ANIMAL HEALTH IN AUSTRALIA

Annual Report 2023

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Please find a digital copy of the *Animal Health in Australia Annual Report 2023*, as well as previous editions, at www.animalhealthaustralia.com.au/ahia.

About this publication

The *Animal Health in Australia Annual Report* covers animal health and related matters that have occurred during the year, including relevant new policies and projects, disease incidents and status, and research activities.

Chapter 1 outlines key achievements, while Chapter 2 highlights the current status of Australia's terrestrial animal health and Chapter 3 the current status of Australia's aquatic animal health.

The report is produced by Animal Health Australia and receives input and review from staff at the Australian Government Department of Agriculture, Fisheries and Forestry, including through the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES). Input is also received from the state and territory governments, Australia's livestock industries and Wildlife Health Australia.

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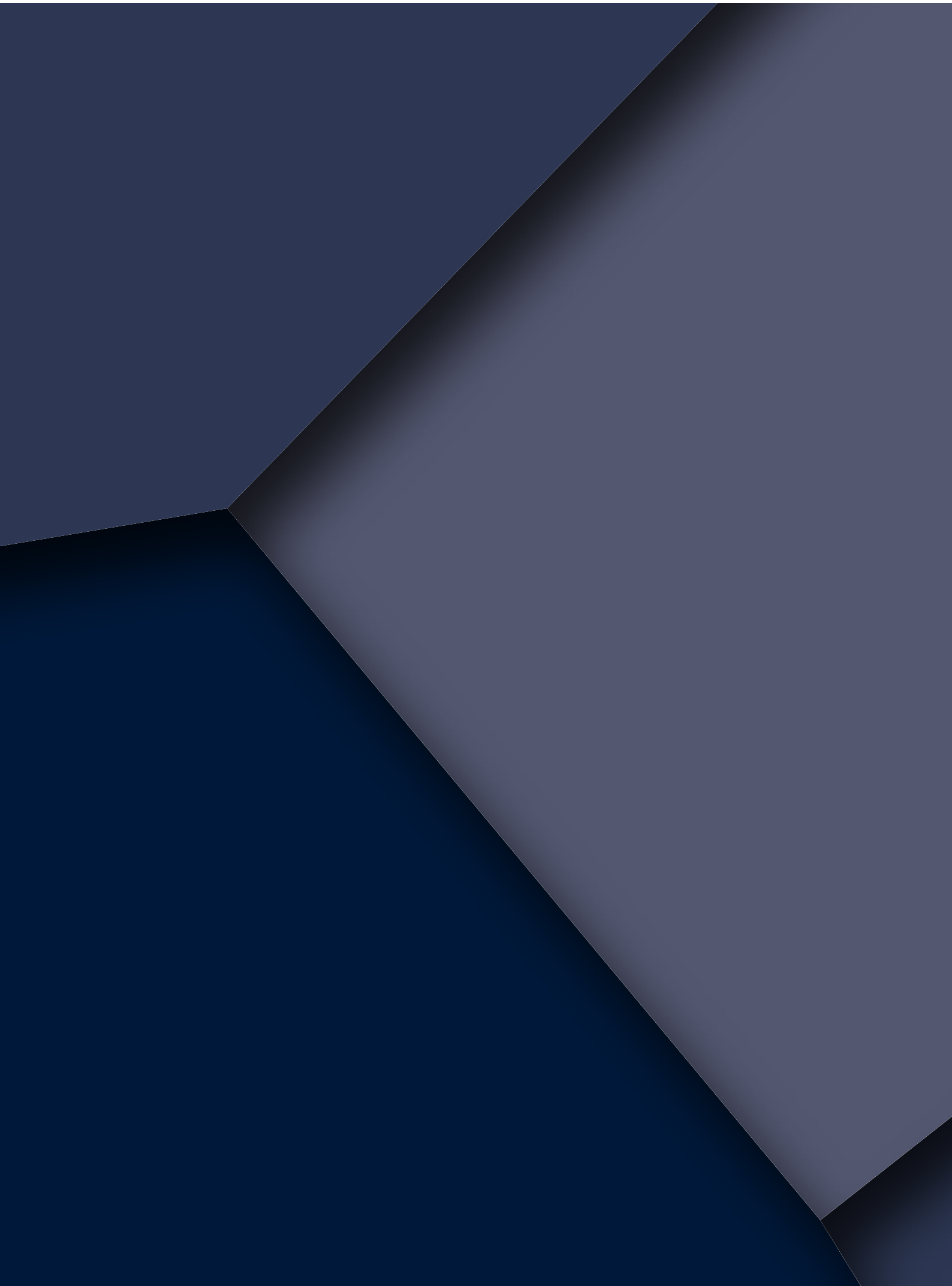


Foreword

I am delighted to have been appointed as the Australian Chief Veterinary Officer (ACVO) in late 2023. My appointment marks the first time Australia has had a female ACVO, as well as the first time an ACVO has been based in a regional location. This gives me the opportunity to maintain my strategic focus on animal health in northern Australia and the Asia-Pacific region from my home base in Cairns in Far North Queensland. I would like to acknowledge the valuable contributions made by my predecessor, Dr Mark Schipp, during his 30-year tenure with the Department of Agriculture, Fisheries and Forestry.

As ACVO, my priorities are to maintain and improve Australia's animal health status and the systems that support it, to protect the prosperity of our agricultural industries and communities, and to support Australia's international trade and market access. Working collaboratively to achieve this – with strong partnerships across Australia and internationally – remains a critical focus. I am also the Australian Delegate to the World Organisation for Animal Health, ensuring that we meet our international reporting obligations, as well as contributing to standard setting that supports the safe trade for animals and animal products.

Welcome to the 2023 edition of the *Animal Health in Australia Annual Report*. This report provides an overview of key animal health initiatives and developments in 2023, including relevant achievements and disease incidents. It complements the *Animal Health in Australia System Report* which details our animal health systems and the governance, surveillance, emergency management and animal welfare arrangements that support Australia's unique animal health status.

The animal health and biosecurity landscape continued to develop in 2023, with diseases like rabies, foot and mouth disease, and lumpy skin disease spreading and establishing within the Asia-Pacific region, outside of Australia. High pathogenicity avian influenza continued to affect poultry, wild birds and wild mammals overseas. In the face of the evolving biosecurity risk environment, we continue to remain vigilant and adapt our systems to maintain our reputation as an exporter of high-quality agricultural products.

Supporting our neighbouring countries in their animal disease control also reduces biosecurity risks to our shores. Australia is working with Pacific and northern neighbours to help increase their disease surveillance and response capacities.

Simulation exercises such as Exercise Waterhole and Exercise Flywheel have helped identify and further strengthen our system's capabilities to prevent and respond to emergency animal diseases.

Australian Chief Veterinary Officer Dr Beth Cookson

Implementation of the *National Lumpy Skin Disease Action Plan* is improving our preparedness for a potential incursion of lumpy skin disease.

Another key pillar of strength in our biosecurity system is the CSIRO Australian Centre for Disease Preparedness (ACDP), Australia's national reference laboratory for notifiable animal diseases, including those which may affect wildlife. ACDP provides Australia's highest level of biocontainment within a purpose-built biosecurity infrastructure. The centre conducts thousands of tests each year to support Australia's animal health status. My thanks to ACDP for its work, and a special congratulations to former Director Professor Trevor Drew on his retirement.

In 2023, Wildlife Health Australia established a World Organisation for Animal Health Collaborating Centre for Wildlife Health Risk Management for Australia and the Pacific, to enhance pandemic prevention and One Health initiatives and engagement within the region. Funding to support this was provided through the One Health Surveillance Initiative that was established by the Australian Government in 2022 to better protect wildlife and strengthen the capacity of Australia's biosecurity system to identify and mitigate risks to human, animal and environmental health.

Australia is committed to modern, sustainable, and evidence-based welfare practice. To support this, the Australian Government has committed $5 million over four years to renew the *Australian Animal Welfare Strategy*. The strategy will provide a contemporary framework for ensuring animal welfare in Australia.

This year, the New South Wales response to the *Varroa destructor* outbreak moved from eradication to transition to management. I would like to acknowledge that this difficult decision reflects the tireless work of many individuals over 15 months in the face of a pest that is incredibly difficult to control.

Antimicrobial resistance is a major global public health threat and notably, *Australia's Animal Sector Antimicrobial Resistance Action Plan 2023 to 2028* was published in 2023. The plan provides Australia's animal health and animal industry sectors with agreed priority activities for the terrestrial and aquatic animal sectors to implement. Australia is committed to minimising the development and spread of antimicrobial resistance and ensuring the continued availability of effective antimicrobials.

This report reflects the concerted and collaborative effort across government and non-government sectors to maintain Australia's robust biosecurity system and ensure the future profitability and sustainability of Australian agriculture.

Dr Beth Cookson
Australian Chief Veterinary Officer

Key achievements

This section outlines the key achievements relating to Australia's animal health systems and reflects the dedication of all those involved in maintaining Australia's unique animal health status.

National exercises and emergency preparedness

Exercise Waterhole

The preparedness of Australia's national animal health laboratory network for outbreaks of emergency animal diseases was put to the test across the country during Exercise Waterhole. It was a series of workshops and simulation exercises held from September to November 2023 that was designed to evaluate national animal health laboratory preparedness for high-impact disease outbreaks, focussing on lumpy skin disease and high pathogenicity avian influenza (HPAI).

All eight official laboratories, including the CSIRO Australian Centre for Disease Preparedness (ACDP), as well as the Department of Agriculture, Fisheries and Forestry, participated in both desktop and laboratory-based activities, which culminated in a three-day response simulation, involving two concurrent disease outbreaks across the country.

Over 100 staff took part in this final activity which provided an exceptional opportunity to challenge and improve laboratory work and reporting processes. The final report from this exercise is being prepared for release in 2024, and some identified lessons are already being addressed to improve laboratory preparedness around the country.

Read about Exercise Waterhole:
agriculture.gov.au/biosecurity-trade/policy/emergency/exercises/exercise-waterhole

Exercise Paratus

In 2023, the Department of Agriculture, Fisheries and Forestry continued the delivery of Exercise Paratus, which is a multi-year program that aims to enhance Australia's capability to respond to current and emerging biosecurity threats. Nine activities have now been completed.

The most recent activity was delivered in June 2023, when a foot and mouth disease scenario was used to validate the department's response protocols and Crisis Communications Response Guide. This response guide was developed following a recommendation by the Joint Interagency Taskforce: Exotic Animal Disease Preparedness.

The department has undertaken a midpoint review of Exercise Paratus to assess the outcomes of

the activities delivered to date. The review has identified a number of lessons that will inform the next phase of the exercise, together with relevant recommendations from the *Joint Interagency Taskforce: Exotic Animal Disease Preparedness Report* (see page 13). The final phase of the Exercise Paratus series will explore strategic planning and consequence management for a severe to catastrophic incident.

Read the *Joint Interagency Taskforce: Exotic Animal Disease Preparedness Report*:
agriculture.gov.au/biosecurity-trade/policy/emergency/exotic-animal-disease-preparedness-report

Read about Exercise Paratus:
woah.org/en/simulation-exercise/simulation-program-exercise-paratus-in-australia

Engaging private veterinarians in an emergency animal disease response

Several task groups from the Animal Health Committee and the Subcommittee for Emergency Animal Diseases are leading work on the *National Lumpy Skin Disease Action Plan* activities and the Joint Interagency Taskforce: Exotic Animal Disease Preparedness recommendations (see page 11 for an update on the *National Lumpy Skin Disease Action Plan*).

One of these groups, the National Framework for the Engagement of Private Veterinary Practitioners Task Group, completed a review of the National Guidance Document on the Engagement of Private Veterinarians During an Emergency Animal Disease Response in June 2023. The task group is now developing a national communications and engagement framework to strengthen veterinarians' support and participation, and access to training so they are better prepared for working in an emergency animal disease response in Australia. The task group will also explore the feasibility of addressing training needs of private veterinarians at a national level.

Read the National Guidance Document on the Engagement of Private Veterinarians During an Emergency Animal Disease Response:
agriculture.gov.au/agriculture-land/animal/health/engagement-of-private-veterinarians/national-guidance-document

Fourth 5-year review of the *Emergency Animal Disease Response Agreement*

The *Emergency Animal Disease Response Agreement* (EADRA), also referred to as the Government and Livestock Industry Cost Sharing Deed in Respect of Emergency Animal Disease Responses, is a key element in Australia's contingency planning to prepare and respond to an emergency animal disease incident. It commits signatories to actions that mitigate the risks of an emergency animal disease and provides a pre-agreed framework to share the costs associated with the approved emergency animal disease response.

Clause 3.2 of the EADRA stipulates that its terms will be reviewed every five years by the parties in light of experience of its operation. Since the EADRA started in 2002, reviews have been conducted in 2007, 2012 and 2017.

The fourth 5-year review commenced in 2022 with a comprehensive stakeholder consultation process. Throughout 2023, Animal Health Australia (AHA), led representatives of government and industry signatories to the EADRA, in discussions on the stakeholder feedback at monthly meetings of the review working group. To facilitate further discussion and consultation, AHA also held two face-to-face workshops in March and September 2023. A work plan to action the recommendations from the review will be presented to all signatories in March 2024 so that the EADRA is kept current and fit for purpose.

Read the *Emergency Animal Disease Response Agreement*:
animalhealthaustralia.com.au/wp-content/uploads/2024/04/EADRA.pdf

Joint National Japanese Encephalitis Virus Outbreak Response Plan

Australia experienced an outbreak of Japanese encephalitis virus (JEV) in domestic pigs in 2022, with detections in over 80 piggeries across New South Wales, Queensland, South Australia and Victoria. The last confirmed case in a piggery was reported in November 2022. The *Joint National Japanese Encephalitis Virus Outbreak Response Plan* (JEV Outbreak Plan) was finalised in June 2023. It provides guidance to support nationally cooperative response arrangements between the animal and human health sectors for jurisdictions managing JEV.

The JEV Outbreak Plan is a collaborative effort of the Department of Health and Aged Care and the Department of Agriculture, Fisheries and Forestry and is the first Australian response plan for JEV. It was drafted during the initial outbreak phase in 2022 and updated iteratively as the national response mechanisms and activities advanced. The final version was endorsed by the Australian Health Protection Principal Committee and the Animal Health Committee in April 2023.

Read the *Joint National Japanese Encephalitis Virus Outbreak Response Plan*:
health.gov.au/resources/publications/joint-national-japanese-encephalitis-virus-outbreak-response-plan

Emergency Animal Disease Training and the National Biosecurity Response Team

AHA leads two key programs aimed at improving emergency preparedness capability and capacity: Emergency Animal Disease Training and the National Biosecurity Response Team (NBRT). Both of these make a significant contribution to Australia's emergency animal disease and biosecurity emergency preparedness.

In 2023, the Emergency Animal Disease Training program delivered a webinar and several workshops in Alice Springs and Darwin to raise awareness of emergency animal diseases that could impact the northern Australia livestock industry. AHA coordinated Incident Controller training for 13 nominees through the National Animal Health Training Reference Group. It also delivered role-based training to 86 government and industry representatives of the Consultative Committee on Emergency Animal Diseases and National Emergency Animal Disease Management Group as well as for Liaison-Livestock Industry officers.

The NBRT program provided resource development, communication and engagement, and professional development activities to a cohort of 63 government personnel who may be deployed to respond to biosecurity incidents across Australia. In 2023, members had access to planning and leadership workshops, collaborated on response planning tools, attended national emergency management conferences, and were deployed to respond to a range of incidents including *Varroa destructor* (varroa mite) and white spot disease outbreaks in New South Wales. Further details on the varroa mite and white spot disease outbreaks can be found on pages 29 and 52 respectively.

Read about the NBRT:
animalhealthaustralia.com.au/national-biosecurity-response-team-program

NBRT Leadership and Consequence Management Workshop, July 2023

European Commission for the Control of Foot-and-Mouth Disease virtual training course

In August 2023, the European Commission for the Control of Foot-and-Mouth Disease delivered a training course to 40 government veterinarians on emergency animal disease preparedness in Australia. This course covered foot and mouth disease, lumpy skin disease, and sheep and goat pox. Key topics for each disease included recognising clinical signs, collecting diagnostic samples, vaccinating animals, and investigating outbreaks in the field.

Since 2012, more than 300 veterinarians, government officers and industry personnel have completed this or similar training. Together they form part of a cohort of Australians whom are ready to respond to an emergency animal disease incursion. The virtual training course will be offered again in 2024.

High pathogenicity avian influenza preparedness

Since 2021, a strain of HPAI called HPAI H5N1 clade 2.3.4.4b has caused significant deaths of poultry and wild birds overseas. In 2023, the Australian Government coordinated multiple government and non-government organisations to improve awareness and preparedness for a potential incursion of HPAI. This work is ongoing and includes:

- working with state and territory governments to clarify appropriate governance and coordination mechanisms for a cross-sectoral emergency response (in the context of existing arrangements for both the animal health and environmental biosecurity sectors)
- considering potential impacts of HPAI on Australia's unique fauna, and any additional preparedness and response arrangements that might be warranted focusing on areas of responsibility such as government-managed or jointly managed areas
- working with poultry industries to advise them of the risk and improve preparedness
- supporting Wildlife Health Australia to deliver awareness materials and risk management guidance relevant to wildlife managers and increase surveillance in shorebirds
- ensuring awareness within the public health sector by briefing key public health committees
- using existing bilateral relationships to learn from the experiences of countries that have experienced outbreaks of HPAI H5N1 clade 2.3.4.4b.

The National Avian Influenza Wild Bird Surveillance Program (see page 38) continued national surveillance for all avian influenza viruses. The *Australian Veterinary Emergency Plan (AUSVETPLAN) Response strategy: Avian influenza* sets out the nationally agreed approach to avian influenza outbreaks in Australia. As described earlier, the EADRA sets out how industry and governments manage costs and responsibilities for emergency responses to animal disease outbreaks, including avian influenza.

The Australian Government continues to closely monitor this dynamic situation. It understands that ongoing preparedness and vigilance remain vital, and will continue to support preparedness activities, and communicate and collaborate with stakeholders.

Read about the National Avian Influenza Wild Bird Surveillance Program:
wildlifehealthaustralia.com.au/Our-Work/Surveillance/Wild-Bird-Surveillance

Read the *AUSVETPLAN Response strategy: Avian influenza*:
animalhealthaustralia.com.au/avian-influenza-ausvetplan

Read the Wildlife Health Australia HPAI information and resources:
wildlifehealthaustralia.com.au/Incidents/Incident-Information/high-pathogenicity-avian-influenza-information

Risk assessment of high pathogenicity avian influenza in wild birds

In December 2023, Wildlife Health Australia published an expert assessment of the level of risk from HPAI to Australia associated with wild birds. This risk assessment was commissioned by the Department of Agriculture, Fisheries and Forestry. It concluded that the overall risk of an HPAI H5N1 clade 2.3.4.4b incursion into Australia via wild birds with establishment in wild birds is high with moderate uncertainty. The overall risk to poultry was assessed as moderate to high with moderate uncertainty and the overall risk to wild mammals was assessed as low with high uncertainty. Compared to previous assessments, the risk has changed based on a moderate increase in the likelihood of entry and exposure of HPAI with a significant increase in the projected consequence of HPAI incursions, due to the expected scale of impacts on wild bird populations. As further knowledge gaps and uncertainties are addressed, sections of the risk assessment will be revised.

