosis accreditation scheme. As at December 2004, 33 Merino/Poll Merino flocks and 25 other breed flocks were accredited. There was no significant change in the incidence of ovine brucellosis in stud or commercial flocks in 2004.

**South Australia**

A voluntary ovine brucellosis accreditation scheme operates in South Australia. There are 369 accredited producers, which includes approximately 490 flocks. These numbers have not changed greatly from previous years. In 2004, one flock with infected rams was suspended from the scheme. After removing the infected rams and negative flock testing, this flock rejoined the scheme. Reactors continue to be detected during accreditation testing but, with the exception of the above flock where disease was confirmed, the remainder of the reactors were false positives.

A survey assessing the prevalence of ovine brucellosis in commercial flocks in southeast South Australia is likely to be extended to other areas of the state in 2005. The results to date indicate that ovine brucellosis is present at a low level in commercial flocks.

**Tasmania**

Tasmania has an accreditation scheme for ovine brucellosis. During 2004, the number of accredited flocks for ovine brucellosis in Tasmania fell from 102 to 86.

**Victoria**

Victoria has a voluntary accreditation program for ovine brucellosis, and at the end of 2004 had 625 accredited free flocks. In addition, there is mandatory control in the Mallee Ovine Brucellosis Control Area, proclaimed in August 1997, that has been maintained to keep the prevalence of ovine brucellosis in that area at a low level. Ovine brucellosis was once present in more than 50% of flocks in the Mallee, with typically 60–80% prevalence in rams in infected flocks (ie 30–40% of all rams). Testing was progressively extended across the Mallee, completing coverage in 2000. All rams must be presented for testing, infected rams slaughtered and their cohorts retested.

Since January 2002, the Ovine Brucellosis Vendor Declaration has been a voluntary document across Victoria, with penalties for a false declaration. However, it is compulsory for all rams sold or entering the Mallee other than for slaughter to be accompanied by a declaration that they have been accredited or tested and palpated negative in the previous 14 days. For rams from accredited flocks, a completed ovine brucellosis accreditation section on the new ovine Johne’s disease Animal Health Statement is also acceptable as a vendor declaration. Signs have been erected in Mallee and nearby sheep saleyards, describing the requirement for ram vendor declarations, and all stock agents have been advised in writing, explaining their legal obligations.

During 2004, the only testing done was in response to a diagnosis of ovine brucellosis in all four rams in one flock, where rams had been introduced on agistment of ewes. All rams in that flock were slaughtered and all 132 rams on nine neighbouring properties were tested and found negative. It is intended that testing will resume across the Mallee in 2005.

**Western Australia**

A voluntary Ovine Brucellosis Accreditation Scheme has been in operation in Western Australia for many years. At the end of 2004, there were 147 flocks (3842 sheep) participating in the scheme, of which 60 flocks were re-accredited (1875 sheep).
**Ovine footrot**

Footrot caused by *Dichelobacter nodosus* infection has been present in Australia for many years, and was probably introduced in the early days of the Australian sheep industry. Virulent footrot causes significant economic loss in southern Australia. Several states have eradication or control programs – Western Australia has a formal eradication program, and New South Wales, South Australia and Victoria operate control programs. Tasmania does not routinely quarantine for footrot, although there is legislation available to do so if required. Footrot is not regarded as a significant problem in Queensland and there are no commercial sheep flocks in the Northern Territory. National agreement has been reached on standard definitions for infected and protected areas and on standards for diagnostic tests for footrot. Australian states are working to coordinate their advisory and regulatory programs.

**New South Wales**

The New South Wales Footrot Strategic Plan remains on track to meet the target of the whole state progressing to protected area status for footrot by end of December 2005. Statistics provided by Rural Lands Protection Boards for 30 June 2004 show 181 flocks in quarantine for footrot throughout New South Wales, compared with more than 6000 flocks infected with footrot in the early 1990s.

In 2004, the New South Wales Footrot Steering Committee approved applications from Goulburn and Yass rural lands protection boards to progress either part (Goulburn) or the whole board (Yass) from control to protected area status. This approval reflects the progress being made with footrot control in these areas and is a credit to the efforts of sheep producers involved, especially as these areas had an estimated footrot flock prevalence of more than 20% when the strategic plan was launched in 1988.

More than 80% of the state is now a gazetted protected area for footrot. Throughout the remaining areas with control status, the highest footrot flock prevalence in any board is now down to 4%. Many of these boards with control areas are close to reducing their footrot flocks to below 1% and should be eligible to apply for protected area status in the near future.

The prolonged drought conditions in many sheep-raising areas of New South Wales in 2004 have favoured footrot eradication programs, and in many areas, significant progress has been made. However, good seasonal conditions in late spring have seen an increase in investigations of lameness in sheep and in a number of cases, footrot has been confirmed. It is hoped that the good seasonal conditions continue to allow full expression of the disease and for effective eradication programs to be put in place.

**Northern Territory**

There is no sheep industry in the Northern Territory.

**Queensland**

During 2004, no cases of ovine footrot were observed or reported in Queensland. One property remains quarantined for suspect footrot, but no clinical cases were seen in the flock.

**South Australia**

Regulatory control of footrot in sheep has been in place in South Australia since the mid-1950s. Over the past few years, the incidence of the disease has been fairly constant, varying between 10 and 20 cases per year. Only two new cases were detected in 2004 – the lowest figure for a number of years. The footrot control program is now 90% funded by the sheep industry, and is currently being reviewed.

**Tasmania**

Tasmania does not routinely quarantine for ovine footrot, although there is legislation to do so if required.

**Victoria**

Below-average rainfall over much of Victoria saw fewer outbreaks of ovine footrot during 2004. However, southwestern Victoria was the exception, experiencing above-average rainfall and producing most Victorian occurrences of footrot. Some flocks were affected in other localised areas experiencing conducive weather conditions.

In 1996, the Victorian sheep industry opted for self-regulation and a move away from mandatory quarantine of infected flocks. The role of DPI since then has been to provide footrot extension, support and training to producers and other service agencies. It also provides assistance with diagnosis, conducts surveillance at major store sheep sales, and takes regulatory action where infected sheep pose a risk to other flocks.

A promising new DNA test for classifying intermediate strains of footrot is being trialled at the University of New South Wales, Armidale, and is being applied to footrot isolates from Victoria and other states. Diagnosing infection by intermediate strains using the current gelatin gel and elastase tests is sometimes difficult, and a more definitive test, such as the DNA test, offers more effective footrot control programs.

**Western Australia**

Control and eradication activities have been conducted on individual properties since the late 1940s. In the mid-1980s, a coordinated eradication campaign began to eliminate virulent strains of the organism that causes footrot. The proportion of infected flocks has declined from an estimated 15% before the campaign commenced, to less than 1% now.

A key element of footrot eradication in Western Australia is proactive surveillance to detect new infections quickly, before major farm-to-farm transmission occurs. Neighbours of quarantined properties and all reports of suspect footrot are checked as a high priority. Funding from Australian Wool Innovation improved on-property surveillance in 2003–04.
Abattoir surveillance has enhanced detection and improved the cost-effectiveness of the eradication campaign. Abattoir surveillance also provides an effective measure of progress towards eradication. The trend has been downward over the past six years with only 0.3% of lines of sheep being found positive for virulent footrot so far in 2004–05 (Table 3.3).

The Western Australian program is on track to eradicate virulent footrot by 2014.

Table 3.3 The percentage of lines of sheep inspected that were identified as new cases of virulent footrot

<table>
<thead>
<tr>
<th>YEAR</th>
<th>NUMBER OF LINES INSPECTED</th>
<th>NEW VIRULENT FOOTROT CASES</th>
</tr>
</thead>
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<tr>
<td>1998/1999</td>
<td>660</td>
<td>4.5%</td>
</tr>
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<td>1.0%</td>
</tr>
<tr>
<td>2004/2005a</td>
<td>616</td>
<td>0.3%</td>
</tr>
</tbody>
</table>

a To December 2004

Small hive beetle

The small hive beetle (SHB) (*Aethina tumida*) is an insect pest that invades honey bee hives. It is endemic in southern Africa and, in recent years, has spread to the United States. The beetle was first detected in Australia in late October 2002, in the Hawkesbury region near Richmond in New South Wales. Eradication from Australia has not been attempted; instead, management strategies aim to reduce the impact of SHB on productivity, slow its spread and minimise damage in infested apiaries. These strategies are supported by ongoing surveillance.

New South Wales

SHB is a notifiable pest under the *Stock Diseases Act 1924*. From December 2003 to December 2004, 19 official confirmed reports were received by the New South Wales Department of Primary Industries. Most reports were from the Sydney basin. Other locations included Kempsey and Anna Bay.

Queensland

SHB has now been reported over a large area of southeast Queensland, with reports in hives from the New South Wales border in the south, reaching as far north as the Maryborough area. However, beetles are only being reported in small numbers, and there are very few incidences of any damage occurring in managed hives. The main reports of damage come from honey frames stored in sheds for long periods before extraction.

South Australia

Caged queen bees and escorts from Queensland and New South Wales are prohibited from entering South Australia unless specific conditions are met: queen bees and escorts must be hand caught and manually inserted into new cages; and there must be written permission from the Chief Inspector of Stock (CIS) of South Australia. This is the second season that these conditions have been in place, affecting 14 queen breeders (five from Queensland and nine from New South Wales). Only one breeder has stopped supplying bees due to these conditions.

The introduction of beeswax, pollen, propolis and queen cells requires written permission from the CIS (including copies of necessary health certificates) before consignments will be allowed to enter. The only applications received for this category of apiary products was for irradiated pollen protein cakes from Queensland.

Bee colonies and used hive equipment may enter South Australia as long as the health certificate requirements are met.

Tasmania

SHB has not been detected in Tasmania. Import controls to restrict its entry are in place.

Victoria

An incursion in the far northwest of Victoria in 2003 was eliminated with the return of the affected hives to their interstate origin. Monitoring around the area and surveillance across the state has not detected further incidents.
Swine brucellosis surveillance

Queensland
Swine brucellosis, caused by *Brucella suis*, is confined to small areas of Queensland where it occurs in feral pigs and occasionally spills over into domestic pigs. The organism is not pathogenic for other livestock species, but exposure of cattle can cause an antibody response that may cause false positive reactions in serological tests for bovine brucellosis, now eradicated from Australia.

The DPI&F’s *Brucella suis* Accreditation Herd Scheme currently has 10 member herds. One herd has remained in the Swine Brucellosis-Tested Herd Scheme, for management reasons. Both schemes are supervised and run in conjunction with members, helping to ensure freedom from *Brucella suis* and provide a secure market source of pig producers wishing to purchase breeding stock. *Brucella suis* was not detected in any domestic piggeries during 2004.

Tasmania
No cases of Brucella suis infection were reported in Tasmania.

Victoria
*Swine brucellosis* is not known to exist in Victoria.

Practitioner surveillance
Most states actively encourage surveillance and reporting by private veterinary practitioners.

South Australia
To increase the pool of data that can be used for passive surveillance, South Australia has introduced an incentive program for private veterinary practitioners. This program supports outbreak investigations at two levels:

> level one covers laboratory diagnostic costs for investigations targeted at multiple animal outbreaks with a differential diagnosis that includes an infectious cause

> level two covers both professional charges and laboratory costs for investigations aimed at more severe outbreaks with significant mortalities that may or may not have a differential diagnosis of an exotic animal disease.

The program has resulted in a dramatic increase in submission rates to the state veterinary laboratory.

Tasmania
Twelve Tasmanian veterinary practices supply monthly farm visit information within broad syndrome categories across all livestock species, including poultry. Between 10 000 and 50 000 livestock are seen each month. During 2004, more than 310 000 head were seen on more than 10 000 visits to about 7500 farms. The syndrome list will be expanded from June 2005 to allow better differentiation of syndromes.

Victoria
The Victorian Department of Primary Industries (DPI) liaises closely with the large network of private veterinarians in urban and rural Victoria, with many in the rural sector providing advisory and testing services to farmers under contract on behalf of DPI. For significant disease outbreaks where costs are potentially high for an individual farmer or the state, the government subsidises laboratory testing and assists with payments for time committed by investigating private veterinarians. Enhanced surveillance projects planned for Victoria in the next few years are expected to see greater involvement of private veterinarians in surveillance activities.

Western Australia
In recent years, Western Australia has actively encouraged surveillance and reporting by private veterinarians through personal networking by departmental veterinary officers, dedicated regional training workshops, and production of a quarterly surveillance newsletter. Diagnostic samples that meet public benefit criteria are exempt from laboratory charges.
CHAPTER 4
AQUATIC ANIMAL HEALTH

During 2004, Australia’s second national strategic plan for aquatic animal health was developed through a series of workshops, with input from a large and diverse group of stakeholders. AQUAPLAN 2005–2010 succeeds AQUAPLAN 1998–2003. The drafting process – overseen by the Aquatic Animal Health Committee (AAHC) – involved extensive consultation with governments, a wide range of aquaculture industries, researchers, conservation groups, the wild-catch and recreational fishing industries, and educational institutes around Australia.

The development of AQUAVETPLAN, Australia’s Aquatic Animal Diseases Veterinary Emergency Plan, was boosted with the formal endorsement of a disease strategy manual and the preparation of another four manuals. Two disease simulation exercises were also held, further enhancing Australia’s aquatic animal disease preparedness and response capability.

Australia’s diagnostic capability was improved with the formal endorsement of standard procedures, as well as the release of a disease awareness kit and the second edition of a diagnostic field guide.

In 2004, advances in diagnostic technology allowed the definitive identification of an apparently avirulent prawn virus, and an endemic disease was reported for the first time in a native Australian fish species.

Importation of live barramundi cod for the ornamental fish industry was suspended.

This chapter provides details on these items.

Photograph courtesy of Fisheries Research and Development Corporation (2004).

Introduction

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Significant achievements in 2004

AQUAPLAN 2005–2010
AQUAPLAN 2005–2010 comprises seven strategies under which government and private sectors have identified priority projects. Together, these objectives will assist in maximising Australia’s ability to control aquatic animal disease outbreaks, maintain market access, support quality assurance and improve the productivity and sustainability of Australia’s aquatic animal production industries.

The seven AQUAPLAN 2005–2010 strategies are to:

> improve the integration and scope of aquatic animal health surveillance in Australia
> harmonise approaches to aquatic animal health in Australia
> improve the aquatic animal emergency disease preparedness and response framework
> provide education and training in the aquatic animal health sector
> establish welfare standards for aquaculture
> ensure appropriate use of therapeutics for aquatic animal health management
> make aquatic animal health management part of ecologically sustainable development.

AQUAPLAN 2005–2010 has been submitted to Australia’s Primary Industries Standing Committee for endorsement at their March 2005 meeting.

AQUAVETPLAN
AQUAVETPLAN is the Australian Aquatic Animal Diseases Veterinary Emergency Plan. It is based on the AUSVETPLAN series for terrestrial animal diseases. Both plans have disease strategy manuals so that aquatic and terrestrial animal health professionals can efficiently respond to animal disease emergency situations in Australia.

In 2004, Australia’s Primary Industries Standing Committee endorsed the AQUAVETPLAN Disease Strategy: Viral encephalopathy and retinopathy (VER). This fish disease has been reported from New South Wales, the Northern Territory, Queensland, South Australia, Tasmania and Western Australia.

In 2004, Australia’s National Aquatic Animal Health Technical Working Group and the Aquatic Animal Health Committee (its parent body) endorsed further AQUAVETPLAN disease strategies for two exotic diseases of fish (viral haemorrhagic septicaemia and whirling disease), and two exotic diseases of crustaceans (crayfish plague and white spot disease). These four manuals have been submitted to Australia’s Primary Industries Standing Committee for endorsement at their March 2005 meeting. Except for whirling disease, all these diseases are listed by the World Organisation for Animal Health (OIE) in the Aquatic Animal Health Code.

AQUAVETPLAN manuals can be downloaded from the Australian Government Department of Agriculture, Fisheries and Forestry website.

Disease simulation exercises
During 2004, the Office of the Australian Chief Veterinary Officer conducted two aquaculture-related simulation exercises: Exercise Acheron, involving the Western Australian departments of fisheries and agriculture and the marron industry; and Exercise Rainbow, involving the Victorian Department of Primary Industries and the trout industry.

Both exercises introduced fisheries officers and industry representatives to the various components of the aquatic animal emergency disease management system. The exercises highlighted that while there is a good general awareness of emergency disease management procedures, the existing systems could be improved or further developed.

‘Disease watch – Play your part’
A new aquatic animal disease awareness package, consisting of a CD-ROM, a website and a monthly newsletter, was released in 2004. The CD-ROM aims to increase awareness of aquatic animal health issues among the commercial fisheries and aquaculture and recreational fishing industries. It has a range of video clips containing approximately 90 minutes of video footage. Additional information is available as text documents, and includes an extensive range of links to other websites with aquatic animal health information. A button at the bottom of the screen allows the user to
transfer to the companion website,21 ‘Disease watch – Play your part’, which provides up-to-date information and new publications, thus extending the useful life of the CD-ROM. The website also supports a discussion forum for the exchange of knowledge and ideas in aquatic animal health.

Field guide

The second, revised edition of Aquatic Animal Diseases Significant to Australia: Identification Field Guide22 was released on CD-ROM in 2004. This edition comprehensively updates the first edition, reflecting increased understanding of those diseases and improved diagnostic capability. It also includes new diseases.

The field guide provides a quick reference for fisheries and aquaculture managers, recreational fishers, border protection staff, environmentalists, students of aquatic animal health and fisheries management. It draws heavily on pictorial images of disease, helping the reader quickly identify gross signs of disease, and features a differential diagnostic key, directing the reader to other possible diseases as depicted by the gross signs observed. In addition, it provides disease reporting contacts within each Australian state and territory, as well as diagnostic links for fish pathologists and veterinarians.

Diagnostic procedures

Correct and reproducible diagnosis is essential for detection, research and management of important aquatic pathogens. Within Australia, a process was established to develop, review and publish standard diagnostic techniques for a number of important aquatic pathogens.

Australian and New Zealand Standard Diagnostic Procedures (ANZSDPs) are written by scientists to standardise diagnostic test methods and interpretation of results. ANZSDPs are consistent with the OIE Manual of Standards for Diagnostic Tests and Vaccines and are endorsed by the Sub-Committee on Animal Health Laboratory Standards (SCAHLS).

In 2004, SCAHLS endorsed a new aquatic ANZSDP for spring viraemia of carp, as well as a policy document on ‘Principles for the Design and Conduct of Surveys to show Presence or Absence of Infectious Disease in Aquatic Animals’. SCAHLS-endorsed ANZSDPs, as well as those that have been endorsed by the National Aquatic Animal Health Technical Working Group and submitted to SCAHLS, can be downloaded from the website.23

Disease events in 2004

Infectious hypodermal and haematopoietic necrosis virus in Australia

Advances in diagnostic technology have finally allowed the definitive identification of a prawn virus that was described as ‘infectious hypodermal and haematopoietic necrosis (IHHN) virus-like virus’ in the early 1990s. Although the structure of this virus was consistent with IHHN virus, samples tested negative for IHHN virus with the IHHN virus primer set 77012F/77353R published in the World Organisation for Animal Health (OIE) Manual of Diagnostic Tests for Aquatic Animals (4th ed, 2003). In recent years, characterisation of IHHN virus isolates from across the Indian and Pacific oceans have revealed a family of RNA viruses with as much as 14% sequence difference between isolates. A new set of PCR primers was developed, and with these primers, archived samples of the Australian virus tested positive. Subsequent sequencing of the PCR fragment revealed that the Australian virus was indeed IHHN virus and was most closely related to isolates from Madagascar that are reported to be avirulent.

In late 2003, individual tiger prawns (Penaeus monodon) caught off the Northern Territory, broodstock originating from Queensland used in a research program, and prawns bred from these broodstock yielded positive PCR results when tested with the new primer sets. In early 2004, individual wild-caught, adult kuruma prawns (P. japonicus) originating from Queensland also tested positive to IHHN virus with the new primer set, and sequence analysis showed an identical nucleotide sequence to the 2003 isolate from P. monodon. None of these prawns had clinical signs of IHHN or histological lesions indicating IHHN virus infection, and none reacted with the OIE-recommended PCR test. The findings were reported to the OIE.

Nodavirus infections

An outbreak in 2004 of viral encephalopathy and retinopathy (VER) in a batch of Australian native bass (Macquaria novemaculeata) held at a New South Wales government facility highlighted one of the emerging problems with disease in aquatic animals. This was the first report of VER in this species, and this particular virus isolate showed a 13% difference in genome sequence from the isolates found in barramundi (Lates calcarifer). VER is a betanodavirus with an RNA genome, and isolates have been recovered from more than 30 species of marine fish. This infection in Australian bass highlights the wide host range to which this virus has adapted, and also raises the possibility that other species of native fish may be susceptible to VER. In future, screening of broodstock for VER may be required to avoid losses in native fish hatcheries. The findings were reported to the OIE.

In an unrelated incident, a hatchery in South Australia had an outbreak of VER. Some stock from the affected batch moved interstate; however, the majority of facilities receiving the affected stock were closed-system farms, using water-recycling technology. This level of biosecurity prevented any threat of discharge of the virus into surrounding waterways.

21 http://www.disease-watch.com
Protective measures implemented

Barramundi cod (*Cromileptes altivelis*) is a finfish species that can be imported live under the *Environmental Protection and Biodiversity Conservation Act 1999* administered by the Australian Government Department of Environment and Heritage. The species was included in the 1999 import risk analysis (IRA) of ornamental finfish, on the premise that imported barramundi cod would be sourced from wild populations and destined for public or home aquaria in Australia.

Advances in barramundi cod aquaculture have implications for the potential source and end-use of imported barramundi cod. The change in these risk factors may have a significant impact on the level of risk and its acceptability:

> Barramundi cod sourced from aquaculture, without any restrictions, could be expected to present different risks from wild-caught fish. The risk factors are likely to be crowding, stress, absence of predators and other conditions that favour the multiplication of disease agents, survival of infected hosts and increased prevalence of disease agents.

> The likelihood of fish in Australia’s natural waters being exposed to a disease agent via an imported fish will be different if imported barramundi cod juveniles are used for aquaculture grow-out in open or semi-open systems, or as broodstock in hatcheries.

In November 2004, AQIS accepted advice from Biosecurity Australia and suspended the importation of live barramundi cod for the ornamental fish industry, pending completion of a biosecurity policy review. Biosecurity Australia will review the quarantine conditions to ensure that the risks are appropriately managed. For more information see the Biosecurity Australia website.^[24](http://www.daff.gov.au/animalbiosecurity)
CHAPTER 5
IMPORT AND EXPORT INITIATIVES

‘Biosecurity Australia and the Australian Quarantine and Inspection Service work to protect Australia’s animal health status... and to protect and expand Australia’s access to export markets.’

Introduction

Because of the high value of our agricultural industries and the importance of our natural fauna and flora, Australia has a highly conservative approach to quarantine risk management through its quarantine policy and procedures at the border. Further, as a member of the World Trade Organization (WTO), Australia ensures that its import policies and procedures meet its international obligations under the WTO’s Agreement on the Application of Sanitary and Phytosanitary Measures (the SPS Agreement). The rights and obligations under this agreement also help Australia gain access to overseas markets under conditions that reflect Australia’s animal health status.

Biosecurity Australia and the Australian Quarantine and Inspection Service (AQIS) maintain Australia’s animal health status by managing potential pest and disease threats posed by imports, and expanding the country’s access to export markets.

On 1 December 2004, Biosecurity Australia was established as an independent agency within the Australian Government Department of Agriculture, Fisheries and Forestry (DAFF). This and other initiatives were implemented to improve stakeholder confidence in the import risk analysis (IRA) process for assessing and managing pest and disease risks associated with agricultural imports. The separation, particularly from the market access area of DAFF, was to remove any perception that trade considerations, rather than scientific analysis, influence IRA recommendations. It also clarified Biosecurity Australia’s role in providing technical and scientific input for Australia’s export market access requests for animals and their genetic products.
AQIS provides quarantine inspection services for international passengers, cargo, mail, and animals and plants or their products arriving in Australia. It also provides inspection and certification for various animal and plant products exported from Australia, and undertakes technical negotiations in relation to agri-food exports, including meat, dairy, eggs, fish, wool, skins, hides, by-products and highly refined animal products.

This chapter discusses the various initiatives and activities undertaken by Biosecurity Australia and AQIS in relation to imports and exports during 2004.

Imports

Legislation

The importation of animals and animal products into Australia is regulated by DAFF under the Quarantine Act 1908 and its subordinate legislation, and by the Australian Government Department of Environment and Heritage under the Environment Protection and Biodiversity Conservation Act 2000 and its subordinate legislation.

Biosecurity Australia

Biosecurity Australia became a prescribed agency under the Financial Management and Accountability Act 1997, to improve stakeholder confidence in the IRA process. Biosecurity Australia aims to provide science-based quarantine assessments and policy advice that protects Australia's favourable pest and disease status and enhances Australia's access to international animal and plant related markets.

Biosecurity Australia's primary role is to develop and review biosecurity policies for the safe importation of animals and animal products, with the minimum restriction on trade. To prevent pests and diseases from entering, establishing and spreading in Australia, pre-border, border and post-arrival measures may be needed.

Biosecurity Australia assesses the risk associated with import proposals and develops appropriate import requirements, consistent with Australia's conservative approach to quarantine risk. The policy recommendations are passed to AQIS for them to take into account when assessing applications for import permits.

Many of Australia's quarantine requirements are based on the standards, guidelines and recommendations established by international organisations such as the World Organisation for Animal Health (OIE). However, additional measures are sometimes needed to reduce risk to an acceptable level. In such cases, Biosecurity Australia analyses the quarantine risk and establishes import conditions based on scientific evidence. The import conditions are applied only to the extent necessary to protect human or animal health.

The Import Risk Analysis Handbook, produced by Biosecurity Australia, sets out the process of using an IRA to analyse quarantine risk. The risk analysis methods used are in line with Australian Government policy, the Quarantine Act 1908 and its subordinate legislation, the requirements of the SPS Agreement, and relevant international animal health guidelines. The process provides for a number of public consultations on topics such as the scope, approach, technical issues to be considered, and the draft IRA report. The draft IRA report is a key document that assesses the quarantine risks and, where appropriate, recommends risk management measures. There are also opportunities for appeal early in the process and on the final IRA report.

Biosecurity Australia updated the IRA handbook in 2003 and, with the creation of an Eminent Scientists Group in 2004, has since made further amendments. The Eminent Scientists Group plays a key role in assessing the way in which stakeholder comments on draft IRA reports are addressed. This is an additional step in the IRA process to assure stakeholders that the valid scientific evidence in the submissions is adequately considered by the risk analysis teams.

Biosecurity Australia is currently conducting 24 animal and aquatic animal IRAs, including ones for prawns and prawn products, nonviable bivalve molluscs, uncooked chicken meat, edible eggs and egg products, pig semen, horses from South Africa, dogs and cats, and a range of zoo animals. During 2004, a major milestone was the completion of the pigmeat IRA. The final report was released in February 2004. Six appeals were received and subsequently dismissed by the Import Risk Analysis Appeal Panel. The Director of Animal and Plant Quarantine made the policy determination on 10 May 2004 and, since then, Biosecurity Australia and AQIS have been implementing the policy. While the new policy tightens the previous conditions, more countries are able to export pigmeat to Australia. Product has been imported from the United States and discussions are continuing with Spain and Italy on cured hams. Implementation continued during a challenge against the policy determination in the Federal Court. The Court had not finalised its deliberations by the end of 2004.

The more complex IRAs are managed by teams that include experts from outside Biosecurity Australia. The uncooked chicken meat and egg and egg products teams have met throughout 2004 and have made good progress on their draft IRA reports. They have also met jointly to ensure a consistent approach to assessing and considering risk management options. The IRA teams for prawns and prawn products has met to progress its revised draft IRA report, and the bivalve mollusc IRA team reconvened in 2004 and is progressing its draft IRA report.

Australian Quarantine and Inspection Service

AQIS’s responsibilities for imports cover biological substances and animal programs that include the live animal import program and animal quarantine stations.
Biological substances

Biological substances include a wide range of products that are derived from humans, animals, plants and microorganisms, and are used for food, therapeutics, research or analytical work. Examples of bioscience include diagnostic and analytical kits and reagents, vaccines and other therapeutics, human and animal food products, bioremediation agents and organic fertilisers.

The importation of biological products into Australia is governed by the *Quarantine Act 1908*. Under this act, many biological products need an import permit from the Director of Quarantine before they can be imported into Australia. Permits are issued based on an assessment of the risk associated with importation. The assessment takes into account:

- policy advice from Biosecurity Australia
- the biological contents of the product
- the relevant plant or animal health status of the country of origin, for each biological component
- the manufacturing processes of the ingredients and the product
- how the product will be used.

Appropriate conditions are then placed on the import permit to manage the product’s quarantine risk.

During 2004, more than 7800 applications for import permits for biological products were processed. Import permits are normally issued for multiple shipments over two years; however, permits may be revoked or amended if there are changes in the health status of a country, quarantine concerns or adverse results from an IRA or policy review performed by Biosecurity Australia.

Animal programs

AQIS protects Australia’s animal health status through the Live Animal Import Program and the Animal Quarantine Program.

**Live Animal Import Program**

Under the Live Animal Import Program, AQIS:

- assesses applications to import animals
- issues import permits with appropriate conditions
- examines health certification for conformance with import conditions
- examines imported animals and genetic material on arrival
- liaises with overseas certifying authorities to verify that certification is consistent with import conditions
- formulates standards for privately operated quarantine premises
- inspects, monitors and audits privately operated quarantine premises.

Animal quarantine stations

AQIS operates four animal quarantine stations with the capacity to manage imported dogs, cats, horses, ruminants, hatching eggs, live pigeons and bees. The Animal Quarantine Program manages these stations, ensuring that the facilities and standard of care for animals being quarantined by AQIS meet acceptable standards of health, welfare and quarantine security.

The quarantine stations are at Eastern Creek (New South Wales), Spotswood (Victoria), Torrens Island (South Australia) and Byford (Western Australia). In each of these states, the quarantine station is about one hour’s drive from the international airport terminal, allowing animals to be quickly transferred for examination and for post-arrival quarantine to begin.

Exports

Legislation

The *Export Control Act 1982* controls the export of goods, including live animals and meat, processed food, animal reproductive material and a range of other animal products. Conditions for the export of live animals and animal reproductive material are documented more specifically in the Export Control (Animals) Order 2004, as amended under the Export Control (Orders) Regulations, which state the legislative responsibilities of AQIS. The export of meat, processed food and some other animal products is covered by other subordinate legislation, including the Export Meat Orders, Processed Food Orders, and the Game, Poultry and Rabbit Meat Orders. More detail can be found in Chapter 7. All the orders operate in conjunction with the Prescribed Goods (General) Orders.

The orders detailed above are, in turn, directly supported by the Australian Export Meat Manual. The Export Meat Orders and the Processed Food Orders have recently been reviewed and rewritten. They will be replaced by the Export Control (Meat and Meat Products) Orders and the Export Control (Dairy, Eggs and Fish) Orders, respectively, on 1 July 2005.

All exporters of red meat and livestock (cattle, sheep, goats, buffalo, deer and camels) require an export licence. The *Australian Meat and Live-stock Industry Act 1997* gives legislative effect to the conditions attached to the licence.
Biosecurity Australia

Biosecurity Australia provides technical, analytical and scientific input for Australia’s negotiations for the export of animals and their genetic products with the aim to protect, improve or gain access to markets. In 2004, Biosecurity Australia was involved in around 80 issues in more than 30 countries, including technical issues associated with the export of:

- livestock to China, Vietnam and the Middle East
- feeder cattle to the US
- cattle to Indonesia
- bees to various countries.

A high priority remains gaining trading partners’ acceptance of Australia’s bluetongue-free zone for exports of ruminants.

Australian Quarantine and Inspection Service

The market maintenance area of AQIS undertakes similar work for animal products; the animal programs area develops policies for export certification.

Recent AQIS achievements include:

- negotiating prelisting rights for establishments to export meat and meat products to China
- negotiating access for product from establishments operating under the Verification Arrangement and fresh Australian poultry meat and meat products to Papua New Guinea
- finalising conditions to allow the export of Australian poultry meal to South Africa
- negotiating access for the export of kangaroo meat and meat products to Korea and Canada
- finalising conditions for export of greasy wool to Chile and Peru
- facilitating the review of Australia’s meat and animal product export systems and establishments by a number of international delegations
- responding to the implementation of emergency measures in relation to Bovine Spongiform Encephalopathy by the United States
- developing the Australian Ratite Industry On-Farm Surveillance Plan (in consultation with industry) to facilitate the export of ratite meat and meat products to the European Union
- significantly extending access for whole table eggs to Singapore
- extending access for shellfish into the Japanese and European Union markets for a number of additional shellfish harvesting areas
- negotiating revised certification for seafood exports to Switzerland
- negotiating new certification conditions for dairy products to Algeria and for ice-cream to Hong Kong
- supporting continuing access for Australian dairy and seafood products exported to European Union member states.

Apart from negotiating access to new markets for Australian food, AQIS also gives high priority to meeting the challenges presented by changes in importing countries’ non-tariff measures. Developments in Australia (and elsewhere) in food safety and animal and public health may threaten established market access conditions, so this work underpins continued market access for Australian food exports to more than 160 countries.

DAFF’s approach (both Biosecurity Australia and AQIS) to technical market access negotiations includes:

- consultation with industry on priorities for current and proposed export protocols
- identification of technical impediments and inconsistencies in international standards and overseas countries, and provision of supporting evidence to correct them
- development of relationships with key trading partners by participating in relevant bilateral and multilateral meetings, and (when appropriate) implementation of veterinary agreements and memorandums of understanding
- maintenance of access to foreign markets during disease or pest emergencies, by contributing to technical information to underpin negotiations with overseas biosecurity authorities
- contribution to the development of international standards appropriate to animal health and production in Australia (eg by contributing to the drafting and amending of new and existing chapters and articles of the OIE Terrestrial Animal Health Code, and to the development of international standards for quarantine).

Export certification and inspection services

AQIS confirms the fitness of Australian live animals and animal products for export, and verifies that the requirements of the importing countries have been met. These activities involve:

- issuing export permits and health certificates to Australia’s exporters of live animals and animal products
- auditing the preparation and inspection procedures undertaken by accredited service providers
- inspecting exports
- registering premises for the assembly, isolation and quarantine of animals intended for export.

International standards

Biosecurity Australia also actively participates in, or contributes technical advice to, SPS Agreement committees, meetings of the quadrilateral group of countries (Australia, New Zealand, Canada and the United States) and the OIE.

In 2004, AQIS continued its efforts to influence the setting of international rules that affect Australia’s trading interests, by participating in organisations such as the Codex Alimentarius Commission in relation to food production systems.
CHAPTER 6
MANAGING ANIMAL HEALTH EMERGENCIES

Introduction
This chapter looks at Australia’s national system for preparing for and responding to emergency animal diseases – a system that encompasses all activities relating to disease surveillance, monitoring and response. These activities are carried out by Australian national, state and territory governments, livestock industries, the Commonwealth Scientific Industrial and Research Organisation (CSIRO), private veterinarians and laboratories, and other animal health workers.

In late 2003 and early 2004, several Asian countries experienced a major epidemic of highly pathogenic avian influenza (HPAI) in poultry due to infection with avian influenza (AI) viruses. To date, more than 100 million birds have died or been destroyed in response to the epidemic, and 47 human cases were confirmed. In response to such threats, Australia has established a whole-of-government support arrangement. This chapter describes these arrangements and the various initiatives that Australia has put in place to prepare for, and respond to, such emergency animal diseases.
Coordination and response plans

Response to emergencies is coordinated by the Consultative Committee on Emergency Animal Diseases (CCEAD). This committee is made up of the chief veterinary officers from the Australian national, state and territory governments, the head of the Australian Animal Health Laboratory (AAHL) and technical representatives from the livestock industries. CCEAD helps to ensure that the most effective technical response is implemented.

The operational capacity for dealing with emergency disease incidents in each state and territory is managed through each jurisdiction’s emergency management committee, which is chaired by the public safety services or state emergency services. This structure brings together a broad range of resources to help agriculture and animal health authorities deal with any problem.

An emergency disease incident has both a national and an international impact; therefore, state and territory response plans are based on the national plan (Australian Veterinary Emergency Plan, AUSVETPLAN, discussed below), but are more detailed. Regional plans, and those produced by industry or enterprises, are based on state plans and AUSVETPLAN, but contain more specific details on local arrangements.

Livestock producers and affiliated industries play an essential role in providing frontline surveillance for emergency diseases, helping to reduce risks by:

> applying onfarm biosecurity measures
> preparing for their partnership role under the Emergency Animal Disease (EAD) Response Agreement
> contributing to the development of industry contingency plans to cover the commercial disruption and loss caused by emergency animal diseases.

Emergency Animal Disease Preparedness program

The Emergency Animal Disease Preparedness (EADP) program, managed by Animal Health Australia (AHA), coordinates most aspects of preparedness for emergency animal disease.

The program is funded in a tripartite arrangement involving the Australian Government, state and territory governments, and livestock industry organisations.

Information is grouped into nine major areas with several subareas:

> emergency preparedness policy frameworks – higher-level issues that concern multiple government agencies, which may or may not have specific actions and timelines associated with them
> international trade – issues relating to the management of trade, or maintenance of trade during an emergency disease response
> communications – issues that involve informing the community or managing information during an emergency response
> information management – the actions necessary to develop a national information system to assist the management of animal health emergencies
> maintenance of the EAD Response Agreement – issues relating to maintaining the agreement
> training in managing animal disease emergencies – ensuring that Australia has adequate numbers of trained personnel operating to nationally agreed standards
> scientific support for disease control – actions involving technical capability, including those relating to foot-and-mouth disease vaccine, epidemiological decision support and diagnostic capability
> regulatory and administrative support for disease control – other supporting issues including national livestock standstill, national livestock identification system, animal welfare, wild and feral animals as potential hosts and carcass disposal
> management of bovine spongiform encephalopathy (BSE) issues – specific issues relating to the management of BSE that have not been managed under other components of this program.

Emergency Animal Disease Response Agreement

The EAD Response Agreement, ratified in March 2002, established new partnership arrangements between governments and livestock industries. Figure 6.1 sets out the phases of an emergency animal disease response and shows how costs are covered under the EAD Response Agreement. Under this agreement, governments and industries share certain costs of responses in proportion to perceived benefits (public, industry or private) flowing from eradication or containment of the disease. This replaces the previous Commonwealth–States Cost Sharing Agreement that did not involve the livestock industry.

In 2004, after a request from the Australian Chicken Meat Federation, a panel was formed to consider the categorisation of avian influenza, which involved the EAD Response Agreement. As at the end of 2004, their findings were with the Animal Health Committee for endorsement.
For more information on the EAD Response Agreement, visit the AHA website.26

Australian Veterinary Emergency Plan (AUSVETPLAN)

AUSVETPLAN is the nationally agreed plan for responding in a consistent manner to an outbreak, or suspected outbreak, of an emergency animal disease anywhere in Australia. The plan has been developed and agreed by the Australian national, state and territory governments and relevant livestock industries to ensure that a prompt, efficient and effective response can be implemented with minimal delay.

AUSVETPLAN provides a comprehensive package that sets out the agreed 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 emergency animal disease response. AUSVETPLAN is available on the AHA website.27

AHA manages the continued development and maintenance of AUSVETPLAN on behalf of government and industry. In 2004, major outputs included the endorsement by the relevant parties to the EAD Response Agreement of AUSVETPLAN manuals for bovine brucellosis, anthrax, bee diseases and pests, and porcine respiratory and reproductive syndrome. Fourteen AUSVETPLAN manuals were progressed through to the technical editing stage.

National Emergency Animal Disease Training Program

The National Emergency Animal Disease Training Program was developed to provide ongoing, proactive education and training to producers, veterinarians and other stakeholders in the Australian livestock industries.

The training program aims to:
> ensure that all personnel who take part in an emergency animal disease response (including government officers, livestock industry members, veterinary practitioners and emergency workers) can perform their role
> further develop a national rapid response team of trained personnel who can perform their duties in any jurisdiction
> ensure that each state and territory has a competent, accredited control centre team.

Governments and livestock industries are the major stakeholders in emergency animal disease outbreaks. Their representatives help AHA to determine priorities through the Emergency Animal Disease Training Steering Committee.

Staff from the Australian national, state and territory governments have gained competencies in workplace assessment. They are now in the process of assessing candidates for control centre management positions against the required competencies, and holding training courses where necessary. In 2004, courses included training for industry representatives on the decision-making committees, industry leaders, supervisors of infected sites and the Australian Veterinary Reserve (see below).