Read the High Pathogenicity Avian Influenza Clade 2.3.4.4b Incursion Risk Assessment for Australia: **wildlifehealthaustralia.com.au/Portals/0/ResourceCentre/BiosecurityMgmt/HPAI_incursion_risk_assessment_Australia.pdf**

Lumpy skin disease preparedness

In June 2023, the Department of Agriculture, Fisheries and Forestry entered a contractual arrangement with a vaccine supplier (MSD Australia) for 300 000 doses of lumpy skin disease vaccine for Australia and our near neighbours, Timor-Leste and Papua New Guinea, if needed. This arrangement extends for four years. The vaccine will be held in a secure facility overseas.

In response to live cattle export trade restrictions in mid-2023, and after collaborative efforts from government, industry and AHA, the Department of Agriculture, Fisheries and Forestry published a dossier providing evidence to support Australia's freedom from lumpy skin disease. Australia remains free from lumpy skin disease in accordance with the World Organisation for Animal Health (WOAH) standards. After this publication and technical discussions with international authorities, trade restrictions for live cattle were lifted. The department continues to engage with stakeholders to provide the necessary assurances to our trading partners on our animal health status. An article on supplementary surveillance for lumpy skin disease that was conducted in response to the trade restrictions was published in *Animal Health Surveillance Quarterly*. Australia's ongoing freedom from the disease, as well as other pests and diseases, emphasises the success of Australia's robust biosecurity systems that underpin agriculture trade.

Read the dossier on Australia's freedom from lumpy skin disease: **agriculture.gov.au/biosecurity-trade/pests-diseases-weeds/animal/lumpy-skin-disease/australias-freedom-from-lsd**

National animal health initiatives

Animal Sector Antimicrobial Resistance Action Plan 2023 to 2028

Australia's Animal Sector Antimicrobial Resistance Action Plan 2023 to 2028 was launched in October 2023. It aligns with the seven objectives of *Australia's National Antimicrobial Resistance Strategy – 2020 and Beyond* and the priority activities of the *One Health Master Action Plan*. The plan was developed following consultation with government and non-government animal health stakeholders. It provides agreed priority activities for the terrestrial and aquatic animal sectors to implement *Australia's National Antimicrobial Resistance Strategy – 2020 and Beyond*. The activities identified are intended to be completed over the five-year time frame of *Australia's Animal Sector Antimicrobial Resistance Action Plan 2023 to 2028*, after which a new five-year action plan will be developed with stakeholders.

Read *Australia's Animal Sector Antimicrobial Resistance Action Plan 2023 to 2028*: **agriculture.gov.au/agriculture-land/animal/health/amr/animal-sector-plan**

Read *Australia's National Antimicrobial Resistance Strategy – 2020 and Beyond*: **amr.gov.au/resources/australias-national-antimicrobial-resistance-strategy-2020-and-beyond**

Read the *One Health Master Action Plan*: **amr.gov.au/resources/one-health-master-action-plan-australias-national-antimicrobial-resistance-strategy-2020-and-beyond**

World Organisation for Animal Health Collaborating Centre for Wildlife Health Risk Management

Wildlife Health Australia achieved official designation from WOAH as a Collaborating Centre for Wildlife Health Risk Management. This centre is based in Australia, and will ensure wildlife health is integrated into One Health decision-making across the Indo-Pacific region to benefit public health, biosecurity, animal health, food security and biodiversity.

Supported with funding from the Department of Agriculture, Fisheries and Forestry's One Health

Surveillance Initiative, the centre will work closely with stakeholders in Australia and the Indo-Pacific region. It will promote wildlife health and build capacities to better understand and address drivers of emerging health risks at their source in animals.

Read more about the WOAH Collaborating Centre for Wildlife Health Risk Management: **wildlifehealthaustralia.com.au/Our-Work/International-One-Health**

Read more about the One Health Investigation Fund: **wildlifehealthaustralia.com.au/Incidents/Disease-Investigation-Funding**

AQUAPLAN 2022–2027

AQUAPLAN 2022–2027 is Australia's fourth national strategic plan for aquatic animal health. It provides a shared vision for governments and aquatic animal industry bodies to prioritise investment for strengthening Australia's aquatic animal health management system. This will contribute to industry productivity and profitability, and the ongoing management of aquatic animal health and environments. *AQUAPLAN 2022–2027* has seven objectives which address border biosecurity and trade, enterprise biosecurity, surveillance, diagnostic capability, emergency preparedness, veterinary medicines, and research and innovation. The plan identifies specific activities that will contribute to achieving each objective. Implementation of *AQUAPLAN 2022–2027* is well underway, with more than half of the plan's 28 activities in progress. A national priority disease list for aquatic animal diseases (activity 5.1) has been compiled, and practical disease investigation guidelines for new and emerging diseases (activity 5.5) are also complete. Progress against the plan is reported biannually on the *AQUAPLAN 2022–2027* website.

Read *AQUAPLAN 2022–2027*: **agriculture.gov.au/agriculture-land/animal/aquatic/aquaplan**

Animalplan 2022 to 2027

Animalplan 2022 to 2027 is Australia's first national action plan for production animal health, consolidating themes from over 30 existing strategies, action plans and frameworks, including both the *National Biosecurity Strategy* and the *Commonwealth Biosecurity 2030* roadmap. In September 2022, *Animalplan 2022 to 2027* was endorsed by the Minister for Agriculture, Fisheries and Forestry, and state and territory agriculture ministers.

Quarterly progress reports on the implementation of *Animalplan 2022 to 2027* are available on the Department of Agriculture, Fisheries and Forestry's website, and as at December 2023, 50 individual projects were identified as aligning with the plan. Government, industry and non-government organisations are working together to implement projects that deliver the objectives outlined in *Animalplan 2022 to 2027*.

Read *Animalplan 2022 to 2027* and the progress reports: **agriculture.gov.au/agriculture-land/animal/health/animal-plan**

National Lumpy Skin Disease Action Plan

In October 2022, the Minister for Agriculture, Fisheries and Forestry released the *National Lumpy Skin Disease Action Plan*. The plan sets out national priorities for actions to strengthen Australia's lumpy skin disease biosecurity preparedness and provide assistance to our near neighbours. It includes eight objectives and 27 activities to ensure Australia is prepared for a potential incursion of the disease.

Significant progress has been made on implementing the plan throughout 2023. Three activities have been completed and all activities are underway. A project focusing on risk-mapping the likelihood of entry of lumpy skin disease was completed (see page 12). A comprehensive communication plan was also developed to raise

awareness and understanding of lumpy skin disease and its risks.

Representatives from government, peak industry bodies and AHA share responsibility for delivering the plan and have been working together to progress the activities. Quarterly progress reports are available on the Department of Agriculture, Fisheries and Forestry's website.

Read the *National Lumpy Skin Disease Action Plan* and the progress reports:
agriculture.gov.au/biosecurity-trade/pests-diseases-weeds/animal/lumpy-skin-disease/national-action-plan

Improving our understanding of the risk of a lumpy skin disease incursion

To better understand the risk of lumpy skin disease to Australia, and to help guide our preparedness efforts, the Department of Agriculture, Fisheries and Forestry commissioned epidemiological modelling of the potential for lumpy skin disease incursions under a hypothetical scenario where the disease has spread and is endemic throughout South-East Asia, Timor-Leste and Papua New Guinea. This was released in March 2023.

The modelling evaluated four higher risk unregulated pathways for the entry of lumpy skin disease into Australia – windborne dispersal of insect vectors, the transport of hitchhiker insect vectors via commercial vessels, returning live export vessels carrying vector species, and Torres Strait Treaty movements carrying vector species. The results showed that the probability of introduction of lumpy skin disease is likely to be lower than previously estimated, with the risk of animals becoming infected subject to uncertainty based on the number of infectious vectors required to transmit the disease. Further research is needed to better understand the number of infectious vectors that are required to transmit an infective dose of lumpy skin disease virus as this proved to be a very sensitive parameter affecting the outcomes of this risk assessment. In this model, windborne dispersal of infectious vectors was shown to be the most likely pathway. This has helped us understand how an incursion might occur and to develop appropriate response plans and research to mitigate the risk should lumpy skin disease arrive in Australia.

Read the *Quantitative Risk Assessment for the Introduction of Lumpy Skin Disease Virus into Australia via Non-regulated Pathways – Final Report*:
agriculture.gov.au/biosecurity-trade/pests-diseases-weeds/animal/lumpy-skin-disease/govt-action/improving-understanding-lsd-incursions-non-regulated-pathways

AUSVETPLAN response strategies and other manuals

In 2023, AHA, in partnership with its government and industry members and stakeholders, continued to manage the maintenance of, and lead the updating of the AUSVETPLAN suite of manuals.

The *AUSVETPLAN Response strategy: Avian influenza* update in early 2023 included lessons from the 2020 avian influenza outbreak in Victoria and updates subsequent to changes to the WOAH *Terrestrial Animal Health Code*. Given the global

spread of HPAI H5N1 clade 2.3.4.4b, a full review of the *AUSVETPLAN Response strategy: Avian influenza* was initiated. This is expected to be completed in 2024.

The update to the *AUSVETPLAN Response strategy: Foot-and-mouth disease* included amendments to the approach to managing livestock in transit when a national livestock standstill is declared, and movement controls for semen, embryos and raw milk. The raw milk movement controls were subsequently tested through a small desktop exercise, Exercise Milky Way, which confirmed that the raw milk movement controls are fit for purpose when used in conjunction with jurisdictional legislation. Final approval processes for the manual commenced in late 2023.

The *AUSVETPLAN Response strategy: Lumpy skin disease* update was informed by a discussion exercise held in 2022, which explored movement controls for live animals, use of susceptible animal-free buffers, emergency vaccination and vector management to enable control and/or eradication of the disease.

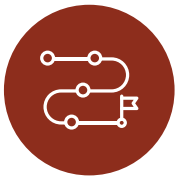
An AUSVETPLAN writing group completed their work on the review of the *AUSVETPLAN Response strategy: Bluetongue* and the manual is being progressed through the approval processes, with publication expected in 2024.

An updated version of the AUSVETPLAN Overview was published in 2023. It details the vision, scope, principles, purpose, structure, development and approvals process for AUSVETPLAN manuals. It also sets out the expectations of AHA's members and how to use AUSVETPLAN in an emergency animal disease response.

Two AUSVETPLAN operational manuals were updated and published in 2023: *Valuation and compensation* and the *Wild animal response strategy*. An updated version of the *AUSVETPLAN Guidance document: Declared areas and allocation of premises classifications in an emergency animal disease response* was also published in 2023 following extensive consultation and revision with AHA stakeholders.

Work continued throughout 2023 on updating a further three manuals: the *AUSVETPLAN Operational manual: Decontamination*, the *AUSVETPLAN Management manual: Laboratory preparedness* and the *AUSVETPLAN Enterprise manual: Wool industry*. A new review of the *AUSVETPLAN Operational manual: Destruction of animals* also commenced.

Read AUSVETPLAN response strategies and other documents:
animalhealthaustralia.com.au/ausvetplan



Implementing recommendations of the *Joint Interagency Taskforce: Exotic Animal Disease Preparedness Report*

In August 2022, the Minister for Agriculture, Fisheries and Forestry announced the establishment of a Joint Interagency Taskforce: Exotic Animal Disease Preparedness to review Australia's preparedness for exotic animal diseases. The taskforce made 14 recommendations to build upon the existing structures, expertise and plans of Australia's already strong national biosecurity system.

The Department of Agriculture, Fisheries and Forestry has developed an implementation roadmap to consider preparedness activities across the national biosecurity system and ensure that the implementation of taskforce recommendations supports ongoing initiatives and does not duplicate effort. Quarterly updates on the implementation of the recommendations are published on the Department of Agriculture, Fisheries and Forestry's website.

Read the *Joint Interagency Taskforce: Exotic Animal Disease Preparedness Report* and the progress reports:
agriculture.gov.au/biosecurity-trade/policy/emergency/exotic-animal-disease-preparedness-report

Animal welfare

Australian Animal Welfare Strategy

The Australian Government has committed $5 million over four years commencing from 2023, to the renewal of the *Australian Animal Welfare Strategy* (AAWS). The renewed strategy will provide a contemporary framework for ensuring animal welfare in Australia. The strategy will cement a national approach to animal welfare and signal to our international trading partners and Australian consumers that animal welfare is a priority for our nation. It will also confirm Australia's commitment to a modern, sustainable, and science-based approach to animal welfare.

The renewed AAWS will provide a vision for the welfare of all animals and provide a national framework to bring key stakeholders together on animal welfare issues of national significance. The AAWS will provide a forward direction for animal welfare in Australia to address community and international expectations. Demonstrating Australia's strong animal welfare standards will support increased access to overseas markets, while strengthening the reputation of our animal and agricultural industries with trading partners.

A consideration of modern challenges, opportunities, science and evidence is being used to inform the renewal as well as key lessons and successes from the previous AAWS.

Australian Animal Welfare Standards and Guidelines for Poultry

The *Australian Animal Welfare Standards and Guidelines for Poultry* were endorsed in July 2023 by agriculture ministers from all states and territories, and the Australian Government. The poultry standards are the culmination of an extensive stakeholder consultation process and are underpinned by contemporary animal welfare science. Implementation of the poultry standards and guidelines, including time frames, will take place at the state and territory level in line with each jurisdiction's specific operational environments.

Read the *Australian Animal Welfare Standards and Guidelines for Poultry*:
agriculture.gov.au/agriculture-land/animal/welfare/standards-guidelines/poultry

Process improvements for developing and reviewing the Australian Animal Welfare Standards

In response to a request from Australia's agriculture ministers, the Animal Welfare Task Group is working on practical steps to improve the process for developing national animal welfare standards and guidelines. The aim is to ensure clarity,

harmonisation, effective stakeholder engagement and timeliness for future standards development. The Animal Welfare Task Group consists of representatives from each of the state and territory governments responsible for animal welfare and the Department of Agriculture, Fisheries and Forestry. The New Zealand Ministry for Primary Industries participates in an observer capacity.

Follow the progress of this project:
agriculture.gov.au/agriculture-land/animal/welfare/awtg

Virtual fencing harmonisation project

The Animal Welfare Task Group's virtual fencing subgroup is continuing its work examining regulatory issues associated with the use of this emerging technology, with a focus on animal welfare outcomes. In 2023, an independent literature review commissioned by the subgroup was publicly released. This review of relevant scientific research, international standards, policies and existing industry standards and practices informs the work of the subgroup.

Follow the progress of this project:
agriculture.gov.au/agriculture-land/animal/welfare/awtg

Development of new *Australian Animal Welfare Standards and Guidelines for Livestock at Processing Facilities*

New *Australian Animal Welfare Standards and Guidelines for Livestock at Processing Facilities* are being developed to replace the 2002 *Model Code of Practice for the Welfare of Animals: Livestock at Slaughtering Establishments*. The project is being led by the Queensland Department of Agriculture and Fisheries on behalf of the Animal Welfare Task Group. Following the completion of an independent scientific literature review in 2022, an independently facilitated Stakeholder Advisory Group met regularly throughout 2022 to provide input and

feedback. In mid-2023 a first draft was released to the advisory group, and wider public consultation on draft proposals is planned for 2024. The standards and guidelines will reflect contemporary scientific knowledge and practice and community expectations and help maintain Australia's strong reputation for animal welfare.

Read about the project:
agriculture.gov.au/agriculture-land/animal/welfare/awtg

Enhancing horse welfare during land transport

A review of the 2012 *Australian Animal Welfare Standards and Guidelines for the Land Transport of Livestock* sections related to the welfare of horses has been completed. The Queensland Department of Agriculture and Fisheries has led this project on behalf of the Animal Welfare Task Group. Following public consultation, a decision regulatory impact statement was submitted to the Australian Government Office of Impact Analysis. The amendments to the standards and guidelines reflect recent advances in scientific understanding of horse welfare and physiology and incorporate the practical expertise of those who work with horses daily. In early 2024, the proposed amendments will be presented to all agricultural ministers for decision and implementation by the states and territories.

Read about the project:
agriculture.gov.au/agriculture-land/animal/welfare/awtg

Industry-led projects

Livestock traceability database uplift commences

Integrity Systems Company, a wholly owned subsidiary of Meat & Livestock Australia, has commenced a three-year project to develop a new and improved traceability platform to replace the 23-year-old National Livestock Identification System (NLIS) database. Integrity Systems Company was awarded a $22.5 million Australian Government grant for this project, announced in September 2023.

Developing a strengthened and enhanced national livestock traceability database is a key pillar in Australia's defences against potential outbreaks of emergency animal diseases including foot and mouth disease and lumpy skin disease. The new database will ensure Australia continues to have a contemporary, fit-for-purpose livestock traceability system that meets current and future biosecurity, food safety and market access requirements.

A collaborative approach is being taken with the development of the new platform. This includes engagement with industry as well as the Australian Government and state and territory governments at all stages.

Read about the NLIS Database Uplift Project:
integritysystems.com.au/identification--traceability/NLIS-Database-Uplift-Project

Alpaca industry improves traceability

The Australian Alpaca Association launched an NLIS for alpacas in 2023 after several years of development. The industry now has electronic identification ear tags available for alpacas, can record alpaca movements in the NLIS Database (managed by Integrity Systems Company) and has NLIS Business Rules. The system has commenced on a voluntary basis with brass registration ear tags being replaced with the new electronic ones. The system will be gradually implemented for other parts of the industry in the next 12 months.

Read about the NLIS for alpacas:
alpaca.asn.au/nlis

Strengthening equine traceability in the Australian harness racing industry

Harness Racing Australia has been on a journey of transformation for more than a decade regarding its approach to equine traceability. Most recently, it has focused on expanding the rules that govern the notification of locations and statuses of horses within the industry. From April 2023, Harness Racing Australia officially

implemented new traceability rules, which require mandatory horse status updates within 24 hours of any changes to a horse's location, activities or responsible person. Compliance with the new rules is supported by world-leading technology via HarnessWeb, the industry-facing portal for participants, and the OnTrack portal for stewards.

Harness Racing Australia has been an active member of the National Horse Traceability Working Group since its inception. In the second half of 2023, the working group started work on better digital integration of property identification codes in the Harness Racing Australia database and HarnessWeb. This work will support the implementation of recommendations from the soon-to-be-established Traceability Taskforce.

Read about the National Horse Traceability Working Group:
dpi.nsw.gov.au/animals-and-livestock/horses/identification-and-traceability/national-horse-traceability-working-group

Australian wool industry leads the world in biosecurity framework development

WoolProducers Australia has led the development of an International Wool Textile Organisation biosecurity framework on the storage, treatment and certification of greasy wool to mitigate sanitary risks (such as foot and mouth disease) from countries and regions impacted by disease outbreaks. The framework was based on the WOAH *Terrestrial Animal Health Code* and the recent experience from South Africa when a domestic process was established to resume exports following foot and mouth disease incursions into its 'free zone'. The framework was accepted and adopted as an International Wool Textile Organisation resource for the benefit of the global supply chain and bilateral government discussions in restoring wool trade following emergency animal disease outbreaks.

Duck industry better protected by emergency animal disease fund

The Australian Duck Meat Association has grown the voluntary reserve fund set up through AHA to allow the industry to fund its portion of response costs for an emergency animal disease outbreak affecting ducks. This levy was set up to enable the Australian Duck Meat Association to become a signatory to the EADRA (see page 6) and has to date accumulated $600 000.