Australian national, state and territory departments of agriculture have agreed to support AHA's competency-based assessment and training program, which is aligned with the Australian National Training Authority's framework. Stakeholders will decide on the number and type of competencies required, in consultation with AHA and in line with the national objectives. Individuals will then be asked to undergo an assessment (to determine whether they already have the necessary competencies) or to attend competency-based training.

Further information on the EAD training program (including updates on the competency assessment material, a calendar of training activities and general information) is available on the AHA website.28

Australian Veterinary Reserve

The Australian Veterinary Reserve (AVR) was established by the Australian Government and launched in May 2004 following recommendations in the Frawley Review of Rural Veterinary Services of 2003. The AVR will consist of 100 trained private veterinary practitioners, chosen from a number of remote and regional areas, such as Mt Isa, Katherine and Warrnambool. The AVR will be used by state and territory government jurisdictions during a major emergency disease outbreak, should the need arise. More than 1000 applications from private veterinary practitioners were received by the Australian Government Department of Agriculture, Fisheries and Forestry (DAFF), indicating of the dedication and professionalism of veterinarians.

Animal Health Australia will deliver the training program over the next three years, on behalf of the Australian Government. The first group of 19 practitioners were trained in November 2004. The course was also attended by a number of observers who are key stakeholders in using the AVR. The initial course was successful and the enthusiasm shown by private practitioners was a testimony to their commitment to keeping Australia free from important exotic diseases.

**Rapid Response Team**

Smaller jurisdictions may not have the resources to maintain a full range of people skilled in all essential facets of a Local Disease Control Centre (LDCC) and/or State Disease Control Headquarters (SDCHQ). Therefore, in December 2002, the Animal Health Committee agreed to develop and trial the Rapid Response Team (RRT) concept. The RRT would enable the immediate deployment of expert personnel, covering essential elements of a LDCC and some key aspects of a SDCHQ, in response to an EAD incident.

The RRT is not intended to take over control of the operation from the recipient jurisdiction – it will be answerable to the chief veterinary officer in the recipient jurisdiction throughout a deployment. However, the RRT will provide expert personnel who supplement, and initially manage, the staff of the recipient jurisdiction. They will establish the organisational systems in the LDCC and SDCHQ until the recipient jurisdiction is in a position to fully take over management of the operations.

In 2004, RRTs were trialled in March in Darwin (Exercise Noonamah) and in May in Tasmania (Exercise Sarcophilus), using funds from DAFF. The concept was found to be a highly worthwhile initiative.

**Increasing awareness and understanding**

The EADP program publishes bulletins on exotic animal diseases. It also runs campaigns to increase awareness among livestock producers of the importance of emergency animal diseases, and the role that producers can play in reducing the risk of a disease outbreak.

**Exotic animal disease bulletins**

Exotic animal disease bulletins are published each year in the Australian Veterinary Journal. During 2004, bulletins covered:

- information on rabies, Rift Valley fever, bluetongue, Australian bat lyssavirus, heartwater and classical swine fever
- the third international bluetongue symposium
- veterinary practitioner awareness courses

**Awareness campaigns**

Under the successful theme “Look. Check. Ask A Vet”, the Protect Australian Livestock Campaign urges producers to remain vigilant and alert for suspicious signs, abnormalities or symptoms within their livestock. The campaign employs a range of public relations, media and stakeholder strategies to deliver its messages.

The campaign also promotes the Emergency Disease Watch Hotline, a toll-free phone number that connects callers to a relevant state or territory officer, to report concerns about any potential emergency disease situation. 29

**Preparedness against specific diseases**

Historically, Australia’s emergency animal disease preparedness programs have been targeted at foot-and-mouth disease (FMD). Although vesicular diseases, such as FMD, remain an important focus of activity, other exotic diseases, such as screw-worm fly (SWF) and certain wildlife diseases, have also received specific attention, because of increased risks or the need for different containment methods.

**Foot-and-mouth disease**

Australia has never had a major outbreak of FMD and has been free of this disease since 1872. The country’s geographical isolation as an island continent and its long history of science-based border quarantine policies underlie its success in maintaining freedom from FMD.

**Supply of FMD vaccine**

In March 2002, the Primary Industries Ministerial Council tasked Animal Health Australia to broker a government–industry agreement to secure a commercial supply of FMD vaccine. This was based on policy and technical direction from the Office of the Australian Chief Veterinary Officer, the Animal Health Committee and expert consultants. The contract for production, storage and supply of FMD vaccine (supply contract) was finalised in October 2004 between Animal Health Australia and Merial, an international animal health pharmaceutical company based in France.

The supply contract, for enough antigen to provide 500 000 cattle-equivalent doses of each of nine FMD strains, will cost Australia approximately $4 million over five years. It guarantees delivery of FMD vaccine within seven business days of notification. The nine antigens were selected to provide broad coverage against potential FMD threats. They were in place by December 2004 and will be regularly reviewed.

The next step in the process involves AHA finalising the funding agreement with Australian governments and industry for purchase of FMD antigen from Merial, though all parties have fully committed their appropriate share of the funds.

**Exercise crucible**

In June, New South Wales Agriculture ran a three-day exercise to evaluate their laboratory network’s preparedness to respond to an FMD incident. The exercise indicated that the first three days of an outbreak are critical to establishing the operational systems within the laboratory and shifting staff to new areas of work. Overall, the feedback on the conduct of the exercise was positive.
Screw-worm fly
A new national SWF preparedness strategy, developed over a two-year period, was endorsed by the Primary Industries Standing Committee (PISC) in September 2004. The new strategy is based on the following assumptions:

> a low to very low risk of SWF incursion into Australia
> no change in the incursion risk over the next 10 or so years
> the predicted costs of potential incursion being as follows:
  - direct producer losses ~ $400 million per year (2003 prices)
  - northern cattle industry most affected and its viability threatened
  - substantial impact on the northern Australian economy, ‘cattle’ towns and associated infrastructures

> continued use of sterile insect technology (SIT) to control Old World SWF (OWSWF), while acknowledging a more competitive fly (than has been achieved in experimental colonies reared to date) is required for an effective, large-scale SIT response

> SIT continuing to be the only tool capable of achieving eradication of a SWF incursion, with success influenced by complementary control measures (including insecticide use)

> the cost of building, maintaining and operating a sterile insect production facility with capacity to adequately respond to an incursion of OWSWF in Australia being in the order of $125 to $150 million to build the facility, depending on its size, with annual operating costs approaching $100 million.

The new strategy acknowledges that further research and development is required to implement an effective, SIT-based response to a SWF incursion. It will improve the surveillance program to allow the earliest possible detection of any incursion and emphasise the need for Australia to maintain expertise in SWF-related capabilities.

A business plan to implement the core components of this new strategy will be submitted to PISC in 2005, for endorsement.

Wildlife and exotic diseases
The Wildlife and Exotic Diseases Preparedness Program (WEDPP) is a joint Australian national, state and territory program that began in 1984–85. Its aim is to develop practical field strategies for the eradication, control and management of wild animals in the event of an outbreak of exotic or other emergency animal disease that could threaten Australia’s livestock industries. Emphasis in recent years has been placed on improving wildlife disease surveillance.

The WEDPP management group considered seven applications for 2004–05, and recommended six projects, noting the continuing funding for the Australian Wildlife Health Network (see Chapter 2), which is a major part of the WEDPP. This year, three projects are being funded that directly relate to avian influenza. The projects funded for this year will investigate:

> animal contact rates — this project will assess the use of current GPS technology (ie collars) to measure or, at least, reasonably infer contact rates, which with the appropriate statistical analysis, will provide data points within 1–3 m precision
> the feasibility of delivering oral liquid vaccines or contraceptives to feral pigs — this project aims to develop a field liquid delivery system for feral pigs in which vaccines (or contraceptives) could be delivered
> the relationship between exceptional weather events and the long-distance spread of exotic disease
> the development of rapid molecular surveillance tools for the detection of avian influenza virus within Victorian wild bird populations
> the feasibility of targeting surveillance for avian influenza in wild birds
> the pathogenicity of H5N1 strain of highly pathogenic avian influenza virus in Australian native ducks.

Other prevention and preparedness initiatives
The national coordination framework is only one component of a range of new measures to help safeguard Australia against the risk of emergency animal diseases. Pre-border measures include overseas training and keeping abreast of new scientific knowledge on FMD and other important emergency diseases. Australia’s ongoing involvement in the cooperative development of regional monitoring, surveillance and control of FMD in Southeast Asia has also helped to reduce the FMD risk.

A number of post-border scientific activities are continuing. Australia’s FMD epidemiological model has been updated and operational exercises have tested contingency plans at the state and territory level. Options for the secure supply of FMD vaccine and its possible strategic use during an outbreak are also being assessed.

In the 2002–03 Budget, the Australian Government provided $10 million over four years for additional DAFF veterinary epidemiology and emergency management staff, and for AAHL to increase testing capacity. Since 2001, AAHL has improved its FMD diagnostic capability and is keeping up to date on the development and validation of new and more sensitive tests for FMD.

Exotic-disease training programs for nongovernment veterinarians are continuing. Two AAHL courses were run in 2004, mainly for government veterinarians, covering the diagnosis, recognition and assessment of animals with diseases exotic to Australia. The course is run in specialised high-containment facilities. A well-established exotic disease awareness campaign for veterinarians, farmers and stock handlers is also continuing.
Emergency animal disease responses in 2004

In 2004 the CCEAD met occasionally in response to a number of disease incidents including Hendra virus in Australia and developments overseas, such as the occurrence of avian influenza (AI) in Southeast Asia and Canada.

Hendra virus

Hendra virus is a viral infection associated with flying foxes. Sporadic infections may occur in horses that come in close contact with infected flying foxes or their body fluids. The Queensland Chief Veterinary Officer advised that a horse, examined by a veterinarian in early December 2004 and subsequently euthanised, tested positive to Hendra virus. This was an isolated case. Hendra was also suspected in a horse that died south of Cairns in October 2004. These cases are consistent with previous findings and do not reflect a change in the known distribution or epidemiology of Hendra virus in Australia.

Avian influenza

In late 2003 and through 2004, several Asian countries experienced a major epidemic of highly pathogenic avian influenza (HPAI) in poultry due to infection with AI viruses of the H5N1 subtype. To date, more than 100 million birds have died or been destroyed in response to the epidemic. By June 2004, the epidemic appeared to have subsided, and several countries declared freedom from the disease or lifted their control measures. However, in July 2004, new outbreaks were reported from parts of China and Indonesia (which are applying controls using vaccination) and Thailand and Vietnam (which to date have adopted a stamping-out response without using vaccination).

In 2004, 47 human cases of H5N1 were confirmed, 34 of which were fatal – 17 in Thailand and 30 in Vietnam. The transmission of avian influenza to humans, although rare, is of public health concern, especially because exchange of genetic material between avian and human viruses could result in a new influenza virus capable of causing a pandemic of influenza in humans.

The continuing outbreaks of HPAI in poultry in Asia mean that Australia must continue to maintain its preparedness against any possible occurrence here. DAFF, the Australian Government Department of Health and Ageing (DoHA), the Australian Agency for International Development (AusAID), the Australian Animal Health Laboratory (AAHL), other Commonwealth and state/territory agencies and industry groups continue to collaborate to ensure that Australia is prepared for any incursion here.

DAFF, DoHA, and AusAID are also liaising with the Australian Centre for International Agricultural Research, the Australian Biosecurity Cooperative Research Centre and international organisations – including the World Organisation for Animal Health\(^{30}\), the Food and Agriculture Organization and the World Health Organization – on the provision of technical assistance and scientific research on HPAI in Asia.

The Office of the Chief Veterinary Officer of DAFF continues to maintain close links with other departments, especially:

- DoHA – regarding possible human health implications
- the Australian Government Department of Environment and Heritage – regarding the potential role of migratory, nomadic and other wild birds
- the Australian Government Department of Foreign Affairs and Trade – regarding trade and market access implications.

DAFF also participates in regular teleconferences of the Communicable Diseases Network of Australia and the National Influenza Pandemic Planning Action Committee, ensuring Australia is prepared for any significant human-to-human transmission.

Additional awareness campaigns are being conducted at airports and seaports, and extra animal health surveys are being undertaken by the Northern Australia Quarantine Strategy to enhance surveillance activity conducted in Australia’s northern high-risk areas and overseas.

In 2004, DAFF coordinated a number of major government–industry meetings. The meetings resulted in a series of actions including:

- assessment of the risk of establishment and spread of HPAI
- development of recommendations on occupational health and safety for personnel in contact with potentially infected birds during an outbreak
- advice on diagnosis, surveillance and research
- continued prime carriage of international liaison and briefing by DAFF
- a coordinated communications and awareness campaign
- clarification of some response issues (particularly pre-emptive slaughter, livestock standstill and timeframes for slaughter and disposal) for inclusion in AUSVETPLAN.

A list of investigations into suspected emergency animal diseases in Australia in 2004 is provided in Appendix 4.
Introduction

This chapter looks at how consumers in Australia and overseas are protected by government and industry programs that assure the safety of both locally produced and imported foods. Many of these programs are administered by the Australian Quarantine and Inspection Service (AQIS). Further information is available on the AQIS website, which includes publications such as the annual AQIS Report to Clients and the monthly AQIS Bulletin (available online free of charge).31

Achievements of 2004 covered in this chapter include the continuation of reforms to ensure that food standards are integrated nationally, and the development of policy guidelines on various food regulatory matters, such as food safety programs. This chapter also provides an update on activities in the many networks and partnerships that help to protect consumers, including:

> surveillance, prevention and control of communicable diseases
> identification of outbreaks of foodborne illness
> monitoring and surveillance of antimicrobial use and antimicrobial resistance
> monitoring of chemical residues and environmental contaminants in products
> generation of secure electronic export certification
> promotion of sound management systems to deliver safe and hygienic meat products to the marketplace.

Finally, this chapter looks at processes for the inspection and monitoring of meat, dairy products, seafood and processed products, and the measures taken to ensure that Australia continues to be free from transmissible spongiform encephalopathies (TSEs).

31 http://www.aqis.gov.au
Regulations and standards

International

During 2003–04, Australia continued to participate in the development of international science-based food standards through the Codex Alimentarius Commission (Codex) and its subsidiary bodies. Initiatives continued in 2004 to encourage stakeholders to participate in consultations run by Codex Australia, the Australian Codex contact point. This participation was helped with the continued publication of Setting the Standard and the National Stakeholder Forum.

Australia continued to chair the Codex Committee on Food Import and Export Inspection and Certification Systems. During 2004, the committee started work on a number of proposed draft standards relating to food inspection and certification systems in areas including equivalence traceability/product tracing, risk-based inspection of imported foods, and principles for electronic certification.

Australia has continued to participate in other key Codex committees, including those relating to food additives and contaminants, residues of veterinary drugs in foods, pesticide residues in food, food hygiene (including meat) and commodity-specific committees (milk, fish, fruit and vegetables). By providing high-quality scientific and policy advice, Australia continues to influence the setting of international standards.

New national arrangements

In November 2000, the Council of Australian Governments signed an agreement to implement reforms in response to the Food Regulation Review Report. The new national food regulatory system and Model Food Act being adopted by all states and territories are based on these reforms.

Domestic food standards

Under the new regulatory system, Food Standards Australia New Zealand (FSANZ) is responsible for developing all domestic food standards, including those for primary products. This had previously been regulated in a number of ways, including by the Agriculture and Resource Management Council of Australia and New Zealand, industry codes and state governments. The primary production and processing standards will form Chapter 4 of the Food Standards Code.

The transfer of responsibility for primary product standards to FSANZ will ensure that, for the first time in Australia, all food standards are integrated nationally and that food regulatory decisions consider the whole production chain (from primary producer to final product). This approach is consistent with international strategies for managing food safety.

The primary production standards will be set within a policy framework developed by the Australia New Zealand Food Regulation Ministerial Council (ANZFRMC). Expertise on primary produce will come from standards development committees, which will include members from key stakeholder groups.

A seafood standard to protect public health and safety along the entire supply chain is nearly completed and development of a standard for poultry production has recently begun. These standards will help the industries by providing guidance on safe food production and by increasing consumer confidence in seafood and poultry meat safety.

Food safety programs

In 2003–04, the Australian Government continued to work with state and territory agencies to develop policy guidelines on various food regulatory issues, including food safety programs. ANZFRMC has now agreed to mandatory food safety programs in sectors with the highest risk. Such sectors include the production, harvesting, processing and distribution of raw oysters and other bivalves, and the production of manufactured and fermented meats.

The safety of bivalve molluscs (including oysters, clams, scallops, pipis and mussels) intended for human consumption will be regulated under the Seafood Primary Production and Processing Standard. This standard will be gazetted mid-2005 and will have a two-year period following gazettal to allow for industry adjustment. The standard will require all seafood producers engaged in the primary production and processing of bivalve molluscs to have mandatory food safety programs, based on Codex hazard analysis critical control point (HACCP) principles or an acceptable equivalent in place.

FSANZ is currently proposing to mandate food safety programs under Standard 3.2.1 of the Australia New Zealand Food Standards Code for all producers of manufactured and fermented meats.

Maximum residue levels

A significant food regulatory decision in 2002–03 was ANZFRMC’s decision to agree to maximum residue levels (MRLs) for ceftiofur in Australian cattle (set at 2 mg/kg for edible offal and 0.5 mg/kg for cattle fat). ANZFRMC also agreed to a process for harmonising the MRL-setting procedures of the Australian Pesticides and Veterinary Medicines Authority (APVMA) and FSANZ. The ultimate aim is to establish one set of published MRLs to regulate both food and the use of chemicals in agriculture. The approach agreed to by ANZFRMC is to harmonise administrative processes between APVMA and FSANZ, monitor and review the new assessment process and, if the revised process proves satisfactory, issue a single MRL.
Protective measures

Communicable disease surveillance

Communicable Diseases Network Australia

The Communicable Diseases Network Australia\(^2\) provides national leadership and coordination on surveillance, prevention and control of communicable diseases that pose a threat to public health. Its members include Australian national, state and territory governments and key organisations relevant to communicable diseases. The network also offers advice to governments and other bodies on public health strategies to minimise the impact of communicable diseases in Australia and the region. Since 1995, the network has overseen the development and implementation of the National Communicable Diseases Surveillance Strategy, to provide effective national surveillance, preparedness and responses to communicable disease risks.\(^3\)

OzFoodNet

The Australian Government Department of Health and Ageing (DoHA), in collaboration with state and territory health authorities, established OzFoodNet in 2000 to improve surveillance for foodborne disease. It is a collaborative network of epidemiologists, microbiologists and food safety specialists, and also conducts applied research into foodborne disease and methods for improving surveillance mechanisms. Reports from OzFoodNet are contained in Communicable Diseases Intelligence.\(^4\)

OzFoodNet acts as an early warning system for identifying outbreaks of foodborne illness (including deliberate contamination of the food supply across state boundaries). It is also a policy tool, providing national data on the incidence, costs and causes of foodborne illness in Australia. The network ensures consistent national responses to outbreaks of foodborne illness (including food product recalls) and reduces morbidity from foodborne illness by promoting early preventive action. The type of approach used in OzFoodNet has been recognised by many countries and by the World Health Organization as an essential tool in reducing the incidence of food poisoning.

One of OzFoodNet’s major initiatives was its national community gastrointestinal illness survey. Data from the survey show that the incidence of gastrointestinal illness in Australia, at 17.2 million cases a year, is significantly higher than previously thought, and that 30% of these cases may have been acquired from food.

Antimicrobial resistance surveillance

Monitoring and surveillance was a key area identified by the Joint Expert Technical Advisory Committee on Antibiotic Resistance (JETACAR)\(^5\) and the Australian Government remains committed to implementing its response to JETACAR.\(^6\) In 2004, the Department of Agriculture, Fisheries and Forestry (DAFF) continued to focus on the monitoring and surveillance aspects of antimicrobial resistance management, as part of the Strategy for Antimicrobial Resistance Surveillance in Australia.\(^7\)

DAFF’s Pilot Surveillance Program for Antimicrobial Resistance in Bacteria of Animal Origin began in November 2003. The pilot focuses on cattle (feedlot, grass-fed and dairy), pigs and poultry. Faecal samples were collected from abattoirs and poultry processing plants and cultured for *Escherichia coli* and *Enterococcus* spp. The poultry samples were also cultured for *Campylobacter* spp. The cultures were forwarded to specialised labs for antimicrobial sensitivity testing. The analysed results will be provided to the Central Coordinating Unit at DoHA for public reporting as part of a national surveillance dataset comprising human, animal, food and antimicrobial use data.