Over the last couple of years, the Australian Duck Meat Association has also negotiated with the 40 contract growers in the industry to make a proportionate contribution to the fund. From 2024, the growers will contribute an additional $30 000 to the fund each year. With these additional annual contributions, the goal of having the fund reach 1% of the industry's gross production value will be achieved in the next three to four years. This demonstrates a high level of cohesion within the industry, and the contract growers will now be represented within the Australian Duck Meat Association.

Building emergency animal disease preparedness in domestic abattoirs

In May 2023, the National Meat Industry Training and Advisory Council Limited produced a suite of emergency animal disease preparedness training materials for abattoir personnel. Six standard operating procedures, eight training manuals and an e-learning course were produced.

Topics covered by these materials include the decontamination of meat processing areas and the humane destruction of livestock during an emergency animal disease outbreak. The materials were designed to assist abattoir staff with developing, implementing and reviewing their own customised emergency animal disease response plan, tailored to the requirements of their individual facility.

International relations and trade

Biosecurity risk reviews

In 2023, the Department of Agriculture, Fisheries and Forestry finalised a risk review that recommends that the import conditions for JEV be removed for horses exported to Australia from approved countries. Horses do not represent a significant risk for onward transmission of JEV, and the virus is now considered endemic in Australia following the widespread outbreak that occurred in 2022.

A risk review for the import of egg powder from approved countries was completed, and trade can now occur under additional conditions that align with standard industry practices.

A review of Australia's current entry requirements for lumpy skin disease in fresh (chilled or frozen) beef and beef products from approved countries has been finalised. The revision of Australia's entry requirements for lumpy skin disease in fresh beef is consistent with contemporary science and the standards of WOAH which designates skeletal muscle meat as a safe commodity. A draft review of Canada's status as a country able to apply to export fresh beef and beef products to Australia was also released for public consultation.

The Department of Agriculture, Fisheries and Forestry published the *Review of Rabies Virus Risk in Imported Dogs, Cats and Canine Semen from Approved Countries – Final Report* on 12 January 2023. Rabies virus is not present in Australia, but it is the most significant biosecurity hazard associated with dog and cat imports to Australia. The review led to updated conditions for dogs and cats entering Australia from 1 March 2023. Most approved countries that export dogs and cats to Australia have implemented these new conditions smoothly, thereby ensuring no disruption to trade. Risk management measures for rabies virus continue not to be warranted for canine semen, as there is no evidence of transmission of rabies virus through canine semen.

Read the *Final Report: Risk of Lumpy Skin Disease via Fresh (Chilled or Frozen) Bovine Skeletal Muscle Meat from Applicant Countries*:
agriculture.gov.au/biosecurity-trade/policy/risk-analysis/animal/fresh-chilled-frozen-beef

Read the *Review of Rabies Virus Risk in Imported Dogs, Cats and Canine Semen from Approved countries – Final Report*:
agriculture.gov.au/biosecurity-trade/policy/risk-analysis/animal/dogs_and_cats

Read about the draft review of Canada's status as a country able to apply to export beef and beef products to Australia:
agriculture.gov.au/biosecurity-trade/policy/risk-analysis/animal/addition-of-canada-as-applicant-country-for-import

Free trade agreements

Free trade agreements are an effective mechanism for opening new trade and investment opportunities for Australian agricultural export industries while maintaining our science-based biosecurity approach and acknowledging the importance of sustainable agrifood systems and improved animal welfare standards. On 31 May 2023, the Australia-United Kingdom Free Trade Agreement came into force. The Australian Government is currently negotiating the India-Australia Comprehensive Economic Cooperation Agreement and the Australia-United Arab Emirates Comprehensive Economic Partnership Agreement.

Read more about free trade agreements: **agriculture.gov.au/biosecurity-trade/market-access-trade/fta**

Regional animal health achievements

Australia delivers targeted international coordination and capacity-building initiatives to improve regional biosecurity, food security, animal health, production and welfare in the Indo-Pacific region. The Department of Agriculture, Fisheries and Forestry has programs focussed on Timor-Leste, Papua New Guinea, Indonesia and the wider Pacific. These activities are complemented by the work of partners, including the Department of Foreign Affairs and Trade's Indo-Pacific Centre for Health Security, the Australian Centre for International Agricultural Research, ACDP, state and territory governments and universities.

In 2023, Australia delivered several activities to strengthen our partnerships with near neighbours and address priority diseases for the region including foot and mouth disease, lumpy skin disease, African swine fever and dog-mediated rabies. Achievements included:

- biosecurity training for frontline quarantine officers in Timor-Leste and Indonesia

- animal disease identification and animal health information system training in Papua New Guinea
- rabies vaccination training in Timor-Leste and animal health and production training for paraveterinarians and livestock officers in the Solomon Islands, Nauru, Cook Islands and Fiji
- provision of laboratory equipment, consumables, and diagnostic training to support animal disease surveillance in the Solomon Islands and Timor-Leste
- field epidemiology and diagnostic support to undertake animal disease surveillance, outbreak investigation and response activities in the Solomon Islands, Nauru and Timor-Leste
- support to assist Indonesia in the control of foot and mouth disease and lumpy skin disease including diagnostic training, funding for industry-led support projects and a technical support project, in partnership with the Food and Agriculture Organization of the United Nations
- delivery of 1 000 000 lumpy skin disease vaccines and 402 500 canine rabies vaccines for Indonesia and 50 000 canine rabies vaccines for Timor-Leste
- establishment of a regional lumpy skin disease vaccine supply arrangement (see update on page 9).

Read more about our regional achievements: **agriculture.gov.au/agriculture-land/animal/health/acvo**

2

Terrestrial animal health status

This chapter provides information about Australia's status for all nationally significant terrestrial animal diseases.

Australia's robust biosecurity system continues to play a critical role in reducing risk and shaping our nation to remain one of the few countries in the world free from the major epidemic diseases of livestock. This freedom is the result of several factors, including our:

- geographical isolation which provides a natural biosecurity barrier
- stringent biosecurity policies
- history of successful disease eradication campaigns
- national disease surveillance and response programs
- unique and strong partnerships between governments and industry on animal health.

The spread of some endemic diseases of animals in Australia is limited by host, pathogen and environmental factors, and the type of animal production enterprises present in an area.

Tick fever, for example, occurs only in parts of northern Australia where the climate is suitable for tick vectors. State and territory governments manage the control and eradication of certain endemic and notifiable animal diseases, often with the support of industry accreditation schemes.

This chapter provides information about Australia's status for all nationally significant terrestrial animal diseases.

2.1 Status of terrestrial animal health in Australia

Australia reports to the World Organisation for Animal Health (WOAH) on the WOAH-listed diseases[1] every six months.[2] Table 2.1 shows Australia's status for the WOAH-listed diseases of terrestrial animals in 2023.

Table 2.1 Australia's status for the WOAH-listed diseases of terrestrial animals, 2023

Infection/Disease	Status	Date of last occurrence and notes
Multiple species		
Anthrax	Present	Limited distribution
Aujeszky's disease virus	Free	Never occurred
Bluetongue virus	Present	Restricted to specific zones of Australia (see page 31); sentinel herd and vector-monitoring programs are in place
Brucella abortus	Free	Australia declared freedom from all terrestrial animal species in 1989
Brucella melitensis	Free	Never occurred in animals
Brucella suis	Present	Maintained in feral pigs in parts of New South Wales and Queensland and has been detected in feral pigs in the Northern Territory and South Australia. Rare occurrence in domestic pigs. Sporadic detections in pig-hunting dogs
Crimean Congo haemorrhagic fever	Free	Never occurred

Continued

1 woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access

2 woah.org/#/home

Infection/Disease	Status	Date of last occurrence and notes
Echinococcus granulosus	Present	Tasmania declared provisional freedom of hydatid disease in dogs and sheep in 1996
Echinococcus multilocularis	Free	Never occurred
Epizootic haemorrhagic disease virus	Virus present	Disease has not been reported
Equine encephalomyelitis (Eastern)	Free	Never occurred
Foot and mouth disease virus	Free	1872; Australia is officially recognised by WOAH as free without vaccination
Heartwater	Free	Never occurred
Japanese encephalitis	Present	Limited distribution
***Mycobacterium tuberculosis* complex**	Free	Australia declared freedom from bovine tuberculosis in 1997; the last case in any species was reported in 2002
New World screw-worm fly (*Cochliomyia hominivorax*)	Free	Never occurred
Old World screw-worm fly (*Chrysomya bezziana*)	Free	Never occurred
Paratuberculosis	Present	National management programs are in place
Q fever	Present	–
Rabies virus	Free	1867
Rift Valley fever virus	Free	Never occurred
Rinderpest virus	Free	1923; with the global eradication of rinderpest in 2011, all countries are free
Surra (*Trypanosoma evansi*)	Free	1907
***Trichinella* spp.**	Limited species present	*Trichinella spiralis* is not present; *T. pseudospiralis* is present in wildlife
Trypanosoma brucei*, *Trypanosoma congolense*, *Trypanosoma simiae* and *Trypanosoma vivax	Free	Never occurred
Tularaemia	Present	–
West Nile fever	Australian variants present	No cases in animals were reported in 2023
Cattle		
Bovine anaplasmosis	Present	Transmission mainly in areas of northern Australia
Bovine babesiosis	Present	Transmission mainly in areas of northern Australia

Continued

Infection/Disease	Status	Date of last occurrence and notes
Bovine genital campylobacteriosis	Present	–
Bovine spongiform encephalopathy (BSE)	Free – negligible risk	Never occurred; the Transmissible Spongiform Encephalopathies Freedom Assurance Project includes surveillance (see page 33); Australia has official WOAH 'negligible risk' status for BSE.
Bovine viral diarrhoea	Present	Bovine viral diarrhoea virus 1 (BVDV-1) is present; BVDV-2 has never occurred
Contagious bovine pleuropneumonia (*Mycoplasma mycoides* subsp. *mycoides* SC)	Free	1967; Australia declared freedom in 1973 and is officially recognised by WOAH as free
Enzootic bovine leucosis	Free (dairy cattle herd) Very low prevalence (beef cattle)	Australian dairy herd achieved freedom in 2012
Haemorrhagic septicaemia	Free	Never occurred; strains of *Pasteurella multocida* are present, but not the 6b or 6e strains that cause haemorrhagic septicaemia
Infectious bovine rhinotracheitis/ infectious pustular vulvovaginitis	Present	Bovine herpesvirus (BHV)-1.2b is present; BHV-1.1 and BHV-1.2a have never occurred
Lumpy skin disease virus	Free	Never occurred
Theileriosis	Free (*Theileria parva* and *T. annulata*) Present (*T. orientalis*)	Australia is free from *T. parva* and *T. annulate*; *T. orientalis* is present
Trichomonosis	Present	–
Sheep and goat		
Caprine arthritis/encephalitis	Present	Voluntary accreditation schemes exist
***Chlamydophila abortus* (enzootic abortion of ewes, ovine chlamydiosis)**	Free	Never occurred
Contagious agalactia	Free	*Mycoplasma agalactiae* has been isolated, but Australian strains do not produce contagious agalactia in sheep
Contagious caprine pleuropneumonia	Free	Never occurred
Maedi–visna	Free	Never occurred
Nairobi sheep disease	Free	Never occurred
Ovine epididymitis (*Brucella ovis*)	Present	Voluntary accreditation schemes exist in all states

Continued

Infection/Disease	Status	Date of last occurrence and notes
Peste des petits ruminants virus	Free	Never occurred; Australia is officially recognised by WOAH as free
Salmonellosis (*Salmonella* Abortusovis)	Free	Never occurred
Scrapie	Free	1952; the Transmissible Spongiform Encephalopathy Freedom Assurance Program includes surveillance (see page 33) to demonstrate freedom from classical scrapie; atypical scrapie has been detected
Sheep pox and goat pox	Free	Never occurred
Equine		
African horse sickness virus	Free	Never occurred; Australia is officially recognised by WOAH as free
Contagious equine metritis	Free	1980
Dourine	Free	Never occurred
Equid herpesvirus 1 (Equine rhinopneumonitis)	Present	–
Equine arteritis virus	Serological evidence	–
Equine encephalomyelitis (Western)	Free	Never occurred
Equine infectious anaemia	Present	Limited distribution and sporadic occurrence
Equine influenza	Free	2007; Australia self-declared freedom according to WOAH standards in 2008[3]
Equine piroplasmosis	Free	1976
Glanders (*Burkholderia mallei*)	Free	1891
Venezuelan equine encephalomyelitis	Free	Never occurred
Swine		
African swine fever virus	Free	Never occurred
Classical swine fever virus	Free	1962; Australia is officially recognised by WOAH as free
Nipah virus	Free	Never occurred
Porcine reproductive and respiratory syndrome virus	Free	Never occurred
***Taenia solium* (porcine cysticercosis)**	Free	Never occurred
Transmissible gastroenteritis	Free	Never occurred

Continued

3 agriculture.gov.au/biosecurity-trade/pests-diseases-weeds/animal#equine-influenza

Infection/Disease	Status	Date of last occurrence and notes
Avian		
Avian chlamydiosis	Present	–
Avian infectious bronchitis	Present	–
Avian infectious laryngotracheitis	Present	–
Avian mycoplasmosis (*Mycoplasma gallisepticum*)	Present	–
Avian mycoplasmosis (*Mycoplasma synoviae*)	Present	–
Duck virus hepatitis	Free	Never occurred
Fowl typhoid	Free	1952
High pathogenicity avian influenza (HPAI) viruses in poultry	Free	2020; Australia self-declared freedom in accordance with WOAH standards on 26 February 2021
Infectious bursal disease	Present	Infectious bursal disease occurs in a mild form and was last reported in 2004; Very virulent strains are not present
Influenza A viruses of high pathogenicity in birds other than poultry, including wild birds	Free	HPAI viruses have not been detected in Australian wild birds, other than a single detection of HPAI H7 virus in one feral Eurasian starling trapped inside an affected poultry shed during the 1985 HPAI H7 virus outbreak
Newcastle disease virus	Lentogenic viruses present	Virulent Newcastle disease last occurred in poultry in 2002
Pigeon paramyxovirus	Present	In August 2011, a paramyxovirus not previously reported in Australia was detected in hobby pigeons in Victoria; disease caused by this virus has not spread to poultry
Pullorum disease	Not reported	Last reported in 1992; *Salmonella* Pullorum is not present in commercial chicken flocks
Turkey rhinotracheitis	Free	Never occurred
Lagomorph		
Myxomatosis	Present	Used as a biological control agent for wild rabbits
Rabbit haemorrhagic disease	Present	Used as a biological control agent for wild rabbits. Rabbit haemorrhagic disease virus (RHDV1 and RHDV2) are present

Continued

Infection/Disease	Status	Date of last occurrence and notes
Bee		
Infection of honey bees with *Melissococcus plutonius* (European foulbrood)	Present	–
Infection of honey bees with *Paenibacillus larvae* (American foulbrood)	Present	–
Infestation of honey bees with *Acarapis woodi*	Free	Never occurred
Infestation of honey bees with *Tropilaelaps* spp.	Free	Never occurred
Infestation of honey bees with *Varroa* spp.	Present	An incursion of *Varroa destructor* was identified in June 2022 in New South Wales. In September 2023 eradication was determined to no longer be achievable and the eradication response has transitioned to management. Limited distribution in New South Wales only
Infestation with *Aethina tumida* (small hive beetle)	Present	Restricted distribution
Other diseases and infections		
Camel pox	Free	Never occurred
Infection of dromedary camels with Middle East respiratory syndrome coronavirus	Free	Never occurred
Leishmaniasis	Australian variant, *Leishmania macropodum*, present	Rare; Australian variant was first isolated in 2000 from macropods and occurs infrequently in a small region near Darwin; in 2017, it was isolated in a new species, captive Nabarlek (pygmy rock wallaby, *Petrogale concinna*) in the Northern Territory. Occasional imported case of *L. infantum* in animals with no known local transmission

2.2 National List of Notifiable Animal Diseases of Terrestrial Animals

The diseases listed in the *National List of Notifiable Animal Diseases of Terrestrial Animals*[4] are a major threat to Australian livestock industries and Australia's access to overseas export markets. A notifiable disease is one that must be reported to agricultural authorities. The list was agreed by the Animal Health Committee[5] based on the list of diseases notifiable to WOAH. Endemic diseases are included for surveillance purposes to detect unusual incidents involving animal mortality or sickness and diseases of public health significance. The requirement to report disease occurrences on this list to government authorities is mandated by state and territory legislation.

The Animal Health Committee reviews the list on a regular basis. The most recent review was finalised this year. Table 2.2 shows Australia's status for diseases on the *National List of Notifiable Diseases of Terrestrial Animals* that were not reportable to WOAH in 2023.

Table 2.2 Australia's status for diseases on the *National List of Notifiable Diseases of Terrestrial Animals* that were not reportable to the WOAH in 2023

Diseases/infections and infestation	Status	Date of last occurrence and notes
Anatid herpesvirus-1	Free	Never reported
Australian bat lyssavirus	Present	–
Borna disease virus	Free	Never reported
Brucella canis	Free	Never reported
Bungowannah virus	Present	2003
Devil facial tumour disease	Present	Restricted distribution to Tasmanian devils in Tasmania
***Ehrlichia canis* (ehrlichiosis)**	Present	First detected in Australian dogs in May 2020; restricted distribution
Equine encephalosis virus	Free	Sporadic occurrence
Getah virus	Free	Never reported
Hendra virus	Present	Sporadic occurrence
***Histoplasma farciminosum* (epizootic lymphangitis)**	Free	Never reported
Influenza A viruses in swine	Present	–
Jaagsiekte sheep retrovirus	Free	Never reported
Jembrana disease virus	Free	Never reported
Louping ill	Free	Never reported
Malignant catarrhal fever (wildebeest-associated)	Free	Never reported

Continued

4 agriculture.gov.au/biosecurity-trade/pests-diseases-weeds/animal/notifiable

5 agriculture.gov.au/agriculture-land/animal/health/committees/ahc

Diseases/infections and infestation	Status	Date of last occurrence and notes
Menangle virus	Present	1997
Mycobacterium avium **(avian tuberculosis)**	Present	–
Mycoplasma iowae	Free	Never reported
Neorickettsia risticii **(Potomac horse fever)**	Free	Never reported
Porcine epidemic diarrhoea virus	Free	Never reported; national survey conducted in 2016 with negative results
Post-weaning multi-systemic wasting syndrome	Free	Never reported
Pseudogymnoascus destructans **in bats (white nose syndrome)**	Free	Never reported
Psoroptes ovis **(sheep scab)**	Free	1896
Salmonella **Abortus-equi**	Free	Never reported
Salmonella **Enteritidis in poultry**	Present	National *Salmonella* Enteritidis Monitoring and Accreditation Program available for commercial egg producers. One serological positive flock was reported in poultry in 2023
Seneca Valley virus (Senecavirus A)	Free	Never reported
Swine vesicular disease virus	Free	Never reported
Taenia saginata **(cysticercus bovis)**	Present	–
Teschovirus encephalomyelitis	Present	–
Tick-borne encephalitis virus	Free	Never reported
Transmissible spongiform encephalopathies (chronic wasting disease, feline spongiform encephalopathy)	Free	Two cases of feline spongiform encephalopathy were diagnosed in imported animals in Australian zoos in 1992 (cheetah) and 2002 (Asiatic golden cat), where disease is thought to have been caused by exposure to feeds derived from bovine spongiform encephalopathy-affected cattle before the animals were imported to Australia
Trypanosoma cruzi **(Chagas disease)**	Free	Never reported
Vesicular exanthema	Free	Never reported
Vesicular stomatitis virus	Free	Never reported
Warble fly infestation	Free	Never reported
Wesselsbron virus	Free	Never reported

2.3 Significant disease incidents and status changes of nationally notifiable terrestrial animal diseases in 2023

This section provides further information about investigations of nationally notifiable terrestrial animal diseases in 2023 to support Australia's disease status for the WOAH-listed diseases presented in Table 2.1. It outlines Australia's response to significant disease incidents important to international trade and market access, which has helped safeguard Australia's animal health status during 2023. Supplementary information about specific disease incidents can be found in *Animal Health Surveillance Quarterly* editions.[6]

Varroa destructor (varroa mite)

In June 2022, *Varroa destructor* was detected in sentinel hives at the Port of Newcastle and the infestation was assessed as being both technically feasible and cost beneficial to eradicate, so an eradication response was mounted under the *Emergency Plant Pest Response Deed*.[7] In September 2023, it was determined that eradication of varroa mite from Australia was no longer achievable due to several technical, operational, legal, economic, environmental and social factors, including but not limited to:

- non-compliance with New South Wales movement orders and mandatory hive testing (alcohol washes) resulting in the further spread of *V. destructor*
- lack of a tracing link between a recent cluster of detections of *V. destructor* identified at Kempsey and previous detections in New South Wales, and the subsequent movement of the pest from this area to several other regions in New South Wales, including the long-distance movement to the Sunraysia and Riverina areas also impacting on Victoria
- economic, environmental and social impact of the risk mitigation measures required to control, contain and eradicate *V. destructor* from Australia (relative to allocating the resources to slow the spread of the pest and minimise its impact on affected stakeholders)
- significant extent of the infested area in New South Wales (now greater than 16 000 square kilometres) including the Sydney Basin and national park areas, presenting challenges for eradication.