Residue monitoring

Residue testing can provide objective evidence of the very low risk of chemical residues and environmental contaminants in Australian produce marketed domestically and in overseas markets. The National Residue Survey (NRS), within DAFF, provides services to monitor chemical residues and environmental contaminants in the livestock and other participating industries. Laboratories are contracted by NRS to do the testing, and NRS undertakes proficiency testing to ensure laboratories return accurate and timely results.

Exporters market their produce to different countries by meeting the importing country’s food standards. The results of NRS residue testing provide confidence to exporters and assurances to importers that the tested commodity meets the residue standards of the importing country. Agricultural authorities from the European Commission, the United States, Canada, Mexico, China and other markets assess NRS residue testing programs for compliance with their market access requirements.

Results from testing can help to identify potential chemical residue problems, and how response activities might best be targeted to maintain Australia’s reputation as a producer of high-quality product. NRS residue results are also used by participating industries to validate industry-based quality assurance schemes.

Further information, including NRS residue testing results, is available on the DAFF website.38

Meat safety management systems

SAFEMEAT was established in 1998 as part of government reforms to the meat industry. The initiative is a partnership between the chairs of the peak red-meat industry bodies and senior national, state and territory government officials. SAFEMEAT’s role is to oversee and promote sound management systems to deliver safe and hygienic products to the marketplace. Further information, including the annual report and business plan, is available on the SAFEMEAT website.39

Since its inception, SAFEMEAT has presided over a number of successful programs, including:

- targeted residue monitoring programs
- the National Livestock Identification System for cattle and the system of national vendor declarations for cattle and sheep
- strategies to deal with animal disease issues as they relate to food safety, including the implications of TSEs such as bovine spongiform encephalopathy (BSE).

A three-year business plan (2002–05) sets out the strategic direction of SAFEMEAT, identifying projects in the areas of:

- standards and regulations
- emergency management
- animal diseases (as they relate to food safety)
- residues
- pathogens
- systems development and management
- communication and education
- emerging issues.

39 http://www.safemeat.org
Inspection and monitoring

Meat

Meat inspection

Slaughter and meat processing establishments in all states and territories must meet the requirements of the relevant Australian standard for the slaughter, inspection, transport and processing of meat: the *Australian Standard for the Hygienic Production and Transportation of Meat and Meat Products for Human Consumption*. This approach to meat safety focuses on performance-based standards using internationally accepted HACCP systems as a mandatory requirement, together with greater industry self-regulation.

Figure 7.1 outlines the three different models that coexist for the inspection and certification of Australian meat and meat products for export by AQIS. All systems are subject to AQIS verification by senior AQIS veterinarians and require meat inspectors to have completed the AQIS-approved national training program.

Figure 7.1 Australian systems for inspection and certification of meat and meat products for export

![Diagram of inspection and certification systems](image)
CHAPTER 7 CONSUMER PROTECTION

Verification arrangement

Australian export meat establishments now have the option of a new model of meat inspection and verification, the Verification Arrangement, based on the new Australian Standard for the Hygienic Production and Transportation of Meat and Meat Products for Human Consumption. Under this model, AQIS has a role in verifying the inspection and auditing processes of state or territory-regulated establishments. It is envisaged that the flexibility, convenience and high level of product safety assurance provided by this new arrangement will replace the original ‘export from domestic’ policy. This is expected to encourage many more establishments and foreign governments to participate in the import of Australian meat.

Traditional inspection

Parallel to the Verification Arrangement, the traditional AQIS meat inspection model continues to provide government inspection and export certification services for exported products. This model requires plants to have AQIS veterinarians and AQIS inspectors on site.

Meat Safety Enhancement Program

Australia continues to refine the third model of meat inspection and certification, the Meat Safety Enhancement Program (MSEP). MSEP integrates the same HACCP-based systems and AQIS veterinary presence as establishments operating under the traditional inspection model. Establishments operating under MSEP are also subject to audit by the AQIS Verification Unit.

The difference between traditional inspection and MSEP is that AQIS directly employs the meat inspectors under the traditional inspection model, while the company employs them under MSEP. Under both models, meat inspectors must have completed the national training program and AQIS-employed veterinarians are on site.

In 2004, the meat export industry generated export earnings of around $5.8 billion and exported meat to more than 161 countries. The AQIS meat inspection program covers 410 export-registered establishments. AQIS employs 128 veterinary officers and 47 veterinary contractors, 451 permanent meat inspectors and 191 contracted meat inspectors.

AQIS negotiates technical market-access conditions and responds to changes in those conditions once they are established. Importantly, AQIS facilitates and manages overseas review missions that visit Australia to audit the Australian system. AQIS works closely with state and territory departments of agriculture, SAFEMEAT, and DAFF’s Product Integrity, Animal and Plant Health Group to implement animal health, food safety and chemical residue control measures. For further details, see the AQIS website.41

Meat hygiene controls

The Australian Government, with industry, reviews and updates rules, regulations and industry practices in response to the latest international and national developments in food safety. Australia has gradually introduced new meat inspection initiatives, such as product and process controls based on meat hygiene assessment and HACCP, which increasingly focus on minimising the level of enteric pathogens on carcases and in processed meat. HACCP systems have been exhaustively used in the export sector since 1994.

Since 1985, the Australian export meat industry has progressively adopted quality assurance systems, which, since 1994, have included HACCP and are closely aligned with international standards (the International Organization for Standardization – ISO – series). The quality assurance system is designed to ensure that the industry assumes greater responsibility for the quality of its product and the accuracy of its documentation. This HACCP-based approach allows AQIS and the export meat industry to demonstrate effective controls and guarantee the integrity of the certification to trading partners.

AQIS requires meat industry establishments to implement meat safety monitoring and product integrity systems, details of which are also given on the AQIS website.41 The systems include standard operating procedures for sanitation, objective meat hygiene assessment, HACCP, work instructions and product inventory controls throughout the processing chain. The main purpose of AQIS inspection is to ensure and certify that a product is safe and hygienic, and is compliant with overseas authorities’ requirements.

As a further step in this process, new export legislation is being introduced in mid-2005 that specifically references the Australian standard. This legislation will continue to mandate the requirement to operate under a government-approved, HACCP-based food safety quality arrangement that is referenced as an ‘approved arrangement’ under the legislation. As part of this package, there will be guidelines for the production of the approved arrangement and a complete set of revised administrative instructions for regulatory staff: the National Meat Management Scheme. An existing quality assurance arrangement will be recognised as an approved arrangement.

The AQIS meat inspection program has responded to, and will continue to respond to, overseas markets’ heightened concerns about food safety and bioterrorism following world events since September 2001. Such efforts will help to ensure continued market access for Australian products.

Microbiological monitoring programs

Pathogenic enteric bacteria pose a risk to meat safety. Research in Australia and overseas has found that such risks can be effectively managed by preventing cross-contamination of meat. Prevention strategies include HACCP-based arrangements, which require hygienic slaughter and dressing practices, and the hygienic chilling, storage and transport of carcases and meat.

41 http://www.aqis.gov.au
42 http://www.aqis.gov.au
Total plate counts and generic *Escherichia coli* counts are indicators of hygienic practice and cross-contamination. In recent years, AQIS and industry have refined the established microbiological testing of carcase surfaces for these indicator bacteria. Such monitoring allows contamination to be quickly detected and responded to with corrective processing measures. Bacteriological monitoring of carcase surfaces is now used to assess the effectiveness of process monitoring programs. Microbial monitoring programs are described in detail on the AQIS website.42

To plot trends and establish national baselines and control limits, the test results from each export abattoir are entered into a national database. Feedback from the database has led to continuous improvement of abattoirs.

**Exports of dairy products, seafood and other processed food**

Premises used for the production and storage of processed food products for export must be registered with AQIS and must comply with requirements outlined in export legislation. The export of dairy products, seafood, processed and organic foods from Australia is subject to the requirements of the *Export Control Act 1982* and its subordinate legislation.

In 2004, the AQIS processed-food program covered approximately 930 export-registered, land-based establishments (including those producing fish, dairy and egg products) and 590 fishing vessels. Export inspection services for fish and egg products are provided by 30 full-time AQIS inspection and support staff. Dairy export inspection is performed by State Dairy Authority staff on behalf of AQIS with verification audits conducted by the AQIS dairy export program staff.

The Australian approach to export inspection is risk-based, focusing on HACCP-based food safety programs and truth in labelling (that is, an accurate description of the product). The system is backed by controls over the construction and hygiene of export processing and storage premises, good manufacturing practice, food standards and product certification.

**Quality assurance programs**

Exporters of dairy, fish and egg products have a choice of three export inspection arrangements. One is an approved quality assurance arrangement in which AQIS audits a company’s quality assurance systems, which must be fully documented, to ensure that products meet export requirements. The second is the food-processing accreditation inspection system, under which a company must document its process controls in a process flowchart and a HACCP table. AQIS inspects the company for compliance with its process control documentation and good manufacturing practice. A third export inspection arrangement is available to companies accredited to an ISO 9000 system, which involves a third-party inspection option. Further details of these options are available on the AQIS website.43

**Electronic documentation**

EXDOC is an electronic export documentation system that provides many benefits to Australian exporters of meat, seafood, dairy products, horticultural products, grain, wool, skins and hides. The system provides the added benefit of giving EXDOC users a single window to government, allowing them to apply for an export permit from AQIS, obtain an export clearance from the Australian Customs Service and report data to the Australian Bureau of Statistics and other regulatory authorities in a single transaction, thereby minimising data duplication across government agencies.

AQIS has now completed development of its new electronic export certification system, known as E-cert. E-cert’s long-term aim is to replace the current EXDOC-generated paper certificate needed for agri-food products to gain overseas market entry. AQIS continues trials with our trading partners, including Singapore, Canada, the United States and New Zealand, and has successfully implemented the system with Jordan. Australia, in partnership with New Zealand, is leading the way with paperless trading initiatives in trade administration and has been actively promoting the system as a secure alternative to paper. The electronic transmission of data from government to government significantly reduces the opportunity for fraud. This is a major achievement by AQIS, providing a powerful tool to respond to heightened food safety and security concerns, and is recognised worldwide as a key benefit of the E-cert system.

**Food imports**

Since mid-1993, all food imports into Australia have been liable to point-of-entry inspection. The intensity of inspection is determined by the assessed risk of the particular food in question. FSANZ conducts the risk assessments and AQIS undertakes the inspections. All costs are borne by the importers.

The imported food program defines three levels of risk: risk-categorised, active surveillance and random surveillance. Details of the imported food program and a guide to importing biological products and foodstuffs are available on the AQIS website.44

Regardless of the risk category into which a food has been placed, all consignments of imported food referred to AQIS for inspection are examined for the presence of foreign or extraneous matter, integrity of packaging and compliance with relevant labelling requirements.

Inspection of imported food applies the standards of the Australian Food Standards Code, and the general food safety criteria of the *Imported Food Control Act 1992* and its subordinate legislation. The imported food program includes provision to enter into certification arrangements with overseas authorities. These arrangements are based on assurances that overseas controls meet Australian requirements; they are also subject to the auditing of selected products on arrival.
Priority Issues in 2004

Australia’s response to the changing international requirements for bovine spongiform encephalopathy (BSE) and scrapie

Australia continues to meet the requirements for freedom from transmissible spongiform encephalopathies (TSEs) affecting animals, including BSE and scrapie. Three key measures underpin this freedom by preventing the introduction, dissemination and amplification of these diseases:

> controls on imports of live animals, genetic material (from 1988) and animal feed (from 1966)

> bans on the feeding of meat and bone meal to ruminants (from 1996)

> TSE surveillance (from 1990) and the National Transmissible Spongiform Encephalopathy Surveillance Program (NTSESP, from 1998), which meets the requirements of the World Organisation for Animal Health (OIE)\(^{45}\) *Terrestrial Animal Health Code* for BSE and scrapie (see Chapter 2 for more information on this program).

Risk management measures to protect Australia from animal TSEs continue to be implemented in accordance with established policies. The agencies involved include DAFF, APVMA, DoHA, FSANZ and the Therapeutic Goods Administration. Established import policies on animal health mean that live cattle and cattle products considered to pose a risk can no longer be imported from countries affected by BSE.

The Primary Industries Ministerial Council, SAFEMEAT and the TSE Freedom Assurance Program (TSEFAP, see Chapter 2) regularly review Australia’s TSE risk-minimisation measures in the light of international developments. Initiatives progressed in 2004 include:

> substantial revision of the Australian Ruminant Feed Ban – National Uniform Guidelines for Ensuring Compliance Through Inspection, Sampling and Testing Programs, thereby ensuring a more consistent approach to regulatory audits

> two government/industry workshops to review current Australian BSE risk-reduction measures and recommend enhancement to these measures where required

> commencement of a research and development program on disease surveillance, using livestock aggregation points, downer animals and rapid testing for TSEs as a case study

> development of a range of contingency plans for responding to any finding of a BSE case

> appraisal of a range of analytical tests for prohibited materials in ruminant feeds.

An established program of official audits of renderers, stockfeed manufacturers, retailers and farmers continued during 2004. These activities by state and territory authorities formed part of a comprehensive, risk-based approach to ensuring compliance with the ruminant feed ban, as detailed in the national guidelines. Australia continues to move closer to a totally integrated and industry-based quality assurance scheme for stockfeeds, as an adjunct to official audit and inspection.

The Australian Government has, where appropriate, provided comments to overseas authorities on regulatory proposals for BSE. Australia continues to provide input to proposed changes to the chapter on BSE in the OIE *Terrestrial Animal Health Code*. When Australia announced its current policy on BSE and food in 2001, it foreshadowed a review of the policy after two years. That review, led by DoHA, began in late 2003 and is expected to be finalised in 2005.

The National Health and Medical Research Council’s Special Expert Committee on TSEs continued to advise Australian governments on all measures necessary to prevent and limit the spread of human and animal TSEs to, or within, Australia. The committee considered a range of TSE-related animal and human health matters during 2003, including Australian TSE surveillance programs and the risks of interspecies and intraspecies feeding of animal materials.

\(^{45}\) Formerly known as the Office International des Epizooties
Introduction

Australia collaborates with many countries to improve the animal health and welfare of livestock and other animals. Recently, concerns about the potential impact of zoonotic diseases on humans have led to increased public and official attention to animal disease control. Australia’s involvement is through:

> assistance under the Australian overseas aid program, including funding through:
  > the Australian Agency for International Development (AusAID)\(^{46}\)
  > the Australian Centre for International Agricultural Research (ACIAR)\(^{47}\)

> other mechanisms, such as direct liaison between government agencies, veterinary associations and private organisations.

Most of Australia’s collaboration with other countries occurs through its membership of the Food and Agriculture Organization of the United Nations (FAO), the Association of South East Asian Nations (ASEAN), the Asia-Pacific Economic Cooperation (APEC) and the Network of Aquaculture Centres in Asia-Pacific. Collaboration through these forums ensures that Australia’s involvement in regional projects addresses key issues and needs for Australia and other countries. This chapter summarises Australia’s main areas of involvement through AusAID and ACIAR in the Asia-Pacific and African regions.

\(^{46}\) http://www.ausaid.gov.au

\(^{47}\) http://www.aciar.gov.au
The aid program

Australia’s overseas aid program aims to help developing countries to reduce poverty and achieve sustainable development. Australia focuses its aid on the Asia-Pacific region, with Papua New Guinea, Pacific island countries and Southeast Asia being the areas of highest priority. The program also responds selectively to development needs in South Asia, Africa and the Middle East. It responds promptly and appropriately to humanitarian and emergency relief situations wherever they arise. A total of 70% of Australia’s aid is designed, delivered and assessed jointly with the governments and people of partner countries to meet their most pressing development needs. The balance of the aid program is delivered through international and nongovernment organisations.

Major themes of the aid program are promoting improved governance and generating income for the rural poor. Animal health projects supported by the aid program contribute to both these aims. Animal disease control and capacity-building for animal health services can have major benefits at the farm level, but they can also improve the trading potential of developing countries by improving their capacity to meet trade-related sanitary requirements.

AusAID projects

Current AusAID projects that focus on or include animal health are described below.

Foot-and-mouth disease campaign – Southeast Asia Region

Australia has supported the OIE Southeast Asia Foot-and-Mouth Disease Campaign (SEAFMD)48 since 1997. The goal of this project is to control and eradicate FMD in Myanmar, Cambodia, Laos, Malaysia, the Philippines, Thailand and Vietnam. Indonesia, although free from FMD, is also a member of the campaign.

The campaign is coordinated through an OIE regional coordination unit (RCU) in Bangkok, which has five staff, including a regional coordinator and two international volunteers (other experts have been employed from time to time for specific activities). The RCU delivers the program as agreed by the OIE Sub-Commission in Southeast Asia.

Major achievements to date include:

- developing national plans for FMD
- agreeing on a progressive zoning approach to FMD control in the region
- signing a memorandum of understanding for the Malaysia-Thailand-Myanmar (MTM) Campaign for FMD Freedom
- achieving OIE-free zone status for FMD in East Malaysia and the Palawan-Masbate-Visayas region of the Philippines,
- appointing an ASEAN citizen as the regional coordinator
- agreeing for the transition of the program to ASEAN responsibility in 2006
- ASEAN agreeing to establish an Animal Health Trust Fund.

Foot-and-mouth disease control – Philippines

Australia has contributed $6.5 million to co-finance a FAO foot-and-mouth disease control project with the Bureau of Animal Industry of the Philippines Department of Agriculture. The aim of the project is to control and eradicate FMD in the Philippines. Project achievements so far include:

- significantly decreasing the incidence of FMD
- establishing a network of national government offices, local government units, and the private sector all working towards FMD control
- achieving and maintaining FMD-free status for all central and southern regions of the Philippines, including international accreditation of Mindanao, the Visayas and the island province of Masbate as FMD-free zones, by the World Organisation for Animal Health (OIE)
- heightening public awareness of FMD through innovative activities: School-on-the-Air programs, theatre presentations, visible signage in ports and airports
- internationally recognised laboratory diagnosis programs
- institutionalised surveillance activities
- competent FMD diagnostic laboratory at the Philippine Animal Health Centre
- improved animal movement management by establishing checkpoints at strategic port areas (quarantine to prevent spread of disease)
- National and local government unit capability to initiate disease emergency preparedness plans, particularly in the disease-free zones of Visayas and Mindanao.

In March 2004, the Australian Government agreed to provide an additional $1.37 million to fund the 18-month eradication phase of the FMD project, bringing Australia’s total contribution towards the campaign against FMD in the Philippines to $7.87 million.

Total AusAID contributions to date are $2.48 million and the Australian Government has recently agreed to extend funding to the end of 2005 to ensure a smooth transition to ASEAN responsibility in 2006.
Sanitary and Phytosanitary Capacity Building Program – ASEAN countries

A Sanitary and Phytosanitary (SPS) Capacity Building Program was implemented by the Australian Government Department of Agriculture, Fisheries and Forestry (DAFF) in October 2004. The countries likely to participate in the program are the Philippines, Indonesia, Malaysia, Thailand, Vietnam, Cambodia, Laos and Burma.

The program has funding of $3.9 million over three years, and aims to strengthen the technical, scientific and managerial capacities of regional and national agencies with responsibilities for management of SPS matters within the ASEAN region. This in turn will build regional cooperation in SPS matters, and strengthen internal and border quarantine capacities.

Avian influenza outbreak in Asia

In 2004, the government approved up to $1 million to support regional responses in addressing the threats posed by the outbreak of the highly pathogenic avian influenza (HPAI). Of this:

> $500 000 was provided to the WHO Western Pacific Regional Office in Manila to employ experts in epidemiology, animal health, virology, laboratory and public health, as well as to obtain supplies and equipment and to produce training materials and guidelines to be translated into local languages.

> $150 000 was provided to the WHO Southeast Asia Regional Office in New Delhi to enable technical support and provide essential supplies, particularly diagnostic kits and personnel protective equipment, for East Timor, Thailand and Burma.

> $350 000 was provided to DAFF to enable it and the CSIRO Animal Health Laboratory in Geelong to respond to the epidemiological and diagnostic needs arising from the outbreak.

In addition, AusAID responded directly to the Indonesia WHO office by providing $325 000 for epidemiological and other technical assistance, antiviral supplies and training. Since the initial outbreaks, a longer-term program of assistance has been developed to strengthen surveillance and the capacity of Indonesia to respond to an outbreak of communicable diseases ($3 million over three years).