The response then entered a transition to management phase with a focus on increasing resilience and minimising ongoing impacts of varroa mite naturalisation across Australia's bee and pollination-dependent industries. The scope of the transition to management phase is to:

- ensure an orderly stand-down of emergency response operational activities
- slow the spread of *V. destructor*
- build industry resilience to the pest
- provide management options including integrated pest management recommendations and chemical control options
- support pollination security.

Activities undertaken during the eradication response, including hive destruction, wild European honey bee baiting and movement restrictions, were successful in reducing the varroa mite load and containing it to the management and suppression zones in New South Wales. Varroa mite remains under official control by other jurisdictions with movement restrictions and surveillance plans in place to control movement and slow the spread.

6 sciquest.org.nz/browse/publications/view/114

7 planthealthaustralia.com.au/biosecurity/emergency-plant-pest-response-deed

Salmonella Enteritidis

In 2023, the New South Wales Department of Primary Industries managed a single incident of *Salmonella* Enteritidis. This incident occurred on a layer farm in the Greater Sydney region, with the presence of *Salmonella* Enteritidis confirmed in May 2023. There have not been any human infections linked to this case. On confirmation of *Salmonella* Enteritidis, an incident management team was assembled to work with farm management for depopulation and decontamination of the infected premises. All trace premises and poultry farms in the vicinity of the infected premises (within two kilometres) tested negative to *Salmonella* Enteritidis. The isolate was sequenced via whole-genome sequencing and found to be related to the 2018–19 *Salmonella* Enteritidis isolates. Investigations have not revealed any evidence of how this might have been maintained. This flock was regularly monitored for *Salmonella* Enteritidis and previous testing (conducted approximately every 12–15 weeks) was negative. Furthermore, there have not been any human cases linked to this isolate. The decontamination process at the infected premises continues at the time of writing. A control order for *Salmonella* Enteritidis remains in place in New South Wales.

Tick fever

In 2023, nine cases of tick fever (also known as babesiosis or anaplasmosis) were confirmed in New South Wales, all in the North Coast region of New South Wales (near the cattle tick infested zone in Queensland). Of the nine cases, seven were babesiosis and two were both babesiosis and anaplasmosis. The nine cases represent 13 positive laboratory submissions (two were positive for anaplasmosis and 11 were positive for babesiosis), from a total of 32 tick fever investigations. The New South Wales Department of Primary Industries continues to work with veterinarians (including Local Land Services and private practitioners) and affected farmers to manage these cases.

Ehrlichiosis

Ehrlichiosis is a serious tick-borne disease of dogs caused by infection with the bacterium *Ehrlichia canis*. The disease is found in most of the world and follows the distribution of the vector, the brown dog tick *Rhipicephalus sanguineus*. Infection with *E. canis* is a nationally notifiable animal disease.

Until May 2020, *E. canis* had not been detected in dogs of Australian origin. It was first confirmed in the Kimberley region of Western Australia and shortly after in June 2020 in the Northern Territory. Since that time, infected dogs have been found throughout the Northern Territory, in the northern regions of Western Australia and South Australia, and Queensland.

The first Queensland case was a dog that tested positive for the disease in July 2021 after travelling through Western Australia and the Northern Territory. In early 2022, Queensland detected its first case in a dog from Mount Isa that had not travelled. Further locally acquired infections of *E. canis* occurred during 2022 in the City of Mount Isa and the nearby shires of Doomadgee, Cloncurry and Carpentaria.

In December 2022, *E. canis* was detected for the first time in the City of Townsville and Kowanyama Aboriginal Shire. Subsequent detections of ehrlichiosis during 2023 in the shires of Burke, Mornington, Palm Island and Mareeba, and the Tablelands region demonstrate the disease may be widespread in Northwest, North and Far North Queensland.

Human-assisted movement of dogs is considered the most likely cause of disease spread and remains the highest risk for introducing *E. canis* to naive tick and canine populations. Disease management is now focused on early detection and treatment, tick prevention and managing risks associated with dog movements. Veterinary and community awareness campaigns continue to play a crucial role in managing the threat of canine ehrlichiosis in Australia. This includes the Department of Agriculture, Fisheries and Forestry's suite of national canine ehrlichiosis resources[8] released in late 2022.

8 agriculture.gov.au/biosecurity-trade/pests-diseases-weeds/animal/ehrlichiosis-in-dogs/resources

2.4 National targeted surveillance programs

The Australian animal health system is underpinned by key partnerships and networks between government, livestock industries, wildlife and commercial organisations, and individuals. Together, they work across a range of programs to investigate significant disease incidents and undertake surveillance and monitoring activities to support animal health status and to determine the distribution of important diseases, agents and vectors. The *Animal Health in Australia System Report*[9] provides an overview of these programs, and an update on program activities from 2023 is presented below.

National Arbovirus Monitoring Program

The National Arbovirus Monitoring Program (NAMP) monitors the distribution across Australia of economically important arboviruses (insect-borne viruses) of livestock (cattle, sheep, goats and camelids) and their associated vectors. The arboviruses of importance to NAMP are bluetongue virus, Akabane virus and bovine ephemeral fever virus. NAMP data are gathered throughout Australia by serological monitoring of cattle in sentinel herds, serological surveys of other cattle herds (serosurveys) and trapping of *Culicoides* species biting midges.

Many regions in Australia do not support the specific *Culicoides* vectors that can transmit bluetongue virus and therefore remain free from viral transmission. The limits of bluetongue virus transmission in Australia are shown on the interactive Bluetongue Virus Zone Map,[10] which defines the areas in which no viral transmission has been detected for the past two years. This interactive online map is publicly available and used by livestock producers and other key stakeholders. The map is updated as required in response to confirmed changes to bluetongue virus distribution.

Summer rainfall for 2022–23 was significantly above average in Australia, with significant flooding affecting large areas of northern Australia and parts of the Murray and Darling river system in western New South Wales and South Australia (following extensive flooding across the Murray-Darling Basin during spring). There was one change to the bluetongue virus transmission zone during the 2022–23 season – a westward expansion into northwest New South Wales in the vicinity of Walgett.

The main serotypes of bluetongue virus detected across Australia were BTV-1, 15, 16 and 21, with BTV-16 being the predominant serotype detected in New South Wales, Queensland and the Kimberley region in Western Australia.

More detailed information about NAMP, including the results of monitoring activities, can be found in the NAMP Annual Report.[11]

9 animalhealthaustralia.com.au/ahia

10 namp.animalhealthaustralia.com.au/public.php

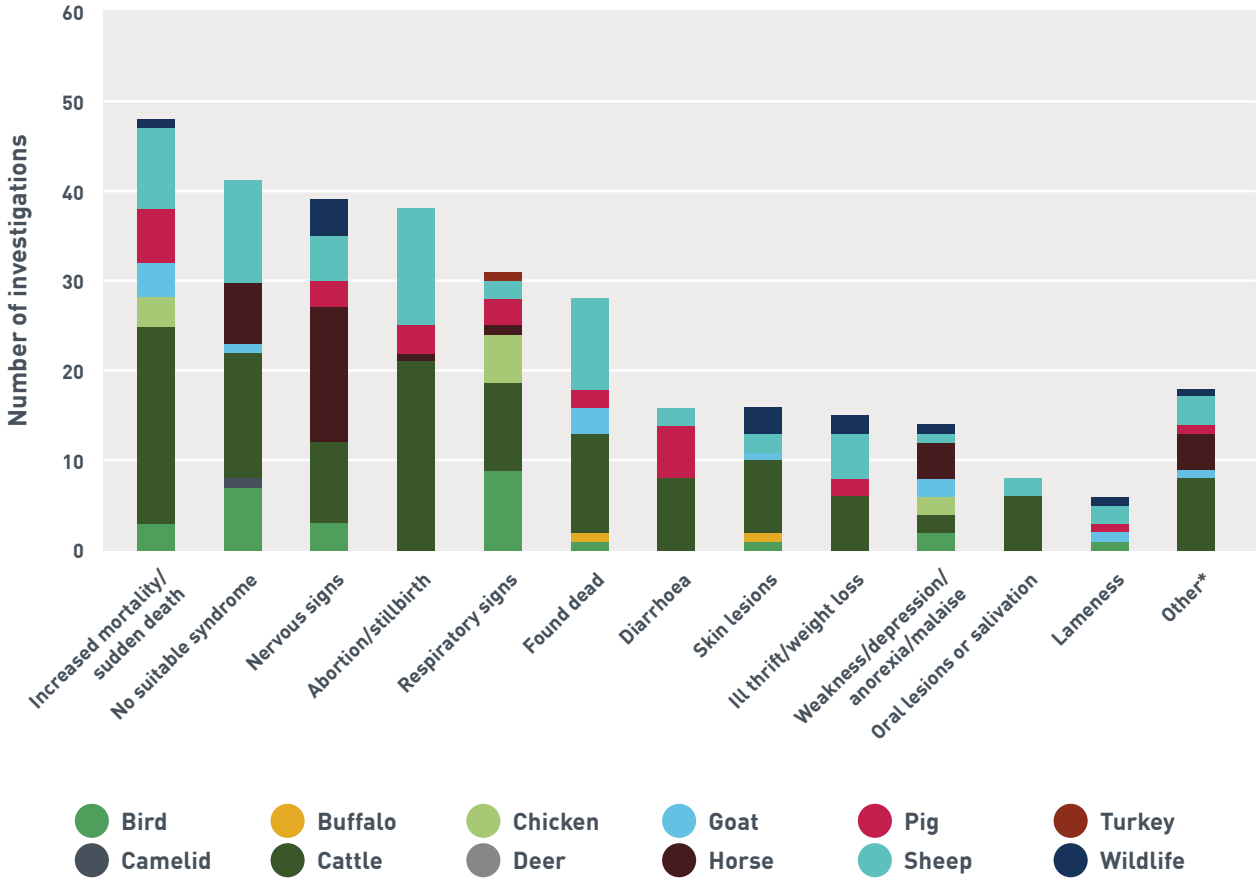
11 animalhealthaustralia.com.au/namp-annual-report

National Significant Disease Investigation Program

Non-government veterinary practitioners play a key role in general surveillance in Australia and provide expertise in evaluating, clinically investigating and reporting incidents of significant animal diseases. The National Significant Disease Investigation Program (NSDIP) provides funding for non-government veterinarians to undertake disease investigations, and for disease investigation training of veterinarians. This increases the likelihood that significant disease events are investigated and improves Australia's ability to detect disease emergencies early by supporting the knowledge, skills, resources and government relationships of non-government veterinary practitioners.

During 2022–23, 318 disease investigations were financially supported by the NSDIP (Figure 2.1). The syndromes most frequently investigated included increased mortality and sudden death, abortion and stillbirth, and neurological signs. The program also supported workshops for non-government veterinarians, and the sampling and laboratory testing of animals for priority diseases such as foot and mouth disease, lumpy skin disease and Japanese encephalitis.

More information about NSDIP can be found on the Animal Health Australia (AHA) website.[12]



*Other syndromes included acute febrile disease, circulatory/anaemia/oedema, alimentary signs other than diarrhoea, generalised oedema, genital lesions, jaundice, mastitis, or no clinical signs.

Figure 2.1 Number of investigations supported by the National Significant Disease Investigation Program, by syndrome and animal group July 2022–June 2023

12 animalhealthaustralia.com.au/collaborative-disease-investigations

National Sheep Health Monitoring Project

The National Sheep Health Monitoring Project (NSHMP) is funded by the sheep and wool industries and managed by AHA. NSHMP monitors lines of sheep in abattoirs for important animal health conditions[13] and generates a comprehensive, contemporary dataset that provides a snapshot of the animal health status of the Australian flock. Sheep carcasses and offal are monitored for a range of diseases and conditions which impact productivity, meat processing wastage and farm profitability. These data are important for highlighting regional variation and trends in the monitored conditions over time, and are available to producers submitting sheep to participating abattoirs via Meat & Livestock Australia's myFeedback portal. During 2023, a total of 10 863 578 sheep from 47 785 lines and 10 866 property identification codes were inspected in 10 domestic and export abattoirs. Bladder worm and pleurisy were the most common findings nationally but there is regional variation in most conditions. More information is available in the NSHMP Annual Reports.[14]

National Transmissible Spongiform Encephalopathy Surveillance Project

The National Transmissible Spongiform Encephalopathy (TSE) Surveillance Project is part of the TSE Freedom Assurance Program, which is managed by AHA with funding from industry stakeholders and all federal, state and territory governments. The TSE Freedom Assurance Program aims to increase market confidence that Australian animals and animal products are free from TSE.[15] The National TSE Surveillance Project provides early detection of bovine spongiform encephalopathy (BSE) and classical scrapie, should they occur, and demonstrates Australia's ability to meet the requirements for negligible risk status for BSE and free status for classical scrapie. The program involves testing samples from cattle, sheep and goats with clinical signs consistent with BSE or classical scrapie. Opportunistic sampling of fallen and casualty slaughter cattle, sheep and goats is also undertaken in abattoirs.

In 2023, Australia maintained freedom from classical scrapie and continued to be recognised by WOAH as a country of negligible risk for BSE. Australia's targeted surveillance program is consistent with WOAH requirements, including recent changes to the surveillance requirements in the BSE chapter in May 2023. Data are submitted to WOAH each year to reconfirm Australia's negligible risk status for BSE. During 2022–23, 315 cattle, 287 sheep and 9 goats were examined as part of the program. All samples tested negative for BSE and classical scrapie.

Screw-Worm Fly Surveillance and Preparedness Program

Screw-worm fly, an insect pest of warm-blooded animals, is not present in Australia but infects livestock, wildlife and humans in many parts of the world. Old World screw-worm fly (*Chrysoma bezziana*) is present throughout much of Africa, the Middle East, the Indian subcontinent and South-East Asia (including Indonesia, Timor-Leste, the Philippines and Papua New Guinea). New World screw-worm fly (*Cochliomyia hominivorax*) is endemic in parts of Central and South America.

The Screw-Worm Fly Surveillance and Preparedness Program conducts targeted national surveillance for screw-worm fly through fly trapping and livestock myiasis monitoring activities, and supports Australia's screw-worm fly entomology capacity and capability. It also promotes awareness to animal health stakeholders and provides a national forum to monitor and address Australia's screw-worm fly risk profile. During 2023, contents of insect traps were inspected on 228 occasions across 22 sites within seven locations. There were 140 targeted myiasis monitoring events at 11 sites within seven locations (Figure 2.2). No screw-worm fly were detected. Targeted communication materials were developed and distributed to veterinarians and other key animal health stakeholders in northern Australia.

13 animalhealthaustralia.com.au/national-sheep-health-monitoring-project

14 animalhealthaustralia.com.au/nshmp-annual-reports

15 animalhealthaustralia.com.au/maintaining-australias-freedom-from-tses

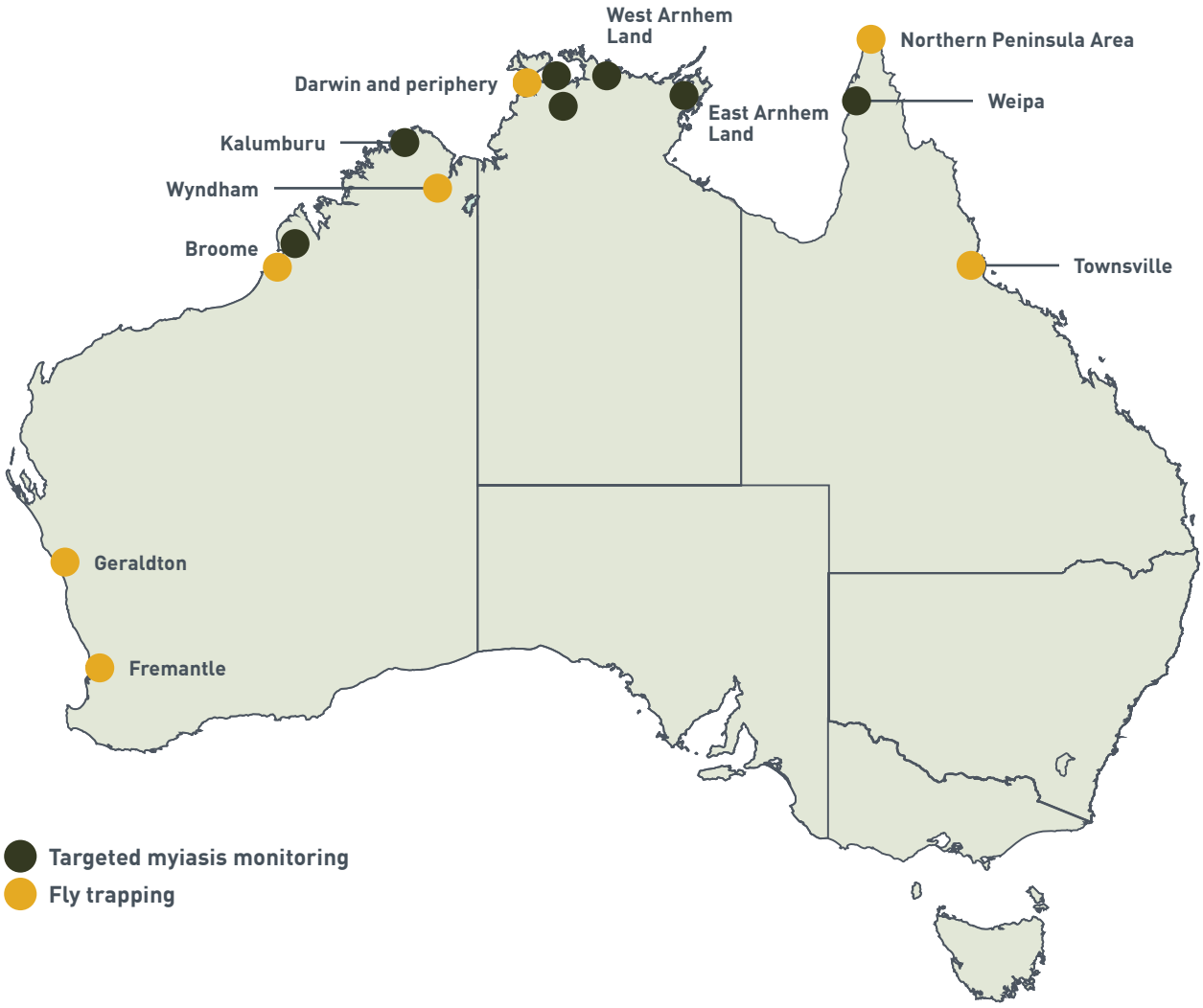


Figure 2.2 Locations of targeted myiasis monitoring and fly trapping in the Screw-Worm Fly Surveillance and Preparedness Program, 2023

Further information and resources associated with the Screw-Worm Fly Surveillance and Preparedness Program are available on the AHA website.[16]

Evidence of Absence Surveillance Project for exotic pig diseases

The Evidence of Absence Surveillance Project, initiated and funded by Australian Pork Limited in consultation with specialist pig veterinarians, is managed by AHA. The project strengthens Australia's substantiation of freedom from important exotic pig diseases through increased surveillance of pigs showing clinical syndromes of interest.

The program targets significant diseases of pigs that are exotic to Australia: porcine reproductive and respiratory syndrome, porcine epidemic diarrhoea virus, transmissible gastroenteritis, Aujeszky's disease, porcine teschovirus encephalomyelitis (formerly porcine enterovirus encephalomyelitis), African swine fever and classical swine fever. A guidelines booklet for participating veterinarians describes the clinical syndromes associated with each of these diseases and the samples that should be submitted for laboratory testing.[17] There has been an increase in exclusion testing, that is, testing of clinically consistent cases which has yielded negative results,

16 animalhealthaustralia.com.au/monitoring-for-swf

17 animalhealthaustralia.com.au/enhanced-surveillance-for-significant-exotic-diseases-of-pigs

for the relevant pig diseases listed above since the inception of the program. Summary records are collated as part of Australia's National Animal Health Information Program.

Northern Australia Quarantine Strategy

In 2023, the Northern Australia Quarantine Strategy (NAQS) continued to deliver its targeted and general surveillance to support proof of freedom and the early detection of exotic pests and diseases that may establish in northern Australia through natural or human-mediated pathways. Please see the *Animal Health in Australia System Report*[18] for further information on the role of NAQS.

NAQS broadened its avian influenza surveillance in 2023 in response to the rising high pathogenicity avian influenza (HPAI) H5N1 clade 2.3.4.4b outbreaks in other parts of the world. NAQS broadened its regular surveillance sites in wild waterfowl, including increased sampling sites and visit frequencies, opportunistic sampling whilst on other surveillance activities, and collaborating with Indigenous ranger groups for sample collection and raising community awareness. NAQS also trialled a novel sampling approach using RNA-preserving swabs, which reduce the need for cold-chain storage and transport, minimising the risk of spoiling samples and limiting concerns around leakage of live viral RNA. NAQS collected 1133 environmental samples of wild bird faeces across northern Australia that were tested for avian influenza. There were notable detections of low pathogenicity avian influenza (LPAI) H9N2 and H5N1, both endemic to Australia and not related to strains circulating in poultry overseas. High-throughput sequencing was used to confirm that the detected H5N1 matched other detections of LPAI H5 from around Australia and was not associated with HPAI H5N1 clade 2.3.4.4b.

Following the outbreak of Japanese encephalitis in the southeastern states in 2022, NAQS continued its targeted surveillance for Japanese encephalitis virus (JEV) within its feral animal surveillance activities, to assist the northern jurisdictions with demarcating virus distribution. In 2023 there was no evidence of molecular presence of JEV in the northern feral pig population.

Lumpy skin disease surveillance increased in 2023 following the detection of this disease in Indonesia in 2022. All feral cattle and buffalo sampled during

Credit: Guy Weerasinghe

18 animalhealthaustralia.com.au//wp-content/uploads/dlm_uploads/2021/04/AHAH2001_Dan-AHiA-2020-Systems-Report_FA2_Digital-min.pdf

feral animal surveys were serologically tested for lumpy skin disease, and all bovids with skin lesions were also sampled and tested via PCR testing. During the year, 75 feral cattle were serologically tested for lumpy skin disease, with 53 of those cattle presenting with skin lesions that were collected and tested. Lumpy skin disease was excluded in all cases. For more information on Australia's freedom from lumpy skin disease, see pages 9 and 23.

NAQS oversees sentinel herds at cattle stations in remote locations across northern Australia. Station managers conduct regular visual inspections and check for evidence of skin lesions. Over the past year, no skin lesions have been reported from these herds.

In 2023, 11 surveys of feral animals were conducted across northern Australia. Most animals sampled were feral pigs (n = 545). Not only are feral pigs relatively abundant compared to other feral animal species found in northern Australia, they also have the potential to host a wide range of exotic animal pests and diseases. Any abnormal clinical signs or pathology detected during these surveys undergo further diagnostic workup and exotic disease exclusion testing (Table 2.3). Complementing this work are post-mortem workshops NAQS delivers to key northern stakeholders to improve awareness of exotic diseases. In 2023, eight post-mortem workshops were delivered by NAQS animal health officers with nine feral pigs and four feral buffalo sampled.

In addition to targeted feral animal health surveillance, NAQS also delivers targeted surveys of domestic animals in the Torres Strait and Northern Peninsula Area of Queensland, including routine sample collection and testing for exotic diseases. NAQS also undertakes ad hoc disease investigations in response to biosecurity or animal health concerns reported by third parties. Please see the *Animal Health in Australia System Report*[19] for further details of ongoing NAQS programs and collaborators.

In addition to its own activities, NAQS works collaboratively with a broad range of stakeholders to conduct surveillance, including:

- Indigenous ranger groups delivering surveillance activities on a fee-for-service basis via the NAQS Indigenous Ranger Program
- private veterinarians working in northern Australia, via the Northern Australia Biosecurity Surveillance Network (NABSnet), a program overseen by a multi-agency working group led by NAQS. The NABSnet program commenced a Cattle Skin Survey in 2023, to assist with describing the typical range of skin conditions observed in northern Australia and to contribute to Australia's lumpy skin disease disease free status evidence base (see page 9).

Additionally, NAQS conducted 46 disease investigations in feral animals exhibiting clinical signs suggestive of exotic diseases including foot and mouth disease (n = 5 feral bovids), African swine fever (n = 1 pig), classical swine fever (n = 1 pig), and lumpy skin disease (n = 39 feral bovids). No exotic pests or diseases were detected through NAQS surveillance in 2023.

Table 2.3 Number of northern Australian healthy feral animals tested for serological exposure to exotic diseases in 2023

Disease tested	Count of animals	Positive test results
African swine fever	545	0
Aujeszky's disease (pseudorabies virus)	545	0
Classical swine fever	545	0
Lumpy skin disease	75	0
Surra	562	0

19 animalhealthaustralia.com.au//wp-content/uploads/dlm_uploads/2021/04/AHAH2001_Dan-AHiA-2020-Systems-Report_FA2_Digital-min.pdf

Wildlife health surveillance

Wildlife Health Australia (WHA) administers Australia's general wildlife health surveillance system in partnership with government agencies and non-government organisations. In 2023, 914 wildlife disease investigation events were added to the national database (Table 2.4). Approximately 42% of these events involved bats; bird events accounted for 29% of investigations reported; and 15% related to marsupials.

A total of 261 investigations of wild bird disease events were reported to WHA in 2023 from around Australia. No wild bird mortality events were attributed to avian influenza virus (AIV) or West Nile virus. Pigeon paramyxovirus (PPMV-1) was attributed as the cause of mortality events involving feral pigeons and doves. AIV and avian orthoavulavirus 1 (AOAV-1) were excluded by PCR testing in 172 and 155 of the 2023 events respectively. AIV and AOAV-1 exclusion testing was not warranted in the remaining events based on clinical signs, history, prevailing environmental conditions or other diagnoses.

In December 2023, a fatal neurological case of the AOAV-1 pigeon paramyxovirus type 1 variant was reported in an immunocompromised child in Australia. While no specific exposure was identified, it was considered probable that the virus had spread through direct contact with pigeon droppings or contaminated fluids.[20] Although AOAV-1 can act as a human pathogen, infection is rare and usually occurs only in people who have very close contact with infected birds, resulting in mild, short-term conjunctivitis or influenza-like symptoms. Avirulent AOAV-1 is considered widespread in Australian native birds.[21]

Table 2.4 Wildlife disease investigation events in Australia in 2023

Wildlife tested	Number of investigations[a]
Bats	384
Birds	261
Marsupials	137
Feral mammals[b]	51
Marine mammals	24
Amphibians	19
Marine turtles	11
Monotremes	10
Snakes and lizards	7
Freshwater turtles	5
Fish	5
Other mammals	5
Crocodiles	1

a 9 investigations involved multiple taxonomic groups, so the total number of events does not equal 914.

b Includes feral pigs (*Sus scrofa*), red fox (*Vulpes vulpes*), European rabbits (*Oryctolagus cuniculus*), black rat (*Rattus rattus*), feral cattle (*Bos sp.* and *Bos javanicus*), Asiatic water buffalo (*Bubalus arnee*) and deer (*Cervus sp.*).

20 Hurley, S. et al. 2023. Fatal human neurologic infection caused by pigeon avian paramyxovirus-1, Australia. *Emerging Infectious Diseases*; 29(12): 2482.

21 wildlifehealthaustralia.com.au/Portals/0/ResourceCentre/FactSheets/Avian/Avian_Paramyxoviruses_and_Australian_Wild_Birds.pdf

Findings in wild bird events in 2023 included: aspergillosis, avian chlamydiosis, botulism, hepatitis, herpesvirus, nontuberculous mycobacteriosis, toxicity (including organophosphate, anticoagulant rodenticide, tick paralysis, heavy metal, pesticide), trichomoniasis and schistosomiasis.

Most bat investigations involved individual bats submitted for testing for Australian bat lyssavirus (ABLV), most commonly following potentially infectious contact with a human or pet. A total of 375 bats were tested for ABLV in 2023, of which 19 were positive for ABLV. This includes 11 positive detections in Queensland, five in South Australia and one each in the Northern Territory, New South Wales and Victoria. There were no detections of ABLV infection in species other than bats. The WHA Bat Health Focus Group regularly reports on the status of ABLV in Australia including the twice-yearly ABLV Bat Stats.[22]

Significant wildlife health incidents in Australia are reported on the WHA website[23] and in *Animal Health Surveillance Quarterly*.[24]

National Avian Influenza Wild Bird Surveillance Program

Through the National Avian Influenza Wild Bird (NAIWB) Surveillance Program,[25] targeted (pathogen-specific, risk-based) surveillance was conducted by sampling apparently healthy live wild birds and hunter-shot wild birds at sites in seven states and territories across Australia (Figure 2.3). A total of 6191 faecal environmental and cloacal swabs collected from waterbirds were tested for AIVs in 2023.

Molecular analysis of AIVs detected through targeted surveillance activities contributes to tracking Australian virus evolution and dynamics, maintaining currency of diagnostic tests, and maintaining a virus sequence library that allows comparison of Australian and overseas strains. This information helps inform the risk to industry and the response to detections in poultry.

Outbreaks caused by a new variant of H5 HPAI called clade 2.3.4.4b began in 2020 in Europe, Asia and Africa and reached North America in 2021. While previous research has determined the risk of HPAI strains entering Australia via migratory birds to be low, the current global situation means an increased level of risk to Australia (see case study on page 40).

Considering the unprecedented number of outbreaks of HPAI in wild birds and poultry and the increase in geographic coverage, additional activities were recommended by the NAIWB Steering Group and funded by the Department of Agriculture, Fisheries and Forestry, including:

- evaluation of the risk of HPAI to Australia
- re-evaluation of natural incursion pathways of AIV into Australia
- assessment of the efficacy of the wild bird surveillance program
- assessment of Australia's capacity to respond rapidly should an incursion occur.

As part of general surveillance, AIV and AOAV-1 were also excluded in wild bird morbidity and mortality events (see 'Wildlife health surveillance' section).

Further information on the NAIWB Surveillance Program is available on WHA's website, and in the Avian Influenza in Wild Birds fact sheet[26] and Wild Bird Newsletter.[27]

22 wildlifehealthaustralia.com.au/Resource-Centre/Bat-Health#Australian%20Bat%20Lyssavirus%20Reports

23 wildlifehealthaustralia.com.au/Incidents/Incident-Information

24 sciquest.org.nz/browse/publications/view/114

25 wildlifehealthaustralia.com.au/Our-Work/Surveillance/Wild-Bird-Surveillance

26 wildlifehealthaustralia.com.au/Portals/0/ResourceCentre/FactSheets/Avian/Avian_influenza_in_wild_birds_in_Australia.pdf

27 wildlifehealthaustralia.com.au/Resource-Centre/Surveillance-Reports

Risk-based surveillance for AIVs has tested almost 142 000 wild birds since July 2005.

Mortality due to AIVs has not been reported in feral or native free-ranging birds in Australia.

In 2023, HPAI viruses were not detected via targeted wild bird surveillance in Australia, and there were no detections of H5 HPAI viruses, including clade 2.3.4.4b.

Surveillance activities continue to show evidence of a wide range of subtypes of LPAI viruses including H1–H11.

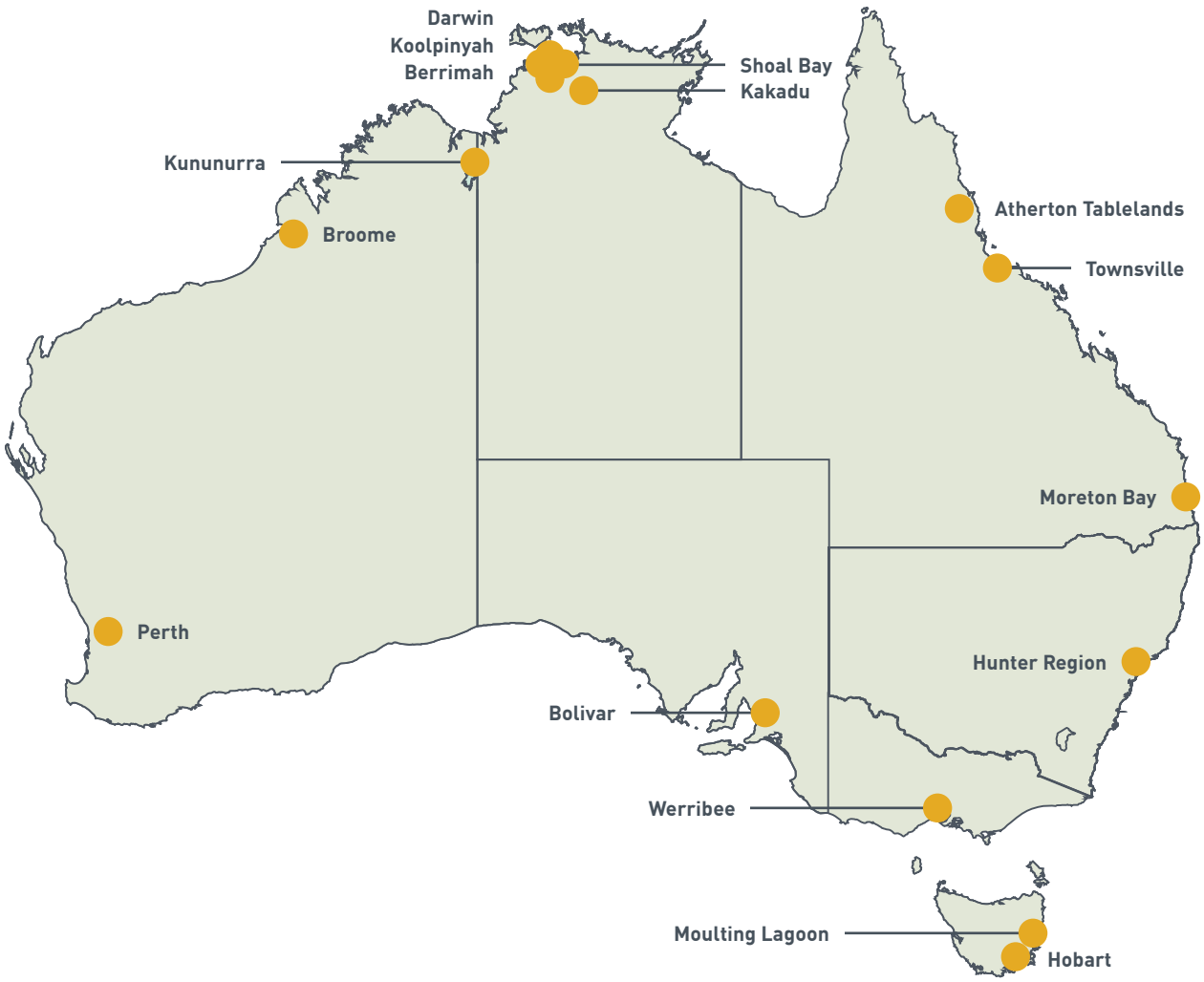


Figure 2.3 Avian influenza virus targeted surveillance key sampling locations*

*This map shows locations where the majority of wild bird samples are collected from, on a regular basis. Locations sampled irregularly or where small numbers of samples are collected are not represented on the map.

CASE STUDY

Global situation on high pathogenicity avian influenza and risk to Australian wildlife

Since October 2021, HPAI H5N1 clade 2.3.4.4b has been spreading extensively worldwide, leading to an unprecedented surge in outbreaks in wild birds, wild mammals and poultry. These AIVs have been reported in the Americas, Europe, Asia and Africa. In October 2023, the HPAI H5N1 clade 2.3.4.4b virus was detected in wild birds on sub-Antarctic islands.[28]

HPAI H5N1 clade 2.3.4.4b viruses have been linked to significant morbidity and mortality events among wild birds, resulting in deaths ranging from hundreds to thousands of birds across various species. Affected birds may exhibit a diverse range of clinical signs, including gastrointestinal, respiratory, neurological or ocular (eye) changes. However, these viruses have also been found in apparently healthy wild birds. Additionally, HPAI H5N1 clade 2.3.4.4b viruses have been identified in wild mammals, including foxes, otters, seals, sea lions and other marine mammals.[29] In some regions, these strains have caused substantial mortality, reaching thousands of deaths in some species of seals and sea lions in South America.[30]

Past HPAI outbreaks in Australia have occurred in commercial poultry operations, and the virus was rapidly eradicated in all cases. These outbreaks originated from the spillover of LPAI H7 viruses from

28 offlu.org/wp-content/uploads/2023/12/OFFLU-wildlife-statement-no.-II.pdf

29 fao.org/animal-health/situation-updates/global-aiv-with-zoonotic-potential/en

30 offlu.org/wp-content/uploads/2023/12/OFFLU-wildlife-statement-no.-II.pdf

Credit: Shana Ahmed

Australian wild birds and subsequent mutation to HPAI in poultry. Although H5 HPAI viruses, including clade 2.3.4.4b viruses, have never been detected in Australia, the potential effects on poultry and wildlife health could be significant.