Additional support was provided to Vietnam and Cambodia for small-scale urgent requests in early 2004 (eg protective clothing and equipment for culling).

Emerging and resurging zoonotic diseases regional initiative

Following the outbreak of avian influenza in the region in early 2004, the Australian Government (through DAFF and the Australian Government Department of Health and Ageing (DoHA) has developed a three-year, $5 million program to strengthen the ability of developing countries to deal with the outbreak of diseases, such as avian influenza. This program will focus on improving animal and human health laboratory diagnostic capacity, surveillance, reporting, and emergency preparedness in the region.

Scoping work on this new regional initiative was undertaken in October 2004, involving close consultation with DoHA, DAFF and relevant international organisations including WHO, OIE and FAO. Implementation is due to start in July 2005.

ASEAN Australia Development Cooperation Program – Strengthening animal health management and biosecurity

This $1.1 million program aims to help ASEAN countries better manage risks to the biosecurity of livestock industries, particularly those related to trade and affecting the poor. The program will improve access to markets for ASEAN member countries’ livestock products, through increased capabilities to analyse risk and provide training partners with greater confidence in livestock disease information that is consistent across the region. This project will focus on strengthening capabilities in risk analysis with an emphasis on developing practical skills, disease surveillance and animal health information management at the regional level.

The program started in August 2004 and will run for two years. The Australian implementing partner for this program is AusVet Animal Health Services Pty Ltd. During the first six months, a number of significant achievements have been made, including:

> establishment of a project website to facilitate administration and training and review of the Web CT system at the University of Sydney

> assessment of likely assistance by organisations such as OIE, FAO and donor agencies in response to the Asian bird flu emergency

> preparation of several training material modules and completion of a number of training workshops

> development and testing of an internet-based learning system based on open source software, A-Tutor, within the program’s website.
ACIAR research projects

The Australian Government aid program funds agricultural research mainly through ACIAR, although some applied agricultural research is funded through AusAID. ACIAR was established in June 1982 to assist and encourage Australia’s scientists to use their skills for the benefit of developing countries, while resolving Australia’s own agricultural problems. The organisation’s mandate is to improve the wellbeing of people in developing countries and Australia. ACIAR achieves this through international collaboration in research and related activities that develop sustainable agricultural systems and appropriate strategies for natural resource management. By funding research, ACIAR aims to help developing countries help themselves, thereby contributing to their wellbeing and general economic growth.

As a small organisation, ACIAR does not do research itself. Instead, it commissions research groups in Australia and in partner developing countries to collaborate in studying common problems. ACIAR's 11 research program managers develop, commission, monitor and review projects in a process that usually spans about five years for each project. Most ACIAR projects are located in Southeast Asia and the South Pacific. Bilateral research resources are allocated to developing countries as follows:

- Southeast Asia - 50–60%
- Papua New Guinea and Pacific island nations - 10–20%
- China - 10–20%
- South Asia - 10–20%
- Africa - 5–10%.

Animal Sciences Program

ACIAR projects reflect the research priorities of the partner country, and topics are chosen so that the results will have a wide impact and be applicable to countries in other regions. Animal health projects are coordinated within ACIAR’s Animal Sciences Program, while aquatic animal health projects are coordinated within the Fisheries Program, described below. Animal health publications produced by ACIAR are available from the organisation’s website.

ACIAR projects are coordinated within ACIAR’s Animal Sciences Program, while aquatic animal health projects are coordinated within the Fisheries Program, described below. Animal health publications produced by ACIAR are available from the organisation’s website.

Animal Sciences Program

The ACIAR Animal Sciences Program helps research organisations in Australia and developing countries to work together in a multidisciplinary context to find sustainable solutions to shared animal production and health problems. The program has three major components:

- sustainable integrated agricultural production systems
- large and small ruminant production and health
- monogastric production and health, and post-harvest livestock technology, such as food safety.

Table 8.1 shows current Animal Sciences Program projects related to animal health.

Table 8.1 Active research projects related to animal health – Animal Sciences Program, Australian Centre for International Agricultural Research

<table>
<thead>
<tr>
<th>PROJECT CODE</th>
<th>PROJECT TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS1/2003/001</td>
<td>Management of classical swine fever and FMD at the village level in Laos</td>
</tr>
<tr>
<td>AS1/2002/099</td>
<td>Development of a model for the control of fasciolosis in cattle and buffalo in the Kingdom of Cambodia</td>
</tr>
<tr>
<td>AS1/2002/042</td>
<td>Control of Newcastle disease and identification of major constraints in village chicken production systems in Myanmar</td>
</tr>
<tr>
<td>AS1/2002/038</td>
<td>Improved productivity, profitability and sustainability of sheep production in Maharashtra, India through genetically enhanced prolificacy, growth and parasite resistance</td>
</tr>
<tr>
<td>AS1/2001/054</td>
<td>The identification of constraints and possible remedies to livestock production by zoonotic diseases in the South Pacific</td>
</tr>
<tr>
<td>AS1/2000/083</td>
<td>Development of a vaccine for the control of Gumboro in village and small poultry holdings in Indonesia</td>
</tr>
<tr>
<td>AS1/2000/029</td>
<td>Production of a vaccine for the control of Jembrana disease in Indonesia</td>
</tr>
<tr>
<td>AS1/2000/009</td>
<td>Development of diagnostic and control methodologies for animal trypanosomiasis (surra) in Papua New Guinea, Indonesia, the Philippines and Australia</td>
</tr>
<tr>
<td>AS1/1997/027</td>
<td>Genetic and immunological characterisation of high resistance to internal parasites in Indonesian thin tail sheep</td>
</tr>
<tr>
<td>AS2/1999/063</td>
<td>Tick-borne diseases: delivery of user-friendly and effective vaccine and diagnostics</td>
</tr>
<tr>
<td>AS2/1999/060</td>
<td>Control of bees and bee mites in Indonesia and the Philippines</td>
</tr>
<tr>
<td>AS1/1998/054</td>
<td>Poverty alleviation and food security through improving the sweet potato-pig systems in Indonesia and Vietnam</td>
</tr>
</tbody>
</table>
Fisheries Program

The ACIAR Fisheries Program develops and coordinates research to solve key problems constraining the productive use and sustainability of fisheries and aquatic resource systems in developing countries and in Australia. It also aims to maximise benefits for target groups in developing countries and to contribute to regional research initiatives. The Fisheries Program spans a diversity of production strategies and environments, including the management of wild-capture marine and freshwater fisheries, aquatic farming systems, mariculture and fisheries enhancement. Table 8.2 shows present Fisheries Program projects related to animal health.

The diagnosis, control and management of aquatic diseases remains an important area of ongoing research for ACIAR. Viral diseases are consistently identified as major threats to the viability of semi-intensive and intensive aquaculture and will continue to receive special attention. Research on shrimp diseases is continuing, with a clear focus on the interests of smallholder farmers who dominate production in most partner countries.

Table 8.2  Active research projects related to animal health – Fisheries Program, Australian Centre for International Research

<table>
<thead>
<tr>
<th>PROJECT CODE</th>
<th>PROJECT TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIS/2002/075</td>
<td>Application of PCR for improved shrimp health management in the Asian region (Indonesia, Thailand, India)</td>
</tr>
<tr>
<td>FIS/2001/075</td>
<td>Sustainable aquaculture development in Pacific Islands region and northern Australia - includes a small project entitled ‘The Quality of Penaeus monodon broodstock in Fiji: their viral disease status’</td>
</tr>
<tr>
<td>FIS/2000/061</td>
<td>Development and delivery of practical disease control programs for small-scale shrimp farmers (Indonesia, Thailand, India, Australia)</td>
</tr>
</tbody>
</table>
Australian Biosecurity Cooperative Research Centre for Emerging Infectious Disease

The Australian Biosecurity Cooperative Research Centre for Emerging Infectious Disease (AB-CRC) was established in 2003. The aim of the AB-CRC is to develop new capabilities to detect, identify, monitor, assess, predict and respond to emerging infectious disease threats that affect biosecurity in Australia and the Asia-Pacific region. The CRC’s partners and governance arrangements set world’s best practice for responding to complex biosecurity issues by bringing together multidisciplinary research expertise alongside national and international public health, animal health and livestock industry experts. This critical mass of research expertise in microbiology, molecular biology, nanochemistry, geographic information and spatial science, and mathematical modelling and applied epidemiology, in conjunction with education and training expertise and government and industry knowledge, is essential for building national capacity for responding to complex biosecurity issues. More information about the Australian Biosecurity Cooperative Research Centre for Emerging Infectious Disease can be found on the organisation’s website.50

The CRC’s research program has three integrated sub-programs:

> technologies to enhance detection
  – novel diagnostic techniques
  – rapid multiplex detection and characterisation systems

> ecology of emerging infectious diseases
  – host range and interactions
  – modes of transmission, maintenance and dispersal

> advanced surveillance systems
  – efficient data collection
  – improved data management
  – better decision-making tools.

Active research projects of the Australian Biosecurity Cooperative Research Centre for Emerging Infectious Disease’s research program are listed in Table 8.3.

Table 8.3  Active research projects related to biosecurity – Australian Biosecurity Cooperative Research Centre for Emerging Infectious Disease

<table>
<thead>
<tr>
<th>PROJECT CODE</th>
<th>PROJECT TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.001R</td>
<td>Development of diagnostic capabilities for influenza H5N1 isolates</td>
</tr>
<tr>
<td>1.002RE</td>
<td>Molecular detection systems for emergency diseases</td>
</tr>
<tr>
<td>1.003E</td>
<td>Advanced detection platforms: use of real-time immuno-PCR and conjugated peptide nucleic acid</td>
</tr>
<tr>
<td>1.007R</td>
<td>Development of a serological test to detect SARS coronavirus antibody in different animal species</td>
</tr>
<tr>
<td>1.009R</td>
<td>Enhanced methods of virus detection using biosensors and signal amplification and control via supramolecular chemistry</td>
</tr>
<tr>
<td>1.013R</td>
<td>Application of new platform technologies for the development of protein-based rapid multi-analyte detection tests (commercial project)</td>
</tr>
<tr>
<td>2.012RE</td>
<td>Assessment of the risk of introduction of Nipah virus to Australia via flying foxes</td>
</tr>
<tr>
<td>2.014R</td>
<td>West Nile virus susceptibility and transmission studies in Australian avifauna</td>
</tr>
<tr>
<td>3.004R</td>
<td>Estimation of prevalence from pooled samples</td>
</tr>
<tr>
<td>3.008R</td>
<td>Using algorithms based on routine surveillance and GIS to identify and monitor outbreaks of human disease</td>
</tr>
<tr>
<td>3.010R</td>
<td>Quantification of confidence in disease freedom</td>
</tr>
<tr>
<td>3.011RE</td>
<td>Mosquito-based surveillance systems for Japanese encephalitis and West Nile virus, with a risk assessment for West Nile virus in eastern Australia</td>
</tr>
<tr>
<td>3.015 RE</td>
<td>Electronic data collection and decision support</td>
</tr>
<tr>
<td>3.107R</td>
<td>Improving bluetongue virus surveillance in remote areas</td>
</tr>
</tbody>
</table>

50 http://www.abcrc.org.au
APPENDIX 1

ORGANISATION OF ANIMAL HEALTH SYSTEMS IN AUSTRALIA

Introduction

Under the Australian Constitution, the Australian Government is responsible for quarantine and international animal health matters, including disease reporting, export certification and trade negotiation. It also advises and coordinates national policy, and, in some circumstances, provides financial assistance for national animal disease control programs. Australian state and territory governments are responsible for disease control and eradication within their own boundaries.

Government veterinary services in Australia include officers from federal, state, territory and local government. Consultative committees ensure that these elements work together to serve the overall interests of Australia (see Figure A1.1). A peak body, Animal Health Australia (AHA), oversees the national system of animal health services so that acceptable standards are maintained. AHA is a not-for-profit public company formed by the national, state and territory governments and the peak national councils of Australia’s livestock industries. Further information is available on the AHA website.\footnote{http://www.aahc.com.au}
States and territories are divided into veterinary regions or divisions, each of which is controlled by a government veterinary officer. Each region or division is further subdivided into animal health districts, which are administered by inspectors (who may be veterinarians or qualified animal technicians). Table A1.1 shows the numbers and categories of veterinarians and other animal health staff in Australia.

Table A1.1 Number of veterinarians and other animal health personnel, 2004

<table>
<thead>
<tr>
<th>Veterinarians</th>
<th>Auxiliary personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>Animal health assistants</td>
</tr>
<tr>
<td>Laboratories, universities etc</td>
<td>605</td>
</tr>
<tr>
<td>Private practitioners</td>
<td>Animal health auxiliaries</td>
</tr>
<tr>
<td></td>
<td>434</td>
</tr>
<tr>
<td>Private practitioners</td>
<td>Food hygiene and meat inspectors</td>
</tr>
<tr>
<td>Other veterinarians</td>
<td>6398</td>
</tr>
<tr>
<td></td>
<td>1261</td>
</tr>
<tr>
<td>Total</td>
<td>Total 1580</td>
</tr>
<tr>
<td>Total</td>
<td>9017</td>
</tr>
<tr>
<td>Total</td>
<td>3268</td>
</tr>
</tbody>
</table>

The Primary Industries Ministerial Council (PIMC) develops agricultural policies that are consistent with the objectives of the Australian Government and the state and territory governments of Australia, and the New Zealand Government. Its aim is to develop and promote sustainable, innovative, and profitable agriculture, fisheries/aquaculture, food and forestry industries in Australia.

The PIMC consists of the Australian national, state and territory ministers for agriculture, and the New Zealand Minister for Agriculture and Forestry. Further information about the PIMC, including publications, is available at the PIMC website. [52]

The PIMC is supported by a permanent committee – the Primary Industries Standing Committee (PISC). It consists of the heads of the Australian national, state and territory and New Zealand departments of agriculture, and representatives of the Bureau of Meteorology and the Commonwealth Scientific and Industrial Research Organisation (CSIRO). PISC is itself supported by an underpinning committee called Primary Industries Health Committee (PIHC).
Several committees advise PISC on specialist issues, and, in turn, have their own infrastructure of subcommittees, working parties and expert panels that focus on particular areas within each committee’s terms of reference. The Animal Health Committee (AHC) advises PISC on animal health matters, particularly technical and regulatory policy. AHC membership includes the federal, and state/territory Chief Veterinary Officers (CVOs), a CSIRO representative, an AHA representative and the CVO of New Zealand.

The AHC may use specialist working groups to advise it on technical issues and regulatory standards pertaining to national disease control programs, veterinary public health, animal welfare and animal health laboratory matters. AHC also provides technical support to the AHA, PIMC, PISC and other bodies dealing with chemical residues, animal identification and other animal health-related matters.

The Consultative Committee on Emergency Animal Diseases (CCEAD) meets on an ad hoc basis (as the need arises) when animal disease emergencies of importance to Australia occur. CCEAD also provides technical and management advice to PISC on emergency disease responses.

PIMC, PISC and its subsidiary committees, industry, and other bodies coordinated by AHA shape the overall policies for animal health services in Australia. AHA facilitates partnerships between governments and industry. The animal health system in Australia is unique in that, in addition to the traditional role of governments in managing animal health, the livestock industries contribute by participating in policy development, supporting targeted activities and contributing to emergency responses.

This framework ensures that veterinary services coordinate their priorities so that Australia is served efficiently and effectively.

### Australian Government veterinary services

The animal health role of the Australian Government is delivered through three business groups:

- Product Integrity, Animal and Plant Health
- Biosecurity Australia
- Australian Quarantine and Inspection Service (AQIS).

In addition, CSIRO provides diagnostic services, exotic and emergency disease support and independent scientific advice.

#### Product Integrity, Animal and Plant Health

The Product Integrity, Animal and Plant Health business group coordinates a national approach to animal health and welfare, plant health and protection, residues and food safety issues that affect Australian agriculture, fisheries and forestry. The Office of the Australian Chief Veterinary Officer (CVO) is located within this group. This office provides an international reference point on animal health and manages Australia’s commitments to the World Organisation for Animal Health (OIE) and other international agencies involved with animal health.

The Australian CVO is Australia’s principal representative on animal health matters nationally and internationally, and the permanent representative to the OIE. The Australian CVO is currently the president of the OIE Regional Commission for Asia, the Far East and Oceania.

Further information on the Office of the CVO is available on the Australian Government Department of Agriculture, Fisheries and Forestry (DAFF) website.

### Biosecurity Australia

To further strengthen quarantine and border protection arrangements, and to boost the integrity of the import risk analysis process, Biosecurity Australia (BA) became a prescribed agency on 1 December 2004.

Under the new arrangements, BA will have a new measure of independence from DAFF, including its own outcome statement – to provide science based quarantine assessments and policy advice that protects Australia’s favourable pest and disease status and enhances Australia’s access to international animal and plant related markets.

In addition to its import risk analysis work, BA will provide technical/scientific input for Australia’s export market access requests.

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53 Formally known as the Office International des Epizooties
Australian Quarantine and Inspection Service

AQIS is responsible for export health certification, including responsibility for:

> veterinary public health inspection of meat through a national inspection service
> health certification of exports of live animals and animal reproductive material
> quarantine of imported live animals and animal products.

Although the Australian Government is responsible for formulating policy and has ultimate responsibility for quarantine under the Australian Constitution, the states and territories may act as agents of the Australian Government in the delivery of quarantine and export certification services. Under the Accreditation Program for Australian Veterinarians, AQIS-accredited veterinarians also provide important export certification services. Further information is available at the DAFF website.55

The Australian Government is the nation’s largest single employer of veterinarians. This is an important reserve for the state and territory governments if there is an outbreak of a major exotic animal disease.

Commonwealth Scientific and Industrial Research Organisation

Several CSIRO divisions work on animal health and CSIRO also operates the high-security Australian Animal Health Laboratory (AAHL) at Geelong in Victoria. The laboratory is a national facility for disease diagnosis, research and training. It develops and tests vaccines, maintains the National Animal Serum Bank (used for retrospective studies on diseases) and acts as a regional and national reference laboratory (see Animal health laboratory network, below). Scientists at AAHL also have considerable expertise in endemic diseases, plant toxins and food pathogens.

Further information on CSIRO and AAHL is available at the CSIRO Livestock Industries website.56

State and territory veterinary services

State and territory veterinary services are responsible under the Australian Constitution for animal health services within their respective borders. State services administer relevant legislation governing livestock identification and movement (within and between states and territories), disease surveillance, diagnosis, reporting and control of notifiable diseases, chemical residues and other programs. This requires the maintenance of close links with livestock producers, private veterinarians and others associated with the livestock industries. An animal health unit headed by the state or territory CVO administers these tasks.

Regional veterinary officers supervise inspectors and administer the application of relevant state and territory acts and regulations. Veterinary officers also maintain records and ensure reliable certification of the animal health status of farms in their region and of animals moving within Australia and to overseas destinations.

The states and territories also have government animal health laboratories that diagnose and investigate disease outbreaks and undertake applied research.

Private veterinary services and veterinary education

Australia has four university veterinary schools providing undergraduate animal health and public health training relevant to the nation’s livestock industries. These institutions also conduct postgraduate training and research. Another university offers postgraduate training in tropical veterinary medicine.

Every six years, an accreditation committee conducts a detailed audit of the veterinary schools’ curricula. Since 1999, this audit has been conducted by the Australasian Veterinary Boards Council Inc (AVBC Inc)57 and has included an international representative on the accreditation committee. The AVBC Inc sets the standards for veterinary registration in Australasia, and conducts the National Veterinary Examination for overseas-qualified veterinarians.

Private veterinarians play a vital role in rural communities, and rural practitioners are an integral part of the animal disease preparedness programs developed for Australia’s livestock industries. Some private veterinarians also work in animal health consultancy and in various capacities in Australia’s livestock industries. Others are in government, tertiary institutions and private sector diagnostic and research laboratories.

55 http://www.daff.gov.au, follow the links: ‘Quarantine and Export Services’ under Outputs on the left-hand side of the DAFF home-page, then ‘Export’
56 http://www.csiro.au/li
57 http://www.avbc.asn.au/
Veterinary surgeons must be registered in the state or territory in which they practise. Competency in recognising and diagnosing livestock diseases is an important part of veterinary education in Australia and a prerequisite for being registered as a veterinary surgeon. All veterinary practitioners have an important role to play in promptly detecting, and appropriately investigating, possible exotic diseases. Training courses for field veterinarians are held every six months at AAHL and include clinical and laboratory diagnosis of exotic and notifiable animal diseases. State and territory authorities conduct awareness programs on notifiable and exotic livestock diseases for those private veterinarians involved in livestock industries.