While earlier research indicated a low risk of HPAI strains entering Australia through migratory birds,[31,32,33,34] the current global situation presents a higher risk to Australia. This is because

31 East IJ et al. 2008. Identifying areas of Australia at risk for H5N1 avian influenza infection from exposure to nomadic waterfowl moving throughout the Australo-Papuan region. *Geospatial Health*; 3(1): 17–27.

32 East IJ et al. Identifying areas of Australia at risk of H5N1 avian influenza infection from exposure to migratory birds: a spatial analysis. *Geospatial Health*; 2(2): 203–213.

33 Curran J. 2012. 'The surveillance and risk assessment of wild birds in northern Australia for highly pathogenic avian influenza H5N1 virus', doctoral dissertation, Murdoch University.

34 Wille M et al. 2019. Serologic evidence of exposure to highly pathogenic avian influenza H5 viruses in migratory shorebirds, Australia. *Emerging Infectious Diseases*; 25(10): 1903–1910.

of the strain's expanded host and geographic range, increased persistence of the virus in the environment, and its ability to spread and infect a wider range of species.

New LPAI viruses are known to arrive in Australia infrequently via long-distance migratory wild bird movements from overseas.[35] The detection of antibodies against H5 HPAI clade 2.3.4.4 variants has demonstrated that migratory shorebirds in Australia can be exposed to HPAI viruses overseas before migrating to Australia.[36]

Strains of HPAI virus are present in the Asia-Pacific region,[37] although there is no evidence to date that long-distance migratory birds carry infectious viruses when they arrive in Australia.[38]

Although there are no current reports of H5 HPAI viruses, including clade 2.3.4.4b, being present in the Indonesian provinces in Papua or Papua New Guinea, movements of wild birds within the Australo-Papuan region, directly to Australia's north, also present a possible pathway for introduction to Australia. These birds show frequent but irregular movements with no apparent or consistent seasonal patterns, driven by strong environmental conditions.[39,40] Hence, the risk period for this pathway is year-round, in contrast to the seasonal risk period from long-distance migratory birds.

Surveillance activities, coordinated by the NAIWB Steering Group[41] and WHA, include investigation of significant morbidity and mortality events in wild and captive birds and risk-based targeted surveillance, through sampling apparently healthy and hunter-shot wild birds of known reservoir species for AIV (including waterfowl and shorebirds) at key locations (see report on page 38).

35 Wille M et al. 2022. Australia as a global sink for the genetic diversity of avian influenza A virus. *PLoS Pathogens*; 18(5): e1010150. doi.org/10.1371/journal.ppat.1010150

36 Wille M et al. 2019. Serologic evidence of exposure to highly pathogenic avian influenza H5 viruses in migratory shorebirds, Australia. *Emerging Infectious Diseases*; 25(10): 1903–1910.

37 WHA, Klaassen M, Wille M. 2023. High pathogenicity avian influenza (HPAI) clade 2.2.3.4b incursion risk assessment for Australia (based on information as of 20 July 2023; abridged version). wildlifehealthaustralia.com.au/Portals/0/ResourceCentre/BiosecurityMgmt/HPAI_incursion_risk_assessment_Australia.pdf

38 Wille M, Klaassen M 2023. No evidence for HPAI H5N1 2.3.4.4b incursion into Australia in 2022. *Influenza and Other Respiratory Viruses*; 17(3): e13118.

39 Ferenczi M et al. 2021. Rainfall driven and wild-bird mediated avian influenza virus outbreaks in Australian poultry, *BMC Veterinary Research*; 17(1): 306, doi.org/10.1186/s12917-021-03010-9

40 Purnell C. 2022. 'The role of waterbirds in Australia's 2022 Japanese Encephalitis outbreak' (unpublished rapid synthesis) BirdLife Australia, wildlifehealthaustralia.com.au/Portals/0/Incidents/Role_of_waterbirds_Aus_2022-JEV-outbreak_RapidSsynthesis_BirdLifeAustralia.pdf (accessed 19 July 2023).

41 wildlifehealthaustralia.com.au/Our-Work/Surveillance/Wild-Bird-Surveillance

A national surveillance program is in place for AIVs in Australia to better understand the risk of HPAI incursion into Australia and rule out HPAI in mass mortality events of wild birds. The monitoring activities of the NAIWB Surveillance Program include coordinated sampling, avian influenza screening and molecular analysis of viruses detected through a collaborative partnership between federal, state and territory government animal biosecurity agencies, including laboratories, universities and NAQS.

Sequence analysis of AIV detections in wild birds to date indicates that introduction of overseas strains into Australia is infrequent, but it does occur periodically.[42,43,44,45] This highlights the importance of detection and subsequent sequencing of AIVs in wild birds to detect changes to Australian AIV evolution and infection dynamics. This work ensures current diagnostic tests can be updated to detect circulating strains and also ensures that avian influenza strains in Australia are compared with those overseas, providing valuable contextual data in the event of AIV detections in poultry.

There is also strong engagement via national and international networks, and the perspectives of key stakeholders are integrated into recommendations and plans. The impact of HPAI on wild bird conservation is substantial, and it is important to highlight the role of ecologists in significantly enhancing our knowledge of the health of seabirds[46] and other wildlife.

Considering the HPAI events occurring globally, Australian governments, industry groups and WHA have been communicating with poultry producers and wildlife health professionals to increase awareness and vigilance. Australia has a system in place for reporting unusual signs of disease in wildlife to state and territory WHA coordinators.[47] Avian influenza is also a nationally notifiable disease and suspected cases in animals must be reported to private veterinarians or the relevant state or territory's department of primary industries or agriculture by phoning the Emergency Animal Disease Hotline on 1800 675 888.

For more information, see WHA's HPAI information webpage,[48] which includes a series of resources such as advice documents, a risk mitigation toolbox for wildlife managers, a technical issue update and avian influenza fact sheet.

42 Kishida N et al. 2008. H2N5 influenza virus isolates from terns in Australia: genetic reassortants between those of the Eurasian and American lineages. *Virus Genes*; 37: 16-21.

43 Vijaykrishna D et al. 2013. The recent establishment of North American H10 lineage influenza viruses in Australian wild waterfowl and the evolution of Australian avian influenza viruses. *Journal of Virology*; 87(18): 10182–10189.

44 Bhatta TR et al. 2020. Detection of a reassortant H9N2 avian influenza virus with intercontinental gene segments in a resident Australian chestnut teal. *Viruses*; 12(1): 88.

45 Wille M et al. 2022. Australia as a global sink for the genetic diversity of avian influenza A virus. PLoS Pathogens; 18(5): e1010150. doi.org/10.1371/journal.ppat.1010150

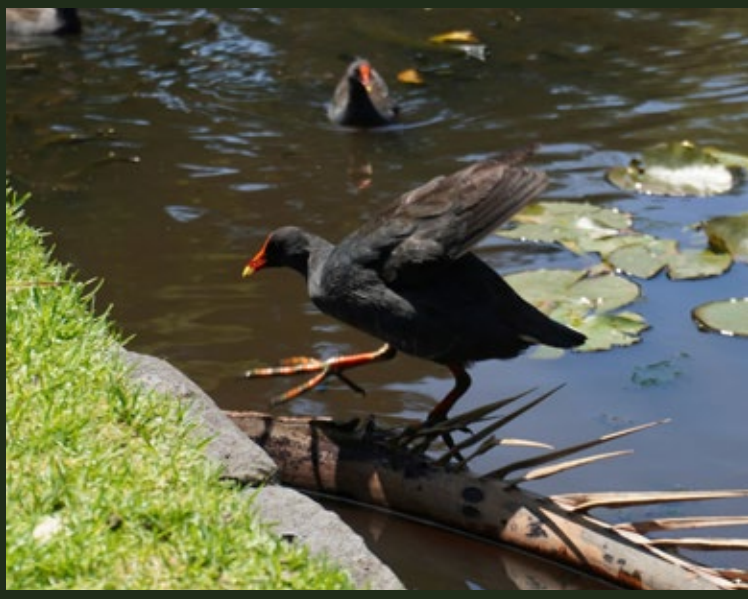
46 Wells MR et al. 2023. The potential of ecologists to enhance our understanding of seabird health. *Marine Ornithology*; 51: 11–22.

47 wildlifehealthaustralia.com.au/Incidents/WHA-Coordinator-Contacts

48 wildlifehealthaustralia.com.au/Incidents/Incident-Information/high-pathogenicity-avian-influenza-information

CASE STUDY

Investigation of a mass mortality in wild birds in central Victoria, with botulism identified as the cause



A mass mortality event at Bells Swamp Nature Conservation Reserve near Maldon in central Victoria was reported to Wildlife Victoria in February 2023 by a regional wildlife rescuer, who collected and transported the initial samples for diagnosis. The event resulted in the death of approximately 800 birds over several weeks, with affected species including chestnut teal (*Anas castanea*), grey teal (*A. gracilis*), Pacific black duck (*A. superciliosa*), Australian coot (*Fulica atra*), Australian magpie (*Cracticus tibicen*), dusky moorhen (*Gallinula tenebrosa*), wood duck (*Aix sponsa*) and white-faced heron (*Egretta novaehollandiae*).[49]

A team led by the Parks Victoria Fire and Emergency Team organised collection of sick birds for treatment or rehabilitation, and dead birds for diagnostic investigation and to reduce potential environmental contamination. No significant gross pathology was found on necropsy. Samples (eye, oral and cloacal swabs) were submitted to Agriculture Victoria's AgriBio Laboratory for viral exclusion testing, and liver and maggot samples were submitted to the Department of Primary Industries and Regional Development Laboratory, Western Australia for botulism testing. AIV and AOAV-1 were ruled out in 59 birds using PCR testing. In two teals, influenza type A was detected (also by PCR testing), and this was further typed to exclude H5 and H7 subtypes. These were incidental, non-clinical LPAI detections which are considered part of the natural wild bird virus community in Australia.[50] *Pasteurella multocida* (avian cholera) was also ruled out by liver culture.

PCR tests were positive for botulinum toxin type C in samples from a chestnut teal and from maggots. In combination with compatible signs across the group and a lack of gross pathology on necropsy, this was considered strong supportive evidence for a diagnosis of botulism.[51] A total of 22 birds were released following a period of supportive care at Zoos Victoria veterinary facilities.

This was a collaborative investigation and response by Parks Victoria, Wildlife Victoria, Zoos Victoria, Vets for Compassion, the Department of Energy, Environment and Climate Action/Agriculture Victoria and the University of Melbourne Veterinary School. WHA provided guidance, information and funding through the National Significant Disease Investigation Program.[52] This event was recorded in the electronic National Wildlife Health System database.[53]

49 parks.vic.gov.au/media-releases/2023/02/21/22/02/bells-swamp-avian-botulism-event-confirmed

50 wildlifehealthaustralia.com.au/Portals/0/ResourceCentre/FactSheets/Avian/Avian_Influenza_in_Wild_Birds_in_Australia.pdf

51 wildlifehealthaustralia.com.au/Portals/0/ResourceCentre/FactSheets/Avian/Diagnosis_of_Avian_Botulism_in_Australia.pdf

52 wildlifehealthaustralia.com.au/Incidents/Disease-Investigation-Funding

53 wildlifehealthaustralia.com.au/Our-Work/Surveillance/eWHIS-Wildlife-Health-Information-System

Antimicrobial resistance surveillance

Antimicrobial resistance (AMR) is one of the biggest threats to both human and animal health today. Monitoring AMR in Australia through surveillance activities allows us to understand the risk and make informed decisions about antimicrobial use. It also aids the development of communication tools to ensure that everyone understands their role in antimicrobial stewardship.

As mentioned in Chapter 1, 2023 saw the release of *Australia's Animal Sector Antimicrobial Resistance Action Plan 2023 to 2028*. The activities identified are intended to be completed over the five-year time frame of the action plan. Monitoring and evaluation will be conducted to determine the effectiveness of the activities and inform the development of the next five-year action plan.

A project to develop the Robotic Antimicrobial Susceptibility Platform (RASP) to support AMR surveillance for difficult-to-grow bacteria was finalised in May 2023. The project aimed to (1) optimise and validate novel robotic protocols for automated isolation, identification and antimicrobial susceptibility testing using RASP

for *Enterococcus* and *Campylobacter* isolates from animal faeces, and (2) perform a proof-of-concept trial using a national collection of faecal samples from livestock (pigs and chickens) to validate the protocols developed. The platform provides capability for high-throughput screening of organisms targeted in surveillance programs, which allows greater numbers of isolates to be tested, improving surveillance sensitivity and confidence in results. It also improves efficiency and repeatability of laboratory testing.

In 2023, a repeat survey to assess the prevalence of AMR against key indicators and foodborne pathogens in the pork industry was completed. This study used methods that align with Chapter 6.8 of the WOAH *Terrestrial Animal Health Code* and other nationally funded AMR surveillance in livestock. The project tested resistance patterns against selected antimicrobials important to human and animal health in more than 3000 bacterial isolates from healthy pigs, including commensal bacteria (*Escherichia coli* and *Enterococcus*) and food-borne disease bacteria (*Salmonella* and *Campylobacter*).

3

Aquatic animal health status

This chapter provides details on the status of aquatic animal health in Australia including disease events in 2023.

3.1 Status of aquatic animal health in Australia

This chapter provides details on the status of aquatic animal health in Australia including disease events in 2023. This year, the World Organisation for Animal Health (WOAH) included 11 finfish diseases, seven mollusc diseases, 10 crustacean diseases and three amphibian diseases on its diseases of aquatic animals list.[54] Australia is free from most of these diseases. Australia's status for each WOAH-listed aquatic animal disease agent in 2023 is shown in Table 3.1. For WOAH-listed diseases that are present, the maps in Figure 3.1 indicate the states and territories where the diseases have been reported.

Table 3.1 Australia's status for WOAH-listed disease agents of aquatic animals in 2023

Agent	Status
Finfish	
***Aphanomyces invadans* (epizootic ulcerative syndrome)**	Last reported 2022
Cyprinid herpesvirus-3 (koi herpesvirus)	Never reported
Epizootic haematopoietic necrosis virus	Reported 2023
Gyrodactylus salaris	Never reported
HPR-deleted or HPR0 infectious salmon anaemia virus	Never reported
Infectious haematopoietic necrosis virus	Never reported
Red sea bream iridovirus	Never reported
Salmonid alphavirus	Never reported
Spring viraemia of carp virus	Never reported
Tilapia lake virus	Never reported
Viral haemorrhagic septicaemia virus	Never reported
Molluscs	
Bonamia ostreae	Never reported
Bonamia exitiosa	Last reported 2019
Haliotid herpesvirus-1 (Abalone herpesvirus)	Reported 2023
Marteilia refringens	Never reported
Perkinsus marinus	Never reported
Perkinsus olseni	Last reported 2022
Xenohaliotis californiensis	Never reported

Continued

54 woah.org/en/what-we-do/standards/codes-and-manuals/aquatic-code-online-access

Agent	Status
Crustaceans	
***Aphanomyces astaci* (crayfish plague)**	Never reported
Decapod iridescent virus 1	Never reported
***Hepatobacter penaei* (necrotising hepatopancreatitis)**	Never reported
Infectious hypodermal and haematopoietic necrosis virus	Reported 2023
Infectious myonecrosis virus	Never reported
***Macrobrachium rosenbergii nodavirus* (white tail disease)**	Last reported 2008
Taura syndrome virus	Never reported
***Vibrio parahaemolyticus* (acute hepatopancreatic necrosis disease)**	Never reported
White spot syndrome virus	Reported 2023
Yellow head virus genotype 1	Never reported
Amphibians	
Batrachochytrium dendrobatidis	Reported 2023
Batrachochytrium salamandrivorans	Never reported
Ranavirus species	Last reported 2008

Notes: Aquatic animal diseases that were reportable to the WOAH in 2023 are those listed in the WOAH *Aquatic Animal Health Code* (2023).[55]

3.2 National List of Reportable Diseases of Aquatic Animals

Australia's National List of Reportable Diseases of Aquatic Animals includes all the aquatic animal diseases currently listed by WOAH and other aquatic animal diseases of national significance. Consistent and accurate reporting is important to demonstrate Australia's claims of freedom from diseases of international significance – to support trade of seafood products and our biosecurity measures. Our disease reporting demonstrates transparency to trading partners and a commitment to disease management and biosecurity. Australia reviews its list annually, considering new scientific information on listed diseases, and new and emerging diseases.

Table 3.2 shows Australia's status for other aquatic animal disease agents of national significance that are not listed on the WOAH *Aquatic Animal Health Code* for 2023.

Credit: Craig Mostyn, Jade Tiger Abalone

55 woah.org/en/what-we-do/standards/codes-and-manuals/aquatic-code-online-access

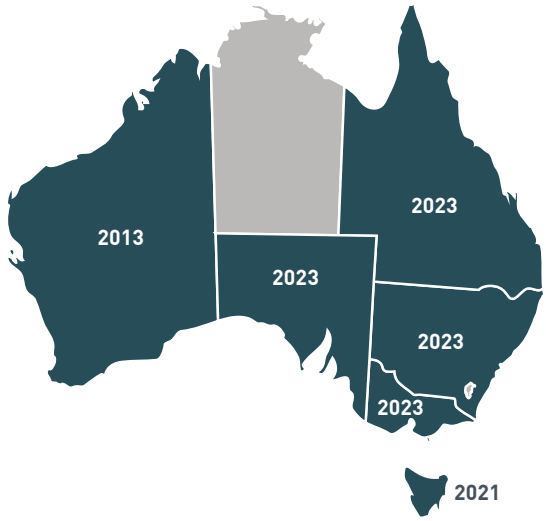
Table 3.2 Australia's status for other significant disease agents of aquatic animals in 2023

Agent	Status
Finfish	
Aeromonas salmonicida – atypical strains	Last reported 2021
Aeromonas salmonicida subsp. *Salmonicida* (furunculosis)	Never reported
Betanodavirus (viral encephalopathy and retinopathy)	Reported 2023
Edwardsiella ictaluri (enteric septicaemia of catfish)	Last reported 2014
Infectious spleen and kidney necrosis virus	Last reported 2020
Infectious pancreatic necrosis virus	Never reported
Myxobolus cerebralis (whirling disease)	Never reported
Piscirickettsia salmonis (piscirickettsiosis)	Never reported
Renibacterium salmoninarum (bacterial kidney disease)	Never reported
Scale drop disease virus	Never reported
Singapore grouper iridovirus (ranavirus)	Never reported
Turbot reddish body iridovirus	Never reported
Yersinia ruckeri – Hagerman strain (enteric redmouth disease)	Never reported
Mollluscs	
Marteilia sydneyi	Reported 2023
Marteilioides chungmuensis	Never reported
Mikrocytos mackini	Never reported
Ostreid herpesvirus-1	Last reported 2022
Crustaceans	
Enterocytozoon hepatopenaei	Never reported
Gill-associated virus	Reported 2023
Monodon slow growth syndrome	Never reported

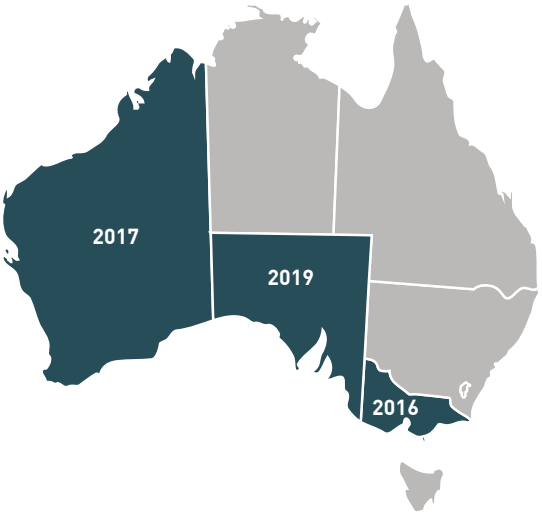
Haliotid herpesvirus-1 (abalone herpesvirus)