The Accreditation Program for Australian Veterinarians (APAV) is a national program designed to integrate private veterinary practitioners into the national animal health system to support the international standing of our animal health capability. The program aims to have an internationally recognised process for accrediting nongovernment veterinarians to contribute to government and industry animal disease programs and to effectively use their skills and knowledge.

In 2002, the Australian Government, in conjunction with peak industry groups, commissioned a major independent review of Australia’s rural veterinary services (the Frawley Report). The review aimed to identify the specific veterinary needs in rural areas and the most effective ways of maintaining veterinary proficiency and presence in these areas. The formal government response to the review was released in 2004, and recommendations have started to be implemented. The emphasis is on national surveillance, greater integration of nongovernment veterinarians into emergency disease preparedness and response activities, and better use of diagnostic facilities.

In 2004, Charles Sturt University, a regional university, launched its new veterinary science program, which will start training undergraduates in 2005. This initiative will help to ensure that a regular supply of graduates is trained to meet the specific needs of rural and regional areas.

The Australian Government also provides five bonded scholarships per year for veterinary science students with AQIS. This not only boosts AQIS’s capability during the period of the scholarship-holder’s bond but also opens a new pathway for veterinarians in regional areas.

Animal health laboratory network

AAHL at Geelong, Victoria, is Australia’s national high-security laboratory for exotic animal disease diagnosis and research. It provides training in exotic diseases for the nation’s animal health field and laboratory staff. It is a designated OIE Reference Laboratory for bluetongue, avian influenza, Newcastle disease, Hendra and Nipah virus diseases, Yellowhead disease and epizootic haematopoietic necrosis. It is the national reference laboratory for these diseases as well as for brucellosis and rabies. AAHL is also an OIE Collaborating Centre for New and Emerging Diseases. AAHL provides a service to other countries, such as during the Nipah virus outbreak in Malaysia, the SARS outbreak in east Asia and the outbreak of highly pathogenic avian influenza in the region.

As well as AAHL, there are 11 government animal health laboratories within the national veterinary laboratory framework. Six of these are central state or territory government laboratories, and five are regional ones. In Victoria, a private laboratory has been contracted to undertake additional diagnostic and investigative work for the government. In South Australia, a private veterinary laboratory has been contracted to manage and operate the government laboratory. State, territory and CSIRO veterinary laboratories provide a wide range of diagnostic services and are involved in various research activities. National reference laboratories have been formalised for Johne’s disease and anthrax at Primary Industries Research Victoria (PIRVic Attwood); tuberculosis at Animal Health Laboratories, South Perth, Western Australia; ovine footrot at Animal Health Laboratories, Albany, Western Australia; and avian influenza and Newcastle disease at AAHL. PIRVic Attwood is an OIE Reference Laboratory for paratuberculosis, and Animal Health Laboratories, South Perth in Western Australia is an OIE Reference Laboratory for bovine tuberculosis.

In addition, some laboratories provide an informal national service for specific pathogens because of their particular expertise. For example, the Animal Research Institute, Queensland, is recognised for its expertise in respiratory pathogens of intensively managed livestock. PIRVic is the National Reference Laboratory for veterinary Escherichia coli, while the Elizabeth Macarthur Agricultural Institute, New South Wales, is especially proficient with pestviruses.

As well as government animal health laboratories, there are veterinary diagnostic laboratories associated with each of Australia’s four veterinary schools. In addition, 10 private veterinary laboratories in five states employ about 30 veterinary pathologists and 150 other staff. Although private veterinary laboratories mainly provide services for companion animals, they also service the livestock industries. Some specialist laboratories also do residue and microbiological testing of meat and other products.
Standards and accreditation

All Australian government veterinary laboratories have third party (National Association of Testing Authorities) accreditation consistent with the OIE Standard, ISO 17025 (General Requirements for the Competence of Testing and Calibration Laboratories) for veterinary laboratories. Several laboratories were re-accredited following their first two-yearly audits.

The Australian Standard Diagnostic Techniques for Animal Health Laboratory Testing were first published by CSIRO in 1993. Standardised procedures for new tests have been added as necessary and existing standards revised as appropriate. In 1999, the Sub-committee on Animal Health Laboratory Standards (SCA HLS) decided to revise some test procedures and to add new ones where appropriate. The new and revised ones are known as the Australian and New Zealand Standard Diagnostic Procedures (ANZSDPs) and are being progressively published on the SCAHLS website.

Quality assurance

The Australian National Quality Assurance Program (ANQAP) facilitates interlaboratory proficiency testing in 30 government and private veterinary laboratories in Australia, New Zealand, USA, China and South Africa. The program was instigated by SCAHLS and is supported nationally. It is funded by the user laboratories and the program is coordinated at PIRvic Attwood. ANQAP conducts external proficiency testing and assesses assays used in quarantine, export certification and national disease control programs. Procedures are based on the Australian standard diagnostic techniques (and ANZSDPs) and constitute the major external proficiency testing program for laboratory accreditation and for endorsement by AQIS to undertake export testing.

In 2004, 40 individual serological and five nonserological assays were evaluated. The nonserological assays include identification of Mycobacterium bovis, the identification of Mycobacterium paratuberculosis (bovine and ovine) and gelatin gel proteolysis thermostability for Dichelobacter nodosus. These last four assays are coordinated at national reference laboratories for these diseases.

Accredited laboratories participate in a range of other interlaboratory proficiency testing programs for haematology, biochemistry, parasitology, histopathology, serology and bacteriology. These programs, together with internal proficiency testing, form an essential, though costly, component of laboratory systems.

Animal Health Australia

Animal Health Australia is a not-for-profit public company established by government and livestock industries with a mission to ensure that Australia’s national animal health system delivers competitive advantage for Australia’s livestock industries.

The company is funded by its 24 members through annual subscriptions. The Australian Government provides one-third of the funding; state and territory government subscriptions and those from the combined livestock industries each provide half of the remaining funds.

Animal Health Australia’s role in the national animal health system is to:

> identify national animal health system priorities
> engage animal health system stakeholders in pursuing agreed priorities
> integrate activities of animal health service participants
> facilitate and manage national animal health programs
> evaluate national animal health system outputs
> communicate national animal health performance.

The following governments and livestock industry organisations were members of AHA in 2004:

> Australian Government Department of Agriculture, Fisheries and Forestry
> State of New South Wales
> State of Queensland
> State of South Australia
> State of Tasmania
> State of Victoria
> State of Western Australia
> Northern Territory
> Australian Capital Territory
> Australian Chicken Meat Federation Inc.
> Australian Dairy Farmers Limited
> Australian Egg Corporation Ltd.
> Australian Horse Industry Council
> Australian Lot Feeders Association Inc.
> Australian Racing Board
> Cattle Council of Australia Inc.
> Australian Pork Limited
> Sheepmeat Council of Australia Inc.
> WoolProducers

[58 http://www.scahls.org.au/]
Animal welfare

Under current arrangements, responsibility for animal welfare matters within Australia rests with individual states and territories, which exercise their legislative control through their ‘prevention of cruelty to animals’ legislation. Each state or territory has a bureau or office to deal with animal welfare. The Australian Government has animal welfare responsibility for export abattoirs and the live animal export trade.

Mechanisms exist for Australian governments to engage industry, the animal welfare bodies and the research community in the development of animal welfare policy, standards and legislation. The key bodies at the national level are the Animal Welfare Working Group and the National Consultative Committee for Animal Welfare.

Further information on animal welfare is available on the DAFF website.60

Animal Welfare Working Group

The Animal Welfare Working Group (AWWG) works to facilitate the development and promotion of national animal welfare standards and harmonisation of animal welfare standards as applied through legislation. AWWG also identifies emerging animal welfare issues of strategic importance for research or policy development in consultation with industry and other stakeholders, and advises and recommends policy to AHC.

In 2004, AWWG employed a consultant to undertake a Review of Australian Model Animal Welfare Codes of Practice.61 The purpose was to:

> review the current arrangements in Australia and in selected other countries (for example New Zealand and the European Union) for development and review of welfare standards in production animals

> develop options for the purpose, structure, production and review process, and funding arrangements for animal welfare codes and standards in Australia

> make recommendations to AHC on a strategy and timing of introduction of the preferred option, including appropriate transitional arrangements.

This consultancy will be finalised early in 2005.

59 http://www.aahc.com.au
60 http://www.daff.gov.au (follow the links to Product Integrity, Animal and Plant Health and then Animal Welfare)
National Consultative Committee on Animal Welfare
The National Consultative Committee on Animal Welfare (NCCAW) is a nonstatutory body, established in 1989, whose purpose is to provide advice to the Minister for Agriculture, Fisheries and Forestry on animal welfare issues; to advise on the effectiveness and appropriateness of national codes of practice, policies, guidelines and legislation to safeguard or further the welfare of animals and protect the national interest; and to liaise with other relevant bodies such as the AHC and AWWG. Membership of NCCAW includes the RSPCA (Royal Society of Prevention of Cruelty to Animals), Animals Australia, Australian and state and territory governments, and industry representatives.

NCCAW position statements are policy statements on animal welfare issues. The statements, derived from sound scientific knowledge and expertise, are developed through extensive consultation with relevant industry bodies and experts. Once agreed to, these position statements are submitted to the state and territory ministers for their consideration and/or action as appropriate. In 2004, NCCAW endorsed the following position statements:

>- rodent traps
>- the puppy export trade
>- national guidelines on rodeos.

These position statements can be found on the DAFF website under Animal Welfare.62

Because of concerns regarding animal activists, at its 34th meeting in October 2004, NCCAW adopted the following statement of principle on animal welfare advocacy:

‘The Australian Animal Welfare Strategy has been developed through a wide consultative and consensual process. The NCCAW sees the strategy as a social contract based on civil ethics that ensures that all community viewpoints are respected and considered in line with Australia’s tolerant democratic principles.

The NCCAW affirms that in accordance with Australian Law intimidation, harassment or violence has no place in the development of public policy.’

Developing an Australian Animal Welfare Strategy
The Australian Animal Welfare Strategy was developed under the auspices of the NCCAW, based on broad stakeholder and community consultation. It was endorsed by PISC in May 2004. It embraces a broad vision for all types of animals, sets broad national goals on animal welfare and provides a framework for sustainable, scientifically-based improvements in animal welfare outcomes. It recognises animal welfare roles and responsibilities at varying levels, namely, the individual animal-owner level, animal industries and communities and governments.

A key step in the implementation plan will be to develop action plans encompassing specific activities and actions as a basis for implementing the objectives and strategies outlined under the three goals, and to assign responsibility for these to relevant lead agencies. It is expected that this will involve a number of existing activities, and could result in the commissioning of some new activities.

The Australian Government has committed $6 million over four years to assist the implementation of the AAWS. The AAWS builds on the current animal welfare framework in Australia to achieve sustainable animal welfare improvements across the six key animal sectors outlined in the strategy, namely, animals used for the production of food, fibre and other products; animals used in research and teaching; companion and guide animals; animals used for recreation, entertainment and display; native and introduced wildlife; and feral animals.

In July 2004, DAFF convened a meeting of key stakeholders to provide advice on implementation priorities. DAFF is currently undertaking recruitment to establish an AAWS implementation team and has undertaken discussions with a number of stakeholders on the potential membership of an AAWS steering committee. There has also been some initial activity in developing a communication strategy, expansion of the current National Animal Health Information System to include animal welfare incidents, and discussions with the LiveCorp Research and Development Committee on animal welfare research relating to the livestock export chain.

Standards on export of livestock
The government worked to a tight timeframe in 2004 to put the livestock export industry on a more sustainable footing following its decisions on the Keniry Livestock Export Review in 2003.63

The initial Australian Standards for the Export of Livestock cover the six major steps along the export chain for cattle, sheep, goats, buffalo, deer and camelds. These are:

>- sourcing of livestock and their preparation for transport by sea
>- land transportation of livestock for export
>- livestock management at pre-embarkation registered premises
>- vessel preparation and loading of livestock onto ships
>- livestock management on-board sea vessels
>- air transportation of livestock.

These initial standards were developed by six multidisciplinary expert working groups, each dealing with particular parts of the livestock export chain. A Livestock Export Standards Advisory Committee provided additional advice to DAFF. They will be used by livestock exporters to meet the requirements for an export licence, and exporters will be required to demonstrate that they have met the standards before being granted an export permit. The new arrangements came into effect on 1 December 2004.

The standards will be refined further in light of comments received from industry, animal rights organisations, state and territory governments and the general public through the public consultation process. The revised standards, Version 1, Australian Standards for the Export of Livestock, will be submitted to Primary Industries Ministerial Committee in April 2005 for ministerial endorsement.

An advisory committee, similar to Livestock Export Standards Advisory Committee, will be commissioned to regularly review and monitor the standards in light of further research, development and experience. The rigorous processes used to formulate these standards will provide a strong foundation for Australia’s livestock export trade in the future.

Organisation of aquatic animal health in Australia

Figure A1.2 shows the organisation of aquatic animal health in Australia. In 2001, the Council of Australian Governments restructured its system of ministerial councils. Since then, issues of aquatic animal health have been the primary responsibility of PIMC and its technical/advisory committees. The development of aquatic animal health policies in Australia therefore involves PIMC, PISC, and PISC’s PIHC.

Figure A1.2 Organisation of aquatic animal health in Australia
PIMC is the forum for the development of policies that are consistent with the objectives of Australian and state/territory governments and, where relevant, with those of the New Zealand government. Where appropriate, PIMC is a means of integrating action by governments on forest, fisheries and aquaculture issues. The council is consultative only; final decisions are taken by member governments.

Membership of PISC (PIMC’s standing committee) comprises the heads of Australian and New Zealand government agencies responsible for the policy and regulatory issues that fall within PIMC’s ambit. PISC supports PIMC in the achievement of the council’s objectives and develops cooperative and coordinated approaches to matters of concern to the council.

PISC is advised by four subsidiary committees, of which the PIHC has prime carriage for health issues. A permanent, technical committee, PIHC meets independently of PISC and provides ongoing support to PISC and PIMC on the management of a range of issues, including product integrity and safety, forest health, plant health, animal health and aquatic animal health. Both AHC and the Aquatic Animal Health Committee (AAHC) report to PIHC. AAHC consults with the AHC and also with the Natural Resources Management Ministerial Council’s Aquaculture Committee.

Unlike the other committees reporting to PIHC, AAHC is a joint industry–government committee. Its membership comprises representatives of the Australian and state and territory governments and representatives of the peak bodies of the commercial and recreational fishing sectors, including aquaculture.

At the end of 2003, a small team comprising the chair of the PIHC, an industry representative and state fisheries representatives reviewed AAHC’s operation and activities. The review, which was endorsed by PISC in March 2004, recommended that AAHC should continue to function as the primary industry–government interface for policy, communication and awareness related to aquatic animal health issues within Australia, with its major function being to provide high-level policy and strategic advice to PISC, through PIHC, on national aquatic animal health issues. The review also recommended that aquatic animal health issues be considered within the context of broader fisheries production issues and that AAHC should collaborate closely with the Australian Fisheries Managers Forum when developing its strategic directions and preparing its work plans.

AAHC continues to be supported by sound scientific and technical advice from the National Aquatic Animal Health Technical Working Group (NAAH-TWG). Late in 2004, the Australian government provided funding for a dedicated part-time technical executive officer for NAAH-TWG who will:

> help facilitate NAAH-TWG business through communication with its members and others as required
> promote NAAH-TWG’s objectives in the aquatic animal health community in Australia
> help the group to raise awareness of aquatic animal health issues and facilitate information exchange between industry and government.
Australia is a major producer and exporter of livestock, livestock products and genetic material. In 2003–04, the gross value of Australian livestock and livestock products was estimated to be $17.5 billion, and exports were estimated to be worth $13.0 billion.

Animal production in Australia is largely based on extensive grazing and is dominated by wool, sheepmeat, beef and dairy production. Australia also has smaller intensive pig and poultry industries. The livestock industries extend from the beef cattle areas of tropical north Queensland to the sheep areas of southern Tasmania, and from the dairying areas of coastal New South Wales to the merino wool-producing areas of Western Australia.

In 2004, drought conditions eased in some areas of Australia and this has been reflected in a recovery in Australian cattle and sheep numbers. The value of farm production and the volume of exports are both expected to increase in 2004–05.

Trends in livestock numbers are shown in Table A2.1. All figures provided in the tables in this appendix are based on Australian financial years, which run from 1 July to 30 June.

Table A2.1 Trends in livestock numbers (millions), 2001–05

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheep</td>
<td>106.2</td>
<td>99.3</td>
<td>94.5</td>
<td>105.8</td>
</tr>
<tr>
<td>Cattle</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>27.9</td>
<td>26.7</td>
<td>26.4</td>
<td>26.6</td>
</tr>
<tr>
<td>Beef</td>
<td>24.7</td>
<td>23.6</td>
<td>23.4</td>
<td>23.6</td>
</tr>
<tr>
<td>Dairy</td>
<td>3.1</td>
<td>3.1</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Pigs</td>
<td>2.9</td>
<td>2.8</td>
<td>2.7</td>
<td>2.6</td>
</tr>
</tbody>
</table>

a Preliminary figures
Source: ABARE 2004, Australian Commodities Vol 11 (4) December
Beef cattle

Cattle are raised over much of Australia (Figure A2.1). Across northern Australia, cattle are produced on large cattle holdings on which they graze native pastures at low stocking rates. Tropical breeds dominate because they are better adapted to the harsh conditions in the north, and the main outputs are manufacturing beef and animals for lot-feeding and live cattle exports. In southern Australia, cattle are produced on smaller holdings, grazing largely on improved pastures. Temperate British or European-derived breeds dominate, and smaller and younger animals are produced, largely for the Australian domestic market.

Figure A2.1 Cattle distribution in Australia

Cattle are bred and produced by diverse farm enterprises, from specialist beef producers to mixed-farm operations that may include sheep or cropping. Specialist beef enterprises range from an average of 250 hectares in Victoria to more than 350 000 hectares in the Northern Territory. Queensland has the most beef cattle, followed by New South Wales and Victoria.

Cattle prices increased during 2004 due to strong demand from a range of buyers. However, weaker export prices are expected to cause a drop in prices during 2005. Pasture feeding is the major method of beef production, but feedlots are often used to finish cattle for specific markets. In response to relatively favourable export prices, Australian lot feeders have placed more cattle on feed. In the September quarter, the number of cattle on feed was around 759 000, about 7% higher than in the June quarter and 24% higher than September 2003. With the resumption of beef trade between the United States and Japan after the suspension due to a single case of BSE in the US cattle herd, prices for Australian beef exports to Japan are expected to fall in early 2005. For 2004–05 as a whole, Australian beef exports are forecast to rise by around 5% but export prices are forecast to decline by around 4%.

Live cattle exports are expected to fall again in 2004–05 because of increased competition from other suppliers and the continuing high value of the Australian dollar. Table A2.2 shows cattle production figures for 2003–05.

Table A2.2 Cattle production, 2003–05

<table>
<thead>
<tr>
<th>Cattle production</th>
<th>2003–04&lt;sup&gt;a&lt;/sup&gt;</th>
<th>2004–05&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cattle (millions)</td>
<td>26.4</td>
<td>26.6</td>
</tr>
<tr>
<td>Slaughterings</td>
<td>8 779 000.0</td>
<td>8 727 000.0</td>
</tr>
<tr>
<td>Production (kilotonnes)</td>
<td>2033.0</td>
<td>2064.0</td>
</tr>
<tr>
<td>Exports (kilotonnes)</td>
<td>660.0</td>
<td>875.0</td>
</tr>
<tr>
<td>Export value ($ million)</td>
<td>3792.0</td>
<td>4004.0</td>
</tr>
<tr>
<td>Live cattle exports</td>
<td>578 000.0</td>
<td>570 000.0</td>
</tr>
</tbody>
</table>

<sup>a</sup> Estimated figures

<sup>b</sup> Forecast figures

Source: ABARE 2004, Australian Commodities Vol 11 (4) December
Sheep

Sheep are produced under a wide range of conditions, from the arid and semi-arid inland to the higher rainfall areas of southeastern Australia (Figure A2.2). Most sheep in Australia are produced as part of a mixed farming enterprise, often for lamb production, and frequently with crops, beef and dairy cattle. Sheep numbers fluctuate according to seasonal conditions, movements in wool prices, and the relative profitability of other enterprises. Numbers have been declining from a high of 173 million head in 1990. Improved seasonal conditions after the 2002–03 drought are expected to result in both increased sheep numbers and increased wool production for 2004–05 (Table A2.3).