***Aphanomyces invadans* (epizootic ulcerative syndrome)**

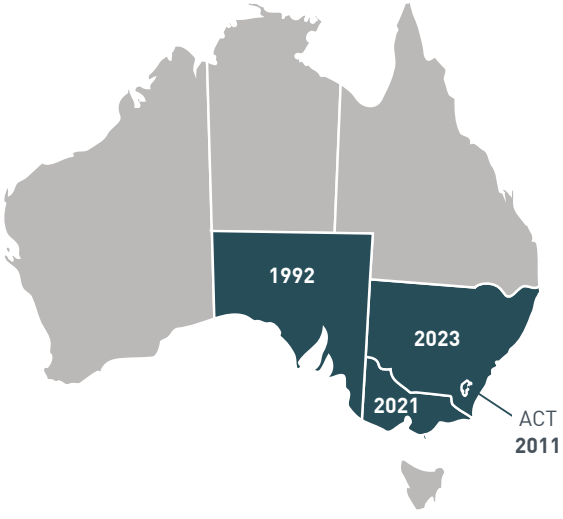
Batrachochytrium dendrobatidis



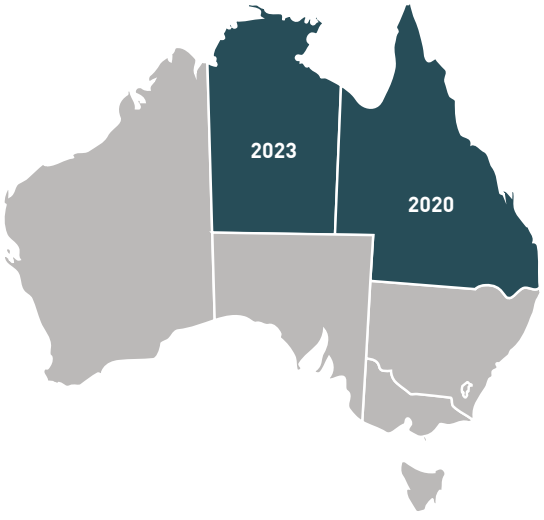
Bonamia exitiosa



Epizootic haematopoietic necrosis virus



Infectious hypodermal and haematopoietic necrosis virus



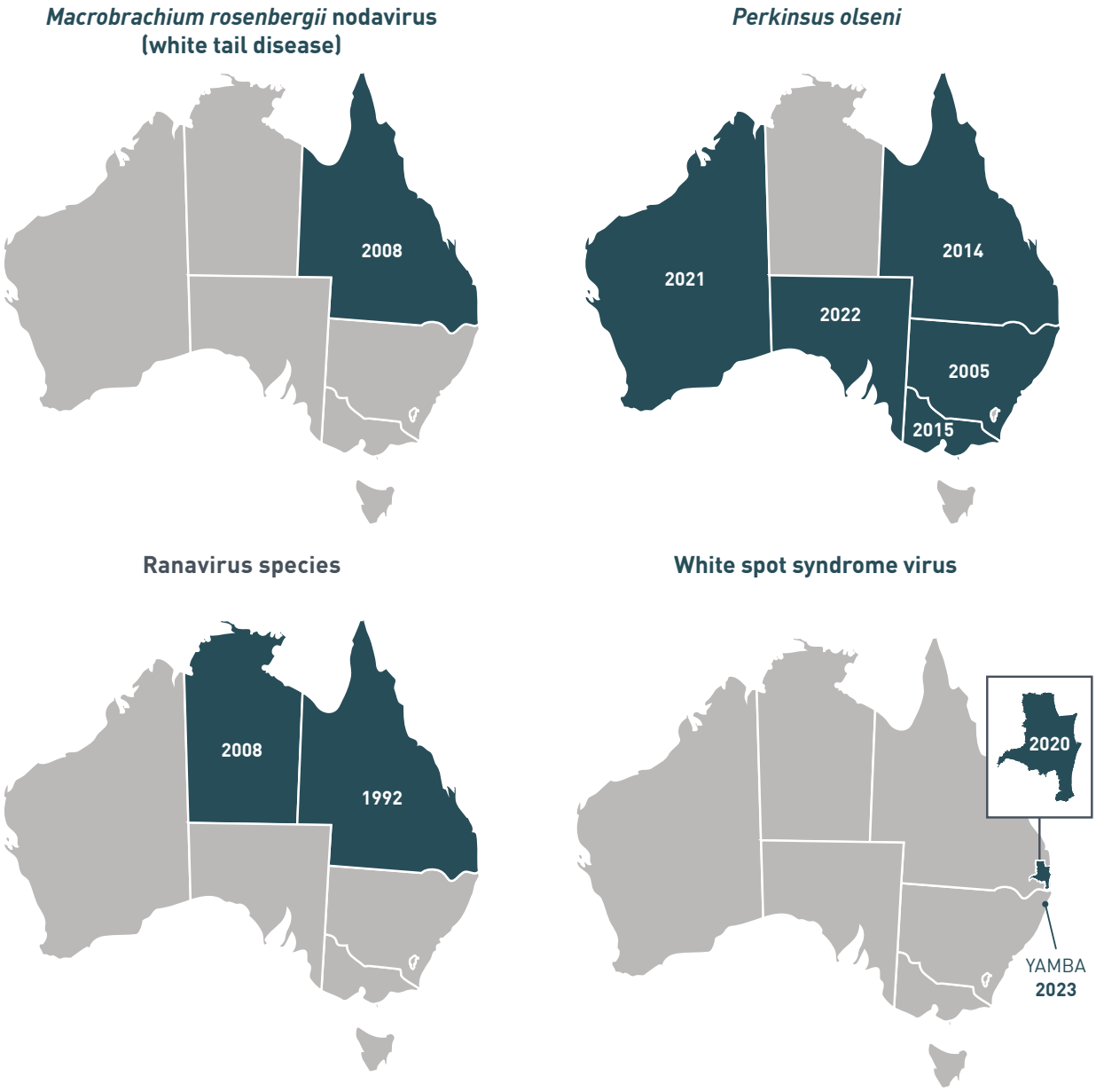


Figure 3.1 Distribution of WOAH-listed aquatic animal diseases in Australia

3.3 National exotic disease exclusion testing of aquatic animals in 2023

During 2023, national exotic disease exclusion testing of aquatic animals was conducted by the CSIRO Australian Centre for Disease Preparedness, the national reference laboratory for diseases of aquatic animals. The purpose of the testing was to detect or exclude nationally reportable diseases (Table 3.3).

Credit: Huon Aquaculture

Table 3.3 National reportable disease investigations of aquatic animals in 2023 – total number of submissions and samples per species

Species	Total number of submissions	Total number of samples
Amphibians	3	4
Crustaceans	17	205
Finfish	21	165
Molluscs	10	87

3.4 Aquatic animal disease events in 2023

White spot syndrome virus in *Penaeus monodon*, New South Wales

Infection with white spot syndrome virus (WSSV), or white spot disease (WSD), is a reportable disease that causes increased mortalities in cultivated stocks of crustaceans, including prawns, crabs, yabbies and lobsters. WSD was first detected in Australia in farmed prawns on the Logan River, Southeast Queensland in 2016. WSSV was later detected in wild populations of crustaceans, including prawns and crabs, in the northern part of Moreton Bay in 2017. A movement-regulated area (MRA) was established to prevent the virus spreading to other parts of Queensland and other states and territories. The national WSSV surveillance program demonstrated that all areas of Australia, outside of the MRA, were free from the virus.

WSSV was detected at a biosecure prawn hatchery in northern New South Wales in August 2022. The incident was quickly contained and WSSV was eradicated from the facility. More recently, WSSV was detected in farmed black tiger prawns (*Penaeus monodon*) on the north coast of New South Wales in February and April 2023. The genetic strain of WSSV detected in New South Wales was different to the detections in Queensland mentioned above. The New South Wales Department of Primary Industries led the response to the outbreak. An incident management team was established on 13 February and stood down on 30 June 2023. The team coordinated the investigation, surveillance and response activities in line with technical advice provided by the Aquatic Consultative Committee on Emergency Animal

Diseases and AQUAVETPLAN, Australia's aquatic veterinary emergency plan.[56]

The New South Wales Department of Primary Industries issued the three infected farms with individual biosecurity directions and finalised decontamination and disinfection of all farm facilities and pond water by 6 October 2023. Discharge of pond water occurred following testing by environment protection authorities to manage its safe release into the environment.

The emergency response has since transitioned to the management phase. A control zone in the Clarence River, New South Wales continues to restrict the movement of raw prawns, decapod crustaceans and polychaete worms. At the same time, New South Wales continues nationally agreed surveillance activities to determine if a self-declaration of freedom from WSD can be made from the Clarence River control zone. The control zone is in place until 8 June 2025.

Initial surveillance of wild prawn populations conducted within the control zone in February 2023 found trace levels of WSSV DNA in a small number of samples. Subsequently, wild prawns and crustaceans in the control zone, including adjacent offshore areas, have tested negative for WSSV. Surveillance of wild crustaceans in the Clarence River control zone's coastal and offshore areas will continue. This will include testing of farmed prawns, should farms recommence cultivation during the surveillance period.

Further information on this disease event is available at: **outbreak.gov.au**.

3.5 National simulation exercises

'Ready Set Go!' Preparing for Emergency Disease Outbreaks in Aquatic Animals is a simulation exercise program[57] that addresses a national priority under

Credit: Australian Prawn Farmers Association

Australia's fourth national strategic plan for aquatic animal health, *AQUAPLAN 2022–2027*.[58] The program, funded by the Fisheries Research and Development Corporation, will deliver a series of national sector-specific, discussion-based emergency response exercises during the *AQUAPLAN 2022–2027* implementation period.

The program aims to improve industry and government preparedness to respond to nationally significant exotic animal disease outbreaks. This will help to prevent or minimise the impacts of exotic diseases on profitability and productivity.

56 AQUAVETPLAN is a series of manuals that outline Australia's approach to national disease preparedness and proposes the technical response and control strategies to be activated in a national aquatic animal disease emergency. For further information see: agriculture.gov.au/agriculture-land/animal/aquatic/aquavetplan

57 agriculture.gov.au/agriculture-land/animal/aquatic/aquaplan/national-simulation-exercises

58 agriculture.gov.au/agriculture-land/animal/aquatic/aquaplan

Credit: South Australian Oyster Growers Association

Although national preparedness arrangements are in place, such as those outlined in the AQUAVETPLAN response manuals, a lack of disease outbreaks means there has been little need to use these in a real-world response.

The simulation program is designed to test whether technical response arrangements are fit for purpose and check that they include sufficient practical information for use in a real-world response.

The program's first simulation exercise was Exercise FlyWheel in 2023. It was conducted in collaboration with the Australian barramundi industry. The discussion-based exercise aimed to test response arrangements and identify any gaps or constraints in how a response can be undertaken cost-effectively. The exercise was conducted using a combination of face-to-face and virtual workshops over a four-week period and infectious spleen and kidney necrosis virus (ISKNV) was used as the outbreak scenario. The participants (barramundi industry and government representatives and consultant veterinarians) agreed on a response objective and collaboratively developed a response plan to achieve it. Through these activities, participants increased their understanding of practical considerations for an emergency response and built working relationships.

Participants considered strengths, weaknesses and gaps in current emergency response

arrangements. Some priority areas to strengthen preparedness were agreed and included:

- strengthening on-farm biosecurity, including testing of site-specific biosecurity plans, and staff training
- furthering industry–government discussions on emergency response arrangements, including the development of a government and industry cost-sharing deed in respect of aquatic emergency animal disease responses (similar to the deed in place for the livestock industry)
- identifying appropriate chemicals for destruction of stock and decontamination of systems
- understanding and addressing risks associated with imports of fish for human consumption and ornamental fish
- developing a new AQUAVETPLAN manual for ISKNV and scale drop disease virus
- increasing research to address knowledge gaps important for eradication and control of ISKNV.

Action plans with defined and achievable goals have been developed for each priority. Work is well advanced for most action plans. Further information on the program and Exercise FlyWheel is available on the project website.[59]

59 frdc.com.au/project/2021-048

4 Appendices

Appendix A – Livestock and aquatic industries in Australia

The data presented in this appendix has been sourced from the Australian Bureau of Agricultural and Resource Economics (ABARES) Agricultural Commodities Report (March 2024) and the Australian Bureau of Statistics (ABS) Agricultural Commodities Report[60] for 2021-22 (as at 17 January 2023).

Table A1 - Sheep and cattle numbers by state, 2021-22

	Unit	Qld	NSW	Vic	SA	WA	Tas	NT	ACT	National
Sheep	'000 head	2814	27 149	14 623	10 594	12 417	2567	0	71	70 235
Beef cattle	'000 head	10 794	4363	2185	958	1912	446	1587	5	22 250
Dairy cattle	'000 head	85	292	1290	94	88	299	-	-	2148

Source: ABS.

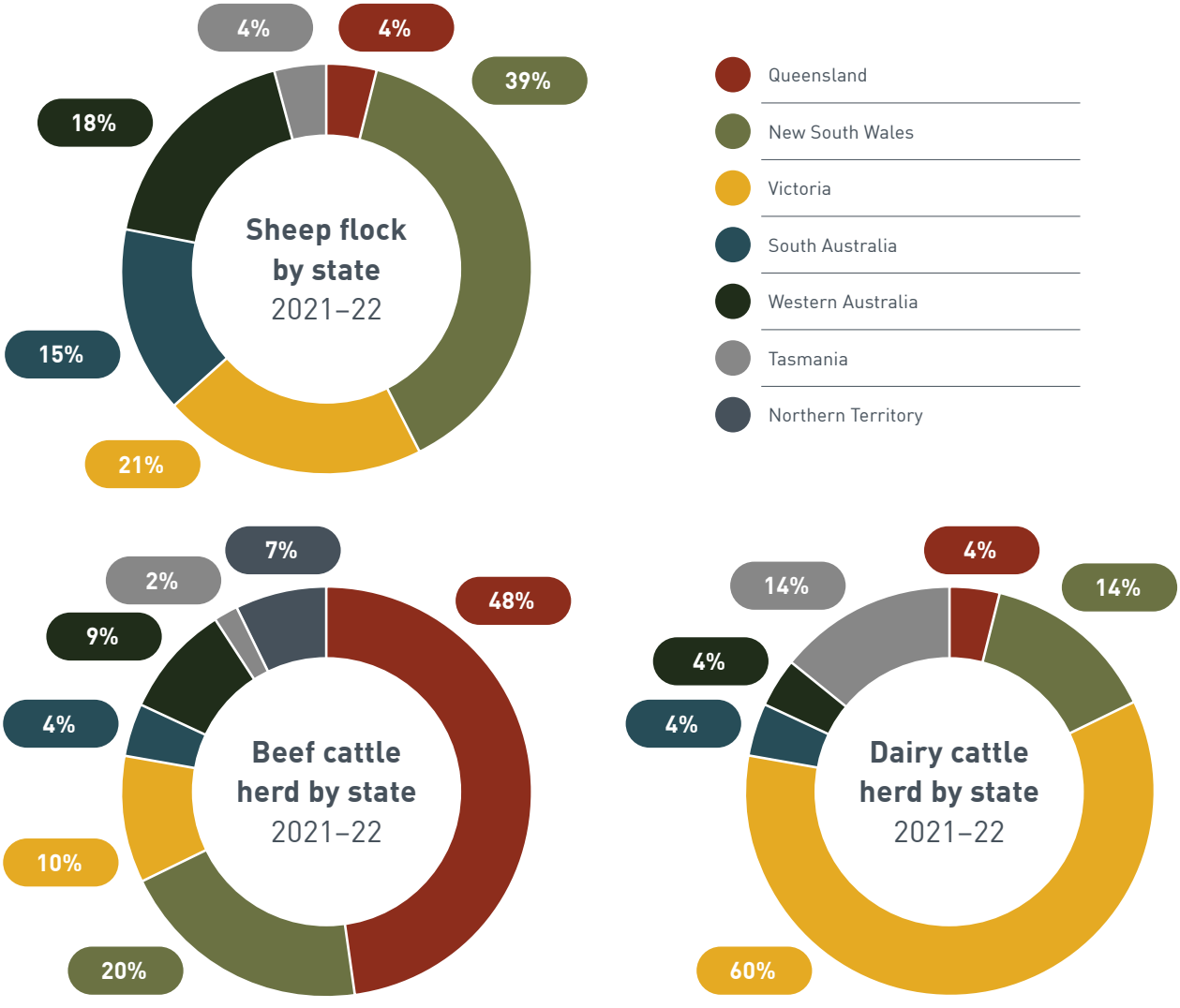


Figure A1 Sheep and cattle numbers by state, 2021–22

60 The ABS Agricultural Commodities Report for 2022–23 had not been released at the time of publication. The 2021–22 data in Table A1 and Figure A1 have not changed since the Animal Health in Australia Annual Report 2022.

Table A2 Australian livestock statistics

	Unit	2020–21	2021–22	2022–23[k]
Livestock numbers				
Sheep	'000 head	68 047	70 235	72 552
Beef cattle	'000 head	22 048	22 250	23 763
Dairy cattle	'000 head	2383	2148	2121
Total Cattle	**'000 head**	**24 431**	**24 398**	**25 884**
Pigs	'000 head	2 578	2 626	2 596
Livestock slaughterings				
Sheep	'000 head	5403	6232	8665
Lamb	'000 head	20 747	20 866	22 732
Cattle and calves	'000 head	6621	6148	6598
Pigs	'000 head	5490	5502	5644
Chickens	million	678	698	711
Goats	'000 head	960	1 460	2 018
Meat produced[a]				
Mutton	kt (cw)	142	164	221
Lamb	kt (cw)	515	513	557
Beef and veal	kt (cw)	1933	1878	2015
Pork	kt (cw)	432	439	453
Poultry	kt (cw)	1292	1362	1376
Goat meat	kt (cw)	16	24	34
Livestock products				
Wool[b]	kt (gr. eq.)	358	391	406
Milk[c]	ML	8858	8554	8129
Eggs	million dozen	401	336	379
Meat exports				
Mutton	kt (sw)	146	158	192
Lamb	kt (sw)	279	288	308
Beef and veal	kt (sw)	981	940	1011
Pig meat	kt (sw)	32	29	34

Continued

	Unit	2020–21	2021–22	2022–23[k]
Chicken meat	kt (sw)	32	54	51
Goat meat	kt (sw)	15	21	25
Kangaroo meat	kt (sw)	1	2	2
Camel meat	kt (sw)	0	1	1
Live animal exports				
Live sheep[d]	'000 head	602	489	676
Live feeder/slaughter cattle[e]	'000 head	780	520	485
Live breeder cattle[f]	'000 head	125	97	105
Live goats	'000 head	14	3	11
Live camels	head	696	661	445
Live buffalo	head	0	2207	4355
Gross value of livestock production				
Sheep[g]	$m	692	848	783
Lamb[g]	$m	3547	3997	3710
Cattle and calves[g,h]	$m	11 959	14 133	13 941
Pigs[g]	$m	1557	1565	1673
Poultry	$m	2927	3178	3670
Goats	$m	134	214	134
Cattle exported live[i]	$m	1507	1188	1155
Sheep exported live[d]	$m	93	85	85
Goats exported live	$m	7	2	7
Wool[b]	$m	2645	3230	3145
Milk[j]	$m	4688	4872	6080
Eggs	$m	1124	967	1303

a Includes carcase equivalent of canned meats.
b Includes shorn wool (includes crutching), dead and fellmongered wool, and wool exported on skins.
c Includes the whole milk equivalent of farm cream intake.
d Includes breeding stock.
e Includes buffalo.
f Includes dairy cattle and buffalo.
g Excludes skin and hide values.
h Includes dairy cattle slaughtered.
i Includes all bovine for feeder/slaughter, breeding and dairy purposes.
j Milk intake by factories and valued at the farm gate.
k ABARES estimate.
Source: ABARES; ABS.