Australia is the world’s largest supplier of apparel wool. Although the expected increase in sheep numbers in 2004–05 will result in an increase in wool production of about 2.5%, levels are still historically low.

The sheepmeat industry has developed along with the wool industry, but rather than being a byproduct of fibre production, it is an important industry in its own right. Although wool and mutton production are spread throughout the sheep-raising areas, prime lamb production is generally confined to higher rainfall areas with good pasture. Prices for both lamb and mutton continued to be firm in 2004 due to strong export demand and lower supplies of both lamb and mutton, but the recent rising value of the Australian dollar is causing some concern. These favourable prices, combined with better seasonal conditions, are expected to result in an increase in flock numbers.

Live sheep exports in 2003–04 are expected to remain subdued during 2004–05 until the memorandum of understanding with Saudi Arabia on live sheep exports is finalised.

Table A2.3 Sheep production, 2003–05

<table>
<thead>
<tr>
<th>Sheep production</th>
<th>2003–04&lt;sup&gt;a&lt;/sup&gt;</th>
<th>2004–05&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheep numbers (million)</td>
<td>94</td>
<td>106</td>
</tr>
<tr>
<td>Total wool production (kilotonnes)</td>
<td>523</td>
<td>531</td>
</tr>
<tr>
<td>Value of wool exports ($ million)</td>
<td>2778</td>
<td>2560</td>
</tr>
<tr>
<td>Sheep slaughterings</td>
<td>10 421 000</td>
<td>9 979 000</td>
</tr>
<tr>
<td>Lamb slaughterings</td>
<td>16 562</td>
<td>17 450</td>
</tr>
<tr>
<td>Mutton production (kilotonnes)</td>
<td>220</td>
<td>219</td>
</tr>
<tr>
<td>Lamb production</td>
<td>341</td>
<td>368</td>
</tr>
<tr>
<td>Live sheep exports</td>
<td>3 843 000</td>
<td>3 853 000</td>
</tr>
</tbody>
</table>

<sup>a</sup> Estimated figures
<sup>b</sup> Forecast figures

Source: ABARE 2004, Australian Commodities Vol 11 (4) December
Dairy cattle

The Australian dairy industry has the third largest wholesale production value of Australia’s rural industries and operates in all states. Victoria has 61% of the national total of dairy cattle, followed by New South Wales (13%) and Queensland (9%). Most dairy farms are family owned and operated. Over the past 20 years, the dairy industry has been extensively restructured through changes in government regulation and changes to domestic and export markets for dairy products. The numbers of farmers and dairy cows have fallen, although production efficiency has increased markedly over the period. Due to improved seasonal conditions and an increased availability of water in most irrigation areas, cow numbers are expected to increase slightly in 2004–05, and milk production is expected to increase by approximately 3% in 2004–05 to 10 401 megalitres. Preliminary and forecast dairy production statistics are shown in Table A2.4.

A growing industry is the export of live dairy cattle, with China emerging as a major export market. In the first nine months of 2004, sales of live dairy cattle increased by 96% year-on-year to 51 000.

Table A2.4 Dairy production, 2003–05

<table>
<thead>
<tr>
<th>Dairy production</th>
<th>2003–04&lt;sup&gt;a&lt;/sup&gt;</th>
<th>2004–05&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy cow numbers</td>
<td>2 028 000</td>
<td>2 041 000</td>
</tr>
<tr>
<td>Total milk (megalitres)</td>
<td>10 065</td>
<td>10 401</td>
</tr>
<tr>
<td>Annual milk yield per cow (litres)</td>
<td>4963</td>
<td>5096</td>
</tr>
<tr>
<td>Gross value of milk production ($ million)</td>
<td>2687</td>
<td>3016</td>
</tr>
</tbody>
</table>

<sup>a</sup> Preliminary figures  
<sup>b</sup> Forecast figures

Source: ABARE 2004, Australian Commodities Vol 11 (4) December

Pigs

Pig farming in Australia has historically been seen as an adjunct to dairy farming, but is now recognised as a highly specialised, well-managed industry with most pigs housed. New South Wales is the largest producer, followed by Queensland and Victoria. The number of farms with pigs has declined steadily, the number of extensive pig-keeping systems has slowly grown, and the number of pigs has remained relatively stable (Table A2.5). This reflects industry adjustments as smaller producers stop farming pigs and others increase the size of their operations. Many of the larger establishments are vertically integrated companies, and the largest 2% of farms account for about 40% of the total sow population.

The pig industry is a large user of feed grain, and pig numbers tend to fluctuate with grain prices.

Over the past 10 years, the Australian pork industry has widened its previous domestic focus to include exports. The relatively small scale of Australian pork production (0.4% of world production) precludes competing in the international marketplace on a traditional commodity basis. Instead, the focus has been on the development of specialist niche markets, tailoring the product according to particular consumer specifications and preferences. Singapore and Japan are the major markets, with sustained growth in exports to New Zealand, Korea, and the Philippines.

Table A2.5 Pig production, 2003–05

<table>
<thead>
<tr>
<th>Pig production</th>
<th>2003–04&lt;sup&gt;a&lt;/sup&gt;</th>
<th>2004–05&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total pigs</td>
<td>2 660 000</td>
<td>2 640 000</td>
</tr>
<tr>
<td>Breeding sows&lt;sup&gt;c&lt;/sup&gt;</td>
<td>304 000</td>
<td>n/a</td>
</tr>
<tr>
<td>Slaughterings</td>
<td>5 591 000</td>
<td>5 559 000</td>
</tr>
<tr>
<td>Pig meat production (kilotonnes)</td>
<td>406</td>
<td>405</td>
</tr>
<tr>
<td>Gross value of production ($ million)</td>
<td>854</td>
<td>879</td>
</tr>
<tr>
<td>Volume of pigmeat exports (kilotonnes)</td>
<td>51</td>
<td>51</td>
</tr>
<tr>
<td>Value of pig meat exports ($ million)</td>
<td>181</td>
<td>187</td>
</tr>
</tbody>
</table>

<sup>a</sup> Preliminary figures  
<sup>b</sup> Forecast figures  
<sup>c</sup> Source for 2003 figures only: ABARE 2004, Australian Commodity Statistics 2004, Canberra

Source: ABARE 2004, Australian Commodities Vol 11 (4) December
Poultry

Australian poultry farming is a highly intensive industry, with most poultry raised in large sheds. It includes both broiler (meat-strain chickens) and egg production. The industry has grown over recent years, with production expanding to meet increased demand. Broilers are the largest category, followed by hens and pullets for egg production.

The broiler industry is dominated by two large integrated companies and several medium-sized operators. Most operations are in or within 50 kilometres of capital cities. The main poultry production areas in Australia are:

- New South Wales – Sydney basin, Central Coast, Lower Hunter, Tamworth, Goulburn, Griffith
- Victoria – Gippsland, Mornington Peninsula
- South Australia – McLaren Vale, Murray Bridge, Adelaide Hills, Northern Plains
- Western Australia – north and south of Perth
- Queensland – Beaudesert area, Redland Bay, Far North
- Tasmania – Langford, Tasman Peninsula, Sorell, Southern Midland, Latrobe area.

The egg industry consists of about 1000 commercial producers, supplying about 200 million dozen eggs for the domestic market. A further 26 million dozen eggs are produced by noncommercial, backyard flocks. The average commercial farm runs 10 000 hens. About 95% of eggs are produced under intensive production systems, with the balance from free-range and other systems.

Poultry production statistics are shown in Table A2.6.

Table A2.6 Poultry production, 2003–05

<table>
<thead>
<tr>
<th>Poultry production</th>
<th>2003–04a</th>
<th>2004–05b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poultry slaughterings (million)c</td>
<td>418.3</td>
<td>n/a</td>
</tr>
<tr>
<td>Broilers (million)d</td>
<td>72.9</td>
<td>1.0</td>
</tr>
<tr>
<td>Layer hens and pullets for egg production (million)</td>
<td>12.9</td>
<td>n/a</td>
</tr>
<tr>
<td>Poultry meat production (kilotonnes)</td>
<td>722.0</td>
<td>755.0</td>
</tr>
<tr>
<td>Value of production ($ million)</td>
<td>1246.0</td>
<td>1333.0</td>
</tr>
<tr>
<td>Exports of poultry meat (kilotonnes)</td>
<td>20.0</td>
<td>24.0</td>
</tr>
<tr>
<td>Value of poultry meat exports ($ million)</td>
<td>20.0</td>
<td>27.0</td>
</tr>
</tbody>
</table>

n/a= not available

a Preliminary figures
b Forecast figures
c Includes chickens, other fowls, turkeys and ducks. Australian Commodity Statistics 2004, ABARE, Canberra

Source: ABARE 2004, Australian Commodities Vol 11 (4) December
Bees

Australia has around 9600 registered beekeepers, but most honey is produced by a relatively small number of honey bee businesses. Approximately 62% of total honey production is produced by businesses operating more than 500 hives (around 250 businesses). Only 16% of Australian honey production is produced by businesses with 250 hives or fewer.

Most honey bee operations are small family owned and operated businesses with fewer than 500 hives. Beekeepers depend on a range of income sources in addition to those related to beekeeping. Typically, smaller operations, particularly those with fewer than 250 hives, derive most of their income from other enterprises, other businesses, investment or government-sourced income. Larger operations, those with more than 500 hives, are mainly dependent on the honey bee business as the source of income.

The estimated crop size is 22 000 metric tonnes (see Table A2.7). The annual gross value of production for the whole industry is estimated to be $85 million, of which approximately $70 million is from sales of honey.

Table A2.7 Honey bee production, 2003 and 2004

<table>
<thead>
<tr>
<th>HONEY BEE PRODUCTION</th>
<th>2003</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of beekeepers</td>
<td>9600</td>
<td>9600</td>
</tr>
<tr>
<td>Total hives ('000)</td>
<td>491</td>
<td>491</td>
</tr>
<tr>
<td>Honey ( tonnes)</td>
<td>21,000</td>
<td>17,000</td>
</tr>
</tbody>
</table>

Camels

Australian camels are in high demand because of their disease-free status and the high standards of veterinary and husbandry management applied to them. A recent survey estimated that there are about 150 000 feral camels in central Australia, with about 40% of these in the Northern Territory. Research shows that feral camel numbers double about every eight years. Current projections indicate a demand within a decade for about 20 000 head per year for live export and slaughter. However, to meet these market demands, the harvesting program for feral camels and the transition to domestic camel herds in the Northern Territory need to accelerate. The Northern Territory Government’s Arid Zone Research Institute at Alice Springs is used as a camel depot, and Department of Business, Industry and Resource Development (DBIRD) staff are pursuing ways to further develop the camel industry.

The Central Australian Camel Industry Association, which organises and oversees the export of camels, reports that the live camel export trade in 2004 supplied markets in Southeast Asia and the Middle East.

The domestic demand for camel meat has increased beyond the capacity of Australia’s only camel abattoir, which is in South Australia. Negotiations with the New Zealand Ministry of Agriculture and Forestry to have camels included in the Trans-Tasman Agreement have been successful. However, Australia’s camel processing capacity is a limiting factor in the further development of camel meat export markets. An export abattoir for camels is considered to be important for the future development of the camel industry. The Northern Territory Camel Association and DBIRD have evaluated the economics of having a purpose-designed, modular mini-abattoir in the Northern Territory that would allow various species, including the camel, to be processed for export. It is envisaged that such an abattoir would be capable of supplying higher value niche markets, and would also reduce the high cost of transporting live camels. Meanwhile, a mini-abattoir designed and built in Australia has been constructed in Sabah (Malaysia), and the first shipment of camels to this abattoir is expected in 2005.
Fisheries and aquaculture

Australia has an advanced wild-caught fishery and a popular recreational fishery of both native and introduced species. In 2003–04, the gross value of fisheries and aquaculture products was $2002 million. This figure is a decrease compared to the figure of $2327 million reported for 2002–03, and this is the fourth year of decline in the value of fisheries products from a peak of $2439 million in 2000–01.

The production and value of individual fisheries for 2003–04 and forward estimates for 2004–05 are shown in Table A2.8.

Table A2.8 Fisheries production, 2003–05

<table>
<thead>
<tr>
<th>COMMODITY</th>
<th>VOLUME OF PRODUCTION (KT)</th>
<th>VALUE OF PRODUCTION ($M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuna</td>
<td>15.2</td>
<td>15.0</td>
</tr>
<tr>
<td>Other finfish</td>
<td>111.2</td>
<td>126.7</td>
</tr>
<tr>
<td>Prawns</td>
<td>25.8</td>
<td>24.7</td>
</tr>
<tr>
<td>Rock lobster</td>
<td>19.3</td>
<td>17.9</td>
</tr>
<tr>
<td>Other crustaceans</td>
<td>8.5</td>
<td>8.7</td>
</tr>
<tr>
<td>Abalone</td>
<td>5.2</td>
<td>5.3</td>
</tr>
<tr>
<td>Scallops</td>
<td>8.4</td>
<td>7.0</td>
</tr>
<tr>
<td>Oysters</td>
<td>11.7</td>
<td>11.3</td>
</tr>
<tr>
<td>Pearls</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Other molluscs</td>
<td>8.8</td>
<td>9.0</td>
</tr>
</tbody>
</table>

n/a= not available  a Preliminary figures  b Forecast figures  Source: ABARE 2004, Australian Commodities Vol 11 (4) December

Aquaculture occurs Australia-wide, from tropical to temperate areas and from marine waters through brackish to fresh waters, and includes all major species. The volume of aquaculture production in Australian dropped slightly in 2003–04 to approximately 43 500 tonnes; however, the value of production remained relatively stable at $732 million. Aquaculture’s contribution to fisheries production continues to rise, and aquaculture now generates 30% of combined fisheries and aquaculture production value.

Figures for the production and gross value of aquaculture harvests in 2002–04 (the latest available figures) are shown in Table A2.9.

Table A2.9 Australian aquaculture production, 2002–04

<table>
<thead>
<tr>
<th>COMMODITY</th>
<th>VOLUME OF PRODUCTION (TONNES)</th>
<th>GROSS VALUE OF PRODUCTION ($M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salmon</td>
<td>13 603.0</td>
<td>14 828.0</td>
</tr>
<tr>
<td>Trout</td>
<td>1811.0</td>
<td>1850.0</td>
</tr>
<tr>
<td>Tuna</td>
<td>9102.0</td>
<td>9290.0</td>
</tr>
<tr>
<td>Barramundi</td>
<td>1750.0</td>
<td>1567.0</td>
</tr>
<tr>
<td>Other a</td>
<td>829.0</td>
<td>765.0</td>
</tr>
<tr>
<td>Total</td>
<td>27 095.0</td>
<td>28 301.0</td>
</tr>
<tr>
<td>Crustaceans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prawns</td>
<td>3365.0</td>
<td>3563.0</td>
</tr>
<tr>
<td>Yabbies</td>
<td>121.0</td>
<td>75.0</td>
</tr>
<tr>
<td>Marron</td>
<td>68.0</td>
<td>67.0</td>
</tr>
<tr>
<td>Redclaw</td>
<td>375.0</td>
<td>75.0</td>
</tr>
<tr>
<td>Total</td>
<td>3930.0</td>
<td>3781.0</td>
</tr>
<tr>
<td>Molluscs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edible oysters</td>
<td>1 433.0</td>
<td>7625.0</td>
</tr>
<tr>
<td>Pearl oysters</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Other b</td>
<td>2351.0</td>
<td>2815.0</td>
</tr>
<tr>
<td>Total</td>
<td>13 784.0</td>
<td>10 440.0</td>
</tr>
<tr>
<td>NEI c</td>
<td>1134.0</td>
<td>954.0</td>
</tr>
<tr>
<td>Total (all categories)</td>
<td>45 943.0</td>
<td>43 475.0</td>
</tr>
</tbody>
</table>

a Includes eels and native fish  b Includes mussels, scallops and giant clams  c Includes aquaculture production not included elsewhere

Other livestock industries

Australia has a rapidly growing goat industry that produces angora and cashmere fibres, as well as milk, meat and live goat exports. It also has a small, farmed deer industry of about 1500 farmers, who stock mainly fallow and red deer and produce venison and velvet. There are many other small, developing livestock industries in Australia, including farmed buffalo, ostriches and alpacas.

Trade in wild animals and their products has increased in Australia since the late 1970s, and wild stock are sometimes used to develop new farming enterprises. Although individually small, these industries can be quite important regionally. Kangaroos and wallabies are the main species harvested commercially from the wild, both for skins and for meat. Others include brushtail possums (fur and meat) and chicks of the short-tailed shearwater, often known as muttonbird (for meat, oil and feathers). Two emerging industries, emu and crocodile farming, are not based on harvesting animals from the wild, although wild-caught stock have been used to establish commercial farms.

Meat products

Australia has a highly developed meat industry and is a major producer of meat and meat products. In 2003–04, the value of the Australian meat industry was estimated to be $11.06 billion. Australia is the world’s largest exporter of beef and veal, and the second largest exporter of sheepmeat. In 2003–04, Australian meat exports were estimated to be worth more than $5.0 billion. Selected production statistics are shown in Table A2.10.

Table A2.10 Volume of meat exports, 2001–04

<table>
<thead>
<tr>
<th>Type of meat</th>
<th>2001–02</th>
<th>2002–03</th>
<th>2003–04</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef and veal</td>
<td>902</td>
<td>902</td>
<td>860</td>
</tr>
<tr>
<td>Mutton</td>
<td>166</td>
<td>162</td>
<td>129</td>
</tr>
<tr>
<td>Lamb</td>
<td>118</td>
<td>102</td>
<td>119</td>
</tr>
<tr>
<td>Pork</td>
<td>59</td>
<td>63</td>
<td>51</td>
</tr>
<tr>
<td>Poultry</td>
<td>21</td>
<td>23</td>
<td>20</td>
</tr>
</tbody>
</table>

Australia produces and exports smaller quantities of meat from goats, kangaroos, emus, ostriches, deer, wild boar, possums, crocodiles and camels. It also exports substantial quantities of animal products, such as hides, skins, wool, rendered meals and animal food. Information on Australia’s meat industries can be found online at the websites of the relevant industry associations and other groups (see Appendix 5 for web addresses):

> farming in general – National Farmers’ Federation
> red meat – Meat and Livestock Association
> cattle – Cattle Council of Australia
> sheepmeat – Sheepmeat Council of Australia
> pigs – Australian Pork Limited
> poultry – Poultry Research and Teaching Unit at the University of New England
> deer – Deer Industry Association of Australia
> kangaroo – Kangaroo Industry Association of Australia
> ostrich – Australian Ostrich Association.
Dairy products, seafood and processed foods

Australia is a major producer and exporter of processed foods, including dairy products, seafood, egg products, processed fruits and vegetables and dried fruits. In 2003–04, exports of all processed foods and beverages were estimated at $22.3 billion, with imports of these commodities estimated at $5.9 billion. In 2003–04, Australia processed 10.1 billion litres (worth $2.8 billion) into $8.5 billion worth of dairy products (both domestically and internationally), such as pasteurised/homogenised milk, butter, cheese and other products. Selected dairy production statistics are shown in Table A2.11.

Table A2.11 Dairy production and exports, 2001–04

<table>
<thead>
<tr>
<th>Type of food</th>
<th>TOTAL PRODUCTION (KILOTONNES)</th>
<th>EXPORTS (KILOTONNES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh milk (megalitres)</td>
<td>11 271</td>
<td>10 326</td>
</tr>
<tr>
<td>Cheese</td>
<td>431</td>
<td>368</td>
</tr>
<tr>
<td>Butter and butter fat</td>
<td>178</td>
<td>149</td>
</tr>
<tr>
<td>Milk powder a</td>
<td>500</td>
<td>n/a</td>
</tr>
</tbody>
</table>

*a Includes whealmilk powder, skim milk powder and casein

Source: ABARE, Australian Commodity Statistics 2004, Canberra

Selected seafood production statistics are shown in Table A2.12.

Table A2.12 Seafood production and exports, 2001–04

<table>
<thead>
<tr>
<th>Type of food</th>
<th>TOTAL PRODUCTION (KILOTONNES)</th>
<th>EXPORTS (KILOTONNES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish and other seafood</td>
<td>237</td>
<td>254</td>
</tr>
</tbody>
</table>

Source: ABARE, Australian Commodity Statistics 2004, Canberra

Further information on each of the industries below may be found at the relevant websites (see Appendix 5 for web addresses):

> processed food, drink and grocery industry
> dairy industry
> seafood industry
> egg industry.

Other Australian agricultural statistics and forecasts are available from the Australian Bureau of Agricultural and Resource Economics website.
APPENDIX 3

ANIMAL HEALTH CONTACTS
IN AUSTRALIA

Australian Government Department of Agriculture, Fisheries and Forestry

Australian Chief Veterinary Officer
Dr Gardner Murray
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Executive Director
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APPENDIX 3  ANIMAL HEALTH CONTACTS IN AUSTRALIA

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Australian Pork Limited
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Bus Fax: 61 3 9866 8356
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WoolProducers
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Australian Lot Feeders Association Inc.
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Bus Fax: 61 2 6959 3751
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Australian Racing Board
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Australian Racing Board
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Bus Fax: 61 3 5965 2216
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**APPENDIX 4**

**INVESTIGATIONS OF SUSPECT EXOTIC AND OTHER EMERGENCY DISEASES IN AUSTRALIA, 2004**

<table>
<thead>
<tr>
<th>DISEASE</th>
<th>MONTH</th>
<th>SPECIES</th>
<th>STATE</th>
<th>RESPONSE</th>
<th>FINDING</th>
</tr>
</thead>
<tbody>
<tr>
<td>African horse sickness</td>
<td>Feb</td>
<td>equine</td>
<td>Qld</td>
<td>2</td>
<td>crotalaria poisoning</td>
</tr>
<tr>
<td>Anthrax</td>
<td>Jan</td>
<td>bovine</td>
<td>Vic</td>
<td>1</td>
<td>negative</td>
</tr>
<tr>
<td></td>
<td>Jan</td>
<td>bovine</td>
<td>Vic</td>
<td>1</td>
<td>negative</td>
</tr>
<tr>
<td></td>
<td>Jan</td>
<td>bovine</td>
<td>Vic</td>
<td>1</td>
<td>negative</td>
</tr>
<tr>
<td></td>
<td>Jan</td>
<td>bovine</td>
<td>Vic</td>
<td>2</td>
<td>negative</td>
</tr>
<tr>
<td></td>
<td>Jan</td>
<td>bovine</td>
<td>Vic</td>
<td>5</td>
<td>positive</td>
</tr>
<tr>
<td></td>
<td>Feb</td>
<td>bovine</td>
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### APPENDIX 4 INVESTIGATIONS OF SUSPECT EXOTIC AND OTHER EMERGENCY DISEASES IN AUSTRALIA, 2004

#### Investigations of exotic and other emergency diseases in Australia, 2004 cont.

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<td>listeriosis</td>
</tr>
<tr>
<td>Screw-worm fly</td>
<td>Dec</td>
<td>other</td>
<td>NT</td>
<td>2</td>
<td>negative</td>
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<tr>
<td>Varroa mite <em>(V. destructor)</em></td>
<td>Nov</td>
<td>apian</td>
<td>Qld</td>
<td>3</td>
<td>negative</td>
</tr>
<tr>
<td>Vesicular stomatitis</td>
<td>Apr</td>
<td>equine</td>
<td>Vic</td>
<td>2</td>
<td>feed injury</td>
</tr>
</tbody>
</table>

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*a Key to highest level of response:
1. Field investigation by government officer
2. Investigation by state or territory government veterinary laboratory
3. Specimens sent to the Australian Animal Health Laboratory (or CSIRO Division of Entomology)
4. Specimens sent to reference laboratories overseas
5. Regulatory action taken (quarantine or police)
6. Alert or standby
7. Eradication*
## APPENDIX 5
### KEY AUSTRALIAN ANIMAL HEALTH WEBSITES

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Website</th>
</tr>
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<tbody>
<tr>
<td>Animal Health Australia</td>
<td><a href="http://www.aahc.com.au">http://www.aahc.com.au</a></td>
</tr>
<tr>
<td>AUS-MEAT</td>
<td><a href="http://www.ausmeat.com.au">http://www.ausmeat.com.au</a></td>
</tr>
<tr>
<td>Australian Alpaca Association</td>
<td><a href="http://www.alpaca.asn.au">http://www.alpaca.asn.au</a></td>
</tr>
<tr>
<td>Australian Biosecurity Cooperative Research Centre</td>
<td><a href="http://www.abcrc.org.au">http://www.abcrc.org.au</a></td>
</tr>
<tr>
<td>Australian Capital Territory</td>
<td><a href="http://www.act.gov.au">http://www.act.gov.au</a></td>
</tr>
<tr>
<td>Australian Centre for International Agricultural Research</td>
<td><a href="http://www.aciar.gov.au">http://www.aciar.gov.au</a></td>
</tr>
<tr>
<td>Australian Chicken Meat Federation</td>
<td><a href="http://www.chicken.org.au">http://www.chicken.org.au</a></td>
</tr>
<tr>
<td>Australian Egg Corporation Limited</td>
<td><a href="http://www.aecl.org">http://www.aecl.org</a></td>
</tr>
<tr>
<td>Australian Food and Grocery Council</td>
<td><a href="http://www.afgc.org.au">http://www.afgc.org.au</a></td>
</tr>
<tr>
<td>Australian Government Department of Agriculture, Fisheries and Forestry</td>
<td><a href="http://www.daff.gov.au">http://www.daff.gov.au</a></td>
</tr>
<tr>
<td>Australian Harness Racing Council</td>
<td><a href="http://www.harness.org.au">http://www.harness.org.au</a></td>
</tr>
<tr>
<td>Australian Honey Bee Industry Council</td>
<td><a href="http://www.honeybee.org.au">http://www.honeybee.org.au</a></td>
</tr>
<tr>
<td>Australian Horse Industry Council</td>
<td><a href="http://www.horsecouncil.org.au">http://www.horsecouncil.org.au</a></td>
</tr>
<tr>
<td>Australian Lot Feeders Association</td>
<td><a href="http://www.feedlots.com.au">http://www.feedlots.com.au</a></td>
</tr>
<tr>
<td>Australian Overseas Aid Program, AusAID</td>
<td><a href="http://www.ausaid.gov.au">http://www.ausaid.gov.au</a></td>
</tr>
<tr>
<td>Australian Pesticides and Veterinary Medicines Authority</td>
<td><a href="http://www.apvma.gov.au">http://www.apvma.gov.au</a></td>
</tr>
<tr>
<td>Australian Pork Limited</td>
<td><a href="http://www.australianpork.com.au">http://www.australianpork.com.au</a></td>
</tr>
<tr>
<td>Australian Quarantine and Inspection Service</td>
<td><a href="http://www.aqis.gov.au">http://www.aqis.gov.au</a></td>
</tr>
<tr>
<td>Australian Racing Board</td>
<td><a href="http://www.australian-racing.net.au">http://www.australian-racing.net.au</a></td>
</tr>
<tr>
<td>Australian Seafood Industry Council</td>
<td><a href="http://www.asic.org.au">http://www.asic.org.au</a></td>
</tr>
<tr>
<td>Australian Veterinary Association</td>
<td><a href="http://www.ava.com.au">http://www.ava.com.au</a></td>
</tr>
<tr>
<td>Deer Industry Association of Australia</td>
<td><a href="http://www.diaa.org">http://www.diaa.org</a></td>
</tr>
<tr>
<td>Department of Agriculture Western Australia</td>
<td><a href="http://www.agric.wa.gov.au">http://www.agric.wa.gov.au</a></td>
</tr>
<tr>
<td>Department of Business, Industry and Resource Development (Northern Territory)</td>
<td><a href="http://www.dbird.nt.gov.au">http://www.dbird.nt.gov.au</a></td>
</tr>
<tr>
<td>Department of Primary Industries and Resources, South Australia</td>
<td><a href="http://www.dpi.sa.gov.au">http://www.dpi.sa.gov.au</a></td>
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<tr>
<td>Department of Primary Industries, Victoria</td>
<td><a href="http://www.dpi.vic.gov.au">http://www.dpi.vic.gov.au</a></td>
</tr>
<tr>
<td>Fisheries Research and Development Corporation</td>
<td><a href="http://www.frdc.com.au">http://www.frdc.com.au</a></td>
</tr>
<tr>
<td>Food Standards Australian New Zealand</td>
<td><a href="http://www.foodstandards.gov.au">http://www.foodstandards.gov.au</a></td>
</tr>
<tr>
<td>Kangaroo Industry Association of Australia</td>
<td><a href="http://www.kangaroo-industry.asn.au">http://www.kangaroo-industry.asn.au</a></td>
</tr>
<tr>
<td>Meat and Livestock Australia</td>
<td><a href="http://www.mla.com.au">http://www.mla.com.au</a></td>
</tr>
<tr>
<td>National Farmers’ Federation</td>
<td><a href="http://www.nff.org.au">http://www.nff.org.au</a></td>
</tr>
<tr>
<td>New South Wales Department of Primary Industries</td>
<td><a href="http://www.agric.nsw.gov.au">http://www.agric.nsw.gov.au</a></td>
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<tr>
<td>Queensland Department of Primary Industries and Fisheries</td>
<td><a href="http://www.dpi.qld.gov.au">http://www.dpi.qld.gov.au</a></td>
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<tr>
<td>Rural Industries Research and Development Corporation</td>
<td><a href="http://www.rirdc.gov.au">http://www.rirdc.gov.au</a></td>
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<tr>
<td>SAFEMEAT</td>
<td><a href="http://www.safemeat.org">http://www.safemeat.org</a></td>
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<tr>
<td>Tasmanian Department of Primary Industries, Water and Environment</td>
<td><a href="http://www.dpiwe.tas.gov.au">http://www.dpiwe.tas.gov.au</a></td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
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<td>----------</td>
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</tr>
<tr>
<td>AAHC</td>
<td>Aquatic Animal Health Committee</td>
</tr>
<tr>
<td>AAHL</td>
<td>Australian Animal Health Laboratory</td>
</tr>
<tr>
<td>AAWS</td>
<td>Australian Animal Welfare Strategy</td>
</tr>
<tr>
<td>ABARE</td>
<td>Australian Bureau of Agricultural and Resource Economics</td>
</tr>
<tr>
<td>ABC</td>
<td>assurance based credit</td>
</tr>
<tr>
<td>AB-CRC</td>
<td>Australian Biosecurity Cooperative Research Centre for Emerging Infectious Disease</td>
</tr>
<tr>
<td>ACIAR</td>
<td>Australian Centre for International Agricultural Research</td>
</tr>
<tr>
<td>ADSP</td>
<td>Animal Disease Surveillance Program</td>
</tr>
<tr>
<td>AFH</td>
<td>American foulbrood</td>
</tr>
<tr>
<td>AHA</td>
<td>Animal Health Australia</td>
</tr>
<tr>
<td>AI</td>
<td>avian influenza</td>
</tr>
<tr>
<td>ANQAP</td>
<td>Australian National Quality Assurance Program</td>
</tr>
<tr>
<td>ANZFRMC</td>
<td>Australia New Zealand Food Regulation Ministerial Council</td>
</tr>
<tr>
<td>ANZSDP</td>
<td>Australian and New Zealand Standard Diagnostic Procedure</td>
</tr>
<tr>
<td>APAV</td>
<td>Accreditation Program for Australian Veterinarians</td>
</tr>
<tr>
<td>APEC</td>
<td>Asia-Pacific Economic Cooperation</td>
</tr>
<tr>
<td>APVMA</td>
<td>Australian Pesticides and Veterinary Medicines Authority</td>
</tr>
<tr>
<td>AQIS</td>
<td>Australian Quarantine and Inspection Service</td>
</tr>
<tr>
<td>AQUAPLAN</td>
<td>Australia’s National Strategic Plan for Aquatic Animal Health</td>
</tr>
<tr>
<td>AQUAVETPLAN</td>
<td>Aquatic Animal Diseases Veterinary Emergency Plan</td>
</tr>
<tr>
<td>ASEAN</td>
<td>Association of South East Asian Nations</td>
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<tr>
<td>AusAID</td>
<td>Australian Agency for International Development</td>
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<tr>
<td>AUSVETPLAN</td>
<td>Australian Veterinary Emergency Plan</td>
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<tr>
<td>AVBC Inc</td>
<td>Australasian Veterinary Boards Council Inc</td>
</tr>
<tr>
<td>AVR</td>
<td>Australian Veterinary Reserve</td>
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<tr>
<td>AWHN</td>
<td>Australian Wildlife Health Network</td>
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<tr>
<td>AWWWG</td>
<td>Animal Welfare Working Group</td>
</tr>
<tr>
<td>BA</td>
<td>Biosecurity Australia</td>
</tr>
<tr>
<td>BSE</td>
<td>bovine spongiform encephalopathy</td>
</tr>
<tr>
<td>CAE</td>
<td>caprine arthritis-encephalitis</td>
</tr>
<tr>
<td>CCEAD</td>
<td>Consultative Committee on Emergency Animal Diseases</td>
</tr>
<tr>
<td>CEV</td>
<td>Centre for Equine Virology</td>
</tr>
<tr>
<td>CIS</td>
<td>Chief Inspector of Stock</td>
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<tr>
<td>Codex</td>
<td>Codex Alimentarius Commission</td>
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<tr>
<td>CSIRO</td>
<td>Commonwealth Scientific and Industrial Research Organisation</td>
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<tr>
<td>CVO</td>
<td>chief veterinary officer</td>
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<tr>
<td>DAFF</td>
<td>Department of Agriculture, Fisheries and Forestry (Australian Government)</td>
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<tr>
<td>DBIRD</td>
<td>Department of Business, Industry and Resource Development (Northern Territory)</td>
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<tr>
<td>DoHA</td>
<td>Department of Health and Ageing (Australian Government)</td>
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<tr>
<td>DNA</td>
<td>deoxyribonucleic acid</td>
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<tr>
<td>DPI</td>
<td>Department of Primary Industries</td>
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<td>DPI&amp;F</td>
<td>Department of Primary Industries and Fisheries</td>
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<tr>
<td>EAD</td>
<td>emergency animal disease</td>
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<td>EADRP</td>
<td>Emergency Animal Disease Response Plan</td>
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<tr>
<td>EADP</td>
<td>Emergency Animal Disease Preparedness (program)</td>
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<td>EBL</td>
<td>enzootic bovine leucosis</td>
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<tr>
<td>ECV</td>
<td>European catfish virus</td>
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<td>EHN</td>
<td>epizootic haematopoietic necrosis</td>
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<td>EHV1</td>
<td>equine herpes virus</td>
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<td>ELISA</td>
<td>enzyme-linked immunosorbent assay</td>
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<td>ESV</td>
<td>European sheatfish virus</td>
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<tr>
<td>EU</td>
<td>European Union</td>
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<tr>
<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
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<td>FMD</td>
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<td>FSANZ</td>
<td>Food Standards Australia New Zealand</td>
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<td>GID</td>
<td>grouper iridoviral disease</td>
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<tr>
<td>HACCP</td>
<td>hazard analysis critical control point</td>
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<td>HPAI</td>
<td>highly pathogenic avian influenza</td>
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<tr>
<td>IHHN</td>
<td>infectious hypodermal and haematopoietic necrosis</td>
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<tr>
<td>IRA</td>
<td>import risk analysis</td>
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<tr>
<td>ISO</td>
<td>International Organization for Standardization</td>
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<td>JE</td>
<td>Japanese encephalitis</td>
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<td>JETACAR</td>
<td>Joint Expert Technical Advisory Committee on Antibiotic Resistance</td>
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<td>KHV</td>
<td>koi herpes virus</td>
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<td>LDCC</td>
<td>Local Disease Control Centre</td>
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<td>LGU</td>
<td>local government unit</td>
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<td>MLA</td>
<td>Meat and Livestock Australia</td>
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<td>MSEP</td>
<td>Meat Safety Enhancement Program</td>
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<td>MTM</td>
<td>Malaysia-Thailand-Myanmar</td>
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<td>NAATW</td>
<td>National Aquatic Animal Health Technical Working Group</td>
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<td>NAHIS</td>
<td>National Animal Health Information System</td>
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<td>NAMP</td>
<td>National Arbovirus Monitoring Program</td>
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<td>NAQS</td>
<td>Northern Australian Quarantine Strategy</td>
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<td>NCCAW</td>
<td>National Consultative Committee on Animal Welfare</td>
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<td>ND</td>
<td>Newcastle disease</td>
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<td>NEPSS</td>
<td>National Enteric Pathogen Surveillance Scheme</td>
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<td>NGSP</td>
<td>National Granuloma Submission Program</td>
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<td>NLIS</td>
<td>National Livestock Identification System</td>
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<tr>
<td>NNDSS</td>
<td>National Notifiable Diseases Surveillance System</td>
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<td>NRS</td>
<td>National Residue Survey</td>
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<tr>
<td>NSW</td>
<td>New South Wales</td>
</tr>
<tr>
<td>NT</td>
<td>Northern Territory</td>
</tr>
<tr>
<td>NTSESP</td>
<td>National Transmissible Spongiform Encephalopathy Surveillance Program</td>
</tr>
<tr>
<td>OIE</td>
<td>World Organisation for Animal Health (formerly Office International des Epizooties)</td>
</tr>
<tr>
<td>OWSSF</td>
<td>Old World screw-worm fly</td>
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<tr>
<td>PCR</td>
<td>polymerase chain reaction</td>
</tr>
<tr>
<td>PIC</td>
<td>property identification code</td>
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<td>PIHC</td>
<td>Primary Industries Health Committee</td>
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<tr>
<td>PIMC</td>
<td>Primary Industries Ministerial Council</td>
</tr>
<tr>
<td>PIRSA</td>
<td>Department of Primary Industries and Resources, South Australia</td>
</tr>
<tr>
<td>PISC</td>
<td>Primary Industries Standing Committee</td>
</tr>
<tr>
<td>PNG</td>
<td>Papua New Guinea</td>
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<tr>
<td>Qld</td>
<td>Queensland</td>
</tr>
<tr>
<td>RCU</td>
<td>regional coordination unit</td>
</tr>
<tr>
<td>RNA</td>
<td>ribonucleic acid</td>
</tr>
<tr>
<td>RRT</td>
<td>Rapid Response Team</td>
</tr>
<tr>
<td>RSPCA</td>
<td>Royal Society for the Prevention of Cruelty to Animals</td>
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<tr>
<td>SA</td>
<td>South Australia</td>
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<tr>
<td>SCAHLS</td>
<td>Sub-committee on Animal Health Laboratory Standards</td>
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<tr>
<td>SDCHQ</td>
<td>State Disease Control Headquarters</td>
</tr>
<tr>
<td>SEAFMD</td>
<td>Southeast Asia Foot-and-Mouth Disease Campaign</td>
</tr>
<tr>
<td>SHB</td>
<td>small hive beetle</td>
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<tr>
<td>SIT</td>
<td>sterile insect technology</td>
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<tr>
<td>SOP</td>
<td>standard operating procedure</td>
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<tr>
<td>SPAC</td>
<td>Agreement on the Application of Sanitary and Phytosanitary Measures (of the WTO)</td>
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<tr>
<td>SWF</td>
<td>screw-worm fly</td>
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<tr>
<td>Tas</td>
<td>Tasmania</td>
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<td>TB</td>
<td>tuberculosis</td>
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<td>TFAF</td>
<td>Tuberculosis Freedom Assurance Program</td>
</tr>
<tr>
<td>TPP</td>
<td>third party provider</td>
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<tr>
<td>TSE</td>
<td>transmissible spongiform encephalopathy</td>
</tr>
<tr>
<td>TSEFAP</td>
<td>Transmissible Spongiform Encephalopathies Freedom Assurance Program</td>
</tr>
<tr>
<td>VER</td>
<td>viral encephalopathy and retinopathy</td>
</tr>
<tr>
<td>Vic</td>
<td>Victoria</td>
</tr>
<tr>
<td>WA</td>
<td>Western Australia</td>
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<tr>
<td>WEDPP</td>
<td>Wildlife and Exotic Diseases Preparedness Program</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization of the United Nations</td>
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<td>WTO</td>
<td>World Trade Organization</td>
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Feedback

Feedback, comments and suggestions regarding the Animal Health in Australia 2004 report are welcomed. Please forward all correspondence to the Manager, Communications and Member Services - Animal Health Australia via email at aahc@aahc.com.au or visit our website at http://www.aahc.com.au

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