Table A3 Australian fisheries production

	Unit	2020–21	2021–22	2022–23
Volume of fisheries production				
Tuna	kt	12	12	12
Salmonids[a]	kt	67	84	81
Other fish	kt	126	132	138
Prawns	kt	25	25	25
Rock lobster	kt	8	10	10
Crab	kt	4	4	3
Other crustaceans	kt	1	1	1
Abalone	kt	3	3	3
Scallop	kt	7	5	4
Oyster	kt	9	11	12
Squid	kt	1	2	2
Other molluscs	kt	6	7	7
Other not elsewhere included	kt	5	3	4
Total	**kt**	**274**	**300**	**302**
Value of fisheries production				
Tuna	$m	178	129	142
Salmonids[a]	$m	904	1031	1150
Other fish	$m	630	627	677
Prawns	$m	370	432	450
Production not included elsewhere[b]	$m	523	403	383
Crab	$m	52	72	68
Other crustaceans	$m	25	28	25
Abalone	$m	140	137	130
Scallop	$m	18	15	11
Oyster	$m	114	138	150
Squid	$m	13	17	18
Other molluscs	$m	124	135	131
Other not elsewhere included	$m	42	28	105
Total	**$m**	**3133**	**3191**	**3438**

Continued

	Unit	2020–21	2021–22	2022–23
Exports of fisheries production				
Seafood products – volume	kt	56	63	68
Seafood products – value	$m	1331	1162	1291
Other marine products – value	$m	80	90	50

a Includes salmon and trout production.

b Includes aquaculture production not elsewhere specified because of confidentiality restrictions. In Victoria, this includes warmwater finfish, ornamental fish, other shellfish, shrimps and aquatic worms.

Sources: ABARES; Australian Fisheries Management Authority; Australian Bureau of Statistics; Department of Fisheries, Western Australia; Department of Primary Industries, New South Wales; Department of Primary Industries, Parks, Water and Environment, Tasmania; Fisheries Queensland, Department of Agriculture, Fisheries and Forestry; Fisheries Victoria, Department of Environment and Primary Industries; Northern Territory Department of Primary Industry and Fisheries; Primary Industries and Regions, South Australia; South Australian Research and Development Institute.

Table A4 Australian aquaculture production[a]

	Unit	2019–20	2020–21	2021–22
Volume				
Fish				
Salmonids[b]	kt	67	84	81
Tuna	kt	8	8	8
Silver perch	kt	0	0	0
Barramundi	kt	4	8	5
Other[c]	kt	4	6	6
Total	**kt**	**83**	**105**	**100**
Crustaceans				
Prawns	t	6740	8727	9450
Yabby	t	14	11	17
Marron	t	57	62	56
Redclaw	t	62	33	31
Total	**t**	**6876**	**8832**	**9554**
Molluscs				
Edible oyster	kt	9	11	12
Pearl oyster	kt	–	–	–
Abalone	kt	1	1	1
Blue mussel	kt	2	2	2
Total	**kt**	**13**	**16**	**17**
Production not included elsewhere[d]	kt	3	1	2
Total (all categories)	**kt**	**106**	**132**	**129**
Value				
Fish				
Salmonids[b]	$m	904	1031	1150
Tuna	$m	137	91	110
Silver perch	$m	2	2	2
Barramundi	$m	79	86	61
Other[c]	$m	55	70	81
Total	**$m**	**1177**	**1281**	**1404**

Continued

	Unit	2019–20	2020–21	2021–22
Crustaceans				
Prawns	$m	134	160	181
Yabby	$m	1	1	1
Marron	$m	2	2	2
Redclaw	$m	2	1	1
Total	**$m**	**139**	**163**	**185**
Molluscs				
Edible oyster	$m	114	138	150
Pearl oyster	$m	71	71	65
Abalone	$m	22	28	26
Blue mussel	$m	6	6	5
Total	**$m**	**235**	**270**	**276**
Production not included elsewhere[d]	$m	35	11	80
Total (all categories)	**kt**	**1587**	**1725**	**1945**

a Excludes hatchery production, crocodiles, microalgae and aquarium worms.

b Includes salmon and trout production.

c Includes eel, other native fish and aquarium fish.

d Includes aquaculture production not specified elsewhere because of confidentiality restrictions. In Victoria, this includes warmwater finfish, ornamental fish, other shellfish, shrimps and aquatic worms.

Sources: ABARES; Australian Fisheries Management Authority; Department of Fisheries, Western Australia; Department of Primary Industries, New South Wales; Department of Primary Industries, Parks, Water and Environment, Tasmania; Fisheries Queensland, Department of Agriculture, Fisheries and Forestry; Fisheries Victoria, Department of Environment and Primary Industries; Northern Territory Department of Primary Industry and Fisheries; Primary Industries and Regions, South Australia; South Australian Research and Development Institute.

Appendix B – Disease Investigations of Notifiable Animal Diseases of Terrestrial Animals

Disease investigations were undertaken throughout 2023 in animals exhibiting clinical signs potentially consistent with a national notifiable disease (excluding wildlife and feral animals). As part of these investigations, 8433 investigations (Table B1) were supported by testing at official veterinary laboratories to detect or exclude one or more nationally notifiable diseases of terrestrial animals.[61] Note that more than one disease may be investigated for a single disease event. In addition, a single investigation may involve more than one animal.

In 2023, compared to the previous year, an increased number of investigations were undertaken to exclude lumpy skin disease in cattle and high pathogenicity avian influenza in birds in response to the changed distribution of these diseases in overseas countries.

Table B1 Investigations of suspect cases of certain emergency animal diseases and nationally notifiable animal diseases, 2023

Disease	Species	Jurisdiction	Number of investigations	Positive results	Negative results
African horse sickness virus	**Horse**	**National total**	**69**	**0**	**69**
		NSW	2	0	2
		NT	2	0	2
		Qld	58	0	58
		Vic	6	0	6
		WA	1	0	1
African swine fever virus	**Pig**	**National total**	**61**	**0**	**61**
		NSW	9	0	9
		NT	2	0	2
		Qld	23	0	23
		SA	4	0	4
		Vic	3	0	3
		WA	20	0	20

Continued

61 agriculture.gov.au/biosecurity-trade/pests-diseases-weeds/animal/notifiable

Disease	Species	Jurisdiction	Number of investigations	Positive results	Negative results
Anthrax	**Cattle**	**National total**	**138**	**0**	**138**
		NSW	85	0	85
		NT	1	0	1
		Qld	12	0	12
		SA	2	0	2
		Tas	1	0	1
		Vic	27	0	27
		WA	10	0	10
	Goat	**National total**	**2**	**0**	**2**
		NSW	2	0	2
	Horse	**National total**	**15**	**0**	**15**
		NSW	2	0	2
		Qld	1	0	1
		Vic	12	0	12
	Pig	**National total**	**2**	**0**	**2**
		NSW	2	0	2
	Sheep	**National total**	**53**	**0**	**53**
		NSW	38	0	38
		SA	2	0	2
		Vic	12	0	12
		WA	1	0	1
Aujeszky's disease virus	**Cattle**	**National total**	**3**	**0**	**3**
		Tas	2	0	2
		WA	1	0	1
	Horse	**National total**	**10**	**0**	**10**
		Tas	7	0	7
		Vic	1	0	1
		WA	2	0	2
	Pig	**National total**	**18**	**0**	**18**
		Qld	9	0	9
		SA	1	0	1
		Vic	1	0	1
		WA	7	0	7
	Sheep	**National total**	**3**	**0**	**3**
		WA	3	0	3

Continued

Disease	Species	Jurisdiction	Number of investigations	Positive results	Negative results
Australian bat lyssavirus	**Cat**	**National total**	**1**	**0**	**1**
		NSW	1	0	1
	Cattle	**National total**	**4**	**0**	**4**
		NT	3	0	3
		Vic	1	0	1
	Dog	**National total**	**1**	**0**	**1**
		NT	1	0	1
	Horse	**National total**	**33**	**0**	**33**
		Qld	27	0	27
		Tas	5	0	5
		Vic	1	0	1
	Sheep	**National total**	**2**	**0**	**2**
		WA	2	0	2
Bluetongue (clinical disease)	**Cattle**	**National total**	**15**	**0**	**15**
		NSW	3	0	3
		Qld	7	0	7
		SA	1	0	1
		Vic	2	0	2
		WA	2	0	2
	Goat	**National total**	**2**	**0**	**2**
		Qld	1	0	1
		SA	1	0	1
	Sheep	**National total**	**24**	**4[a]**	**20**
		NSW	11	2	9
		Qld	6	2	4
		SA	3	0	3
		WA	4	0	4
Borna disease virus	**Sheep**	**National total**	**1**	**0**	**1**
		WA	1	0	1
Bovine anaplasmosis (in tick-free areas)	**Cattle**	**National total**	**44**	**2[b]**	**42**
		NSW	38	2	36
		WA	6	0	6
Bovine babesiosis (in tick-free areas)	**Cattle**	**National total**	**47**	**14**	**33**
		NSW	38	12[c]	26
		Qld	2	2	0
		WA	7	0	7

Continued

a The cases occurred within the bluetongue virus transmission zone and were associated with a known serotype.

b For more information refer to the article 'Tick Fever' on page 30, section 2.3 of this report.

c The 12 investigations reported are associated with 11 cases. For more information refer to the article 'Tick Fever' on page 30, section 2.3 of this report.

Disease	Species	Jurisdiction	Number of investigations	Positive results	Negative results
Bovine viral diarrhoea (type 2)	**Cattle**	**National total**	**371**	**0**	**371**
		NSW	1	0	1
		Qld	236	0	236
		SA	1	0	1
		WA	133	0	133
	Goat	**National total**	**2**	**0**	**2**
		Qld	2	0	2
Brucella abortus	**Cattle**	**National total**	**111**	**0**	**111**
		NSW	14	0	14
		Qld	23	0	23
		SA	4	0	4
		Tas	1	0	1
		Vic	30	0	30
		WA	39	0	39
	Dog	**National total**	**2**	**0**	**2**
		NT	2	0	2
	Pig	**National total**	**2**	**0**	**2**
		Qld	2	0	2
Brucella canis	**Dog**	**National total**	**43**	**0**	**43**
		NSW	2	0	2
		NT	3	0	3
		Qld	28	0	28
		SA	4	0	4
		Vic	4	0	4
		WA	2	0	2
Brucella melitensis	**Dog**	**National total**	**1**	**0**	**1**
		NT	1	0	1
	Goat	**National total**	**1**	**0**	**1**
		WA	1	0	1
	Sheep	**National total**	**14**	**0**	**14**
		NSW	1	0	1
		Vic	1	0	1
		WA	12	0	12

Continued

Disease	Species	Jurisdiction	Number of investigations	Positive results	Negative results
Brucella suis	**Dog**	**National total**	**645**	**159**[d]	**486**
		ACT	2	0	2
		NSW	439	125	314
		NT	3	0	3
		Qld	196	33	163
		SA	3	0	3
		Vic	2	1	1
	Horse	**National total**	**2**	**0**	**2**
		NSW	2	0	2
	Pig	**National total**	**17**	**1**	**16**
		NSW	10	1	9
		Qld	3	0	3
		Vic	3	0	3
		WA	1	0	1
Bungowannah virus (porcine myocarditis)	**Pig**	**National total**	**7**	**0**	**7**
		NSW	5	0	5
		Qld	1	0	1
		WA	1	0	1
***Chlamydophila abortus* (enzootic abortion of ewes, ovine chlamydiosis)**	**Goat**	**National total**	**5**	**0**	**5**
		Qld	5	0	5
	Sheep	**National total**	**29**	**0**	**29**
		NSW	5	0	5
		Qld	1	0	1
		WA	23	0	23
Classical swine fever virus	**Pig**	**National total**	**64**	**0**	**64**
		NSW	9	0	9
		NT	2	0	2
		Qld	26	0	26
		SA	4	0	4
		Vic	2	0	2
		WA	21	0	21
Contagious agalactia (clinical disease)	**Sheep**	**National total**	**2**	**0**	**2**
		WA	2	0	2
Contagious bovine pleuropneumonia (*Mycoplasma mycoides* subsp. *mycoides* SC)	**Cattle**	**National total**	**23**	**0**	**23**
		NSW	2	0	2
		Qld	13	0	13
		WA	8	0	8

Continued

d For more information refer to Table 2.1 on page 21 of this report.

Disease	Species	Jurisdiction	Number of investigations	Positive results	Negative results
Contagious caprine pleuropneumonia	**Goat**	**National total**	**3**	**0**	**3**
		Qld	1	0	1
		WA	2	0	2
	Sheep	**National total**	**6**	**0**	**6**
		WA	6	0	6
Contagious equine metritis	**Horse**	**National total**	**2**	**0**	**2**
		WA	2	0	2
Dourine	**Horse**	**National total**	**1**	**0**	**1**
		WA	1	0	1
Eastern, Western or Venezuelan equine encephalomyelitis viruses	**Horse**	**National total**	**52**	**0**	**52**
		Qld	29	0	29
		SA	1	0	1
		Tas	6	0	6
		WA	16	0	16
***Ehrlichia canis* (ehrlichiosis)**	**Dog**	**National total**	**849**	**222[e]**	**627**
		ACT	1	0	1
		NSW	11	0	11
		NT	331	101	230
		Qld	205	32	173
		SA	13	0	13
		Vic	22	3	19
		WA	266	86	180
Enzootic bovine leucosis	**Camelid**	**National total**	**1**	**0**	**1**
		NSW	1	0	1
	Cattle	**National total**	**20**	**0**	**20**
		NSW	12	0	12
		Qld	3	0	3
		SA	1	0	1
		Tas	2	0	2
		Vic	1	0	1
		WA	1	0	1
Epizootic haemorrhagic disease virus (clinical disease)	**Sheep**	**National total**	**1**	**0**	**1**
		WA	1	0	1

Continued

e For more information refer to the article 'Ehrlichiosis' on page 30, section 2.3 of this report.

Disease	Species	Jurisdiction	Number of investigations	Positive results	Negative results
Equid herpesvirus 1 (equine rhinopneumonitis)	**Horse**	**National total**	**237**	**9**	**228**
		NSW	94	7	87
		NT	1	0	1
		Qld	69	0	69
		SA	5	0	5
		Tas	12	0	12
		Vic	35	2	33
		WA	21	0	21
Equine arteritis virus	**Horse**	**National total**	**6**	**0**	**6**
		NSW	2	0	2
		NT	2	0	2
		SA	2	0	2
Equine infectious anaemia	**Horse**	**National total**	**13**	**0**	**13**
		NSW	3	0	3
		Qld	8	0	8
		WA	2	0	2
Equine influenza	**Horse**	**National total**	**13**	**0**	**13**
		NSW	3	0	3
		Qld	1	0	1
		SA	1	0	1
		Vic	7	0	7
		WA	1	0	1

Continued

Disease	Species	Jurisdiction	Number of investigations	Positive results	Negative results
Foot and mouth disease virus	**Cattle**	**National total**	**78**	**0**	**78**
		NSW	34	0	34
		NT	2	0	2
		Qld	18	0	18
		SA	4	0	4
		Tas	3	0	3
		Vic	13	0	13
		WA	4	0	4
	Deer	**National total**	**1**	**0**	**1**
		NSW	1	0	1
	Goat	**National total**	**5**	**0**	**5**
		NSW	2	0	2
		NT	1	0	1
		Qld	1	0	1
		SA	1	0	1
	Pig	**National total**	**3**	**0**	**3**
		NT	1	0	1
		WA	2	0	2
	Sheep	**National total**	**16**	**0**	**16**
		NSW	3	0	3
		NT	1	0	1
		Qld	2	0	2
		SA	5	0	5
		WA	5	0	5
Fowl typhoid	**Chicken**	**National total**	**12**	**0**	**12**
		NSW	1	0	1
		WA	11	0	11
Haemorrhagic septicaemia	**Cattle**	**National total**	**9**	**0**	**9**
		WA	9	0	9
Heartwater	**Cattle**	**National total**	**1**	**0**	**1**
		WA	1	0	1

Continued

Disease	Species	Jurisdiction	Number of investigations	Positive results	Negative results
Hendra virus	**Donkey**	**National total**	**6**	**0**	**6**
		Qld	5	0	5
		Vic	1	0	1
	Horse	**National total**	**890**	**1**[f]	**889**
		ACT	1	0	1
		NSW	194	1	193
		NT	5	0	5
		Qld	491	0	491
		SA	101	0	101
		Tas	16	0	16
		Vic	59	0	59
		WA	23	0	23
Infection of bees with *Melissococcus plutonius* (European foulbrood)	**Bees**	**National total**	**283**	**69**	**214**
		ACT	5	1	4
		NSW	175	47	128
		Qld	73	18	55
		SA	20	1	19
		Vic	10	2	8
Infection of bees with *Paenibacillus larvae* (American foulbrood)	**Bees**	**National total**	**787**	**241**	**546**
		ACT	5	3	2
		NSW	185	103	82
		Qld	73	37	36
		SA	266	47	219
		Vic	258	51	207
Infectious bursal disease virus (very virulent and exotic antigenic variant forms)	**Chicken**	**National total**	**5**	**0**	**5**
		WA	5	0	5
Infestation of bees with *Tropilaelaps* spp.	**Bees**	**National total**	**4**	**0**	**4**
		Qld	4	0	4
Infestation of bees with Varroa spp. (varroosis)	**Bees**	**National total**	**611**	**321**[g]	**290**
		NSW	607	321	286
		Qld	4	0	4

Continued

f The case was a single, unvaccinated horse near Newcastle in NSW.

g For more information refer to the article '*Varroa destructor* (varroa mite)' on page 29, section 2.3 of this report.

Disease	Species	Jurisdiction	Number of investigations	Positive results	Negative results
Influenza A virus in birds[h]	**Bird**	**National total**	**395**	**1[i]**	**394**
		NSW	173	0	173
		NT	15	0	15
		Qld	58	0	58
		SA	21	0	21
		Tas	9	0	9
		Vic	47	1	46
		WA	72	0	72
Influenza A viruses in swine	**Pig**	**National total**	**14**	**2**	**12**
		Qld	5	1	4
		Vic	2	1	1
		WA	7	0	7

Continued

h Excludes testing in wild birds. Refer to the article 'National Avian Influenza Wild Bird Surveillance Program' on page 38, section 2.4 for details of wild bird surveillance.

i The case was not HPAI, or H5 or H7 LPAI.

Disease	Species	Jurisdiction	Number of investigations	Positive results	Negative results
Japanese encephalitis	**Alpaca**	**National total**	**1**	**0**	**1**
		SA	1	0	1
	Bird	**National total**	**1**	**0**	**1**
		NSW	1	0	1
	Camelid	**National total**	**1**	**0**	**1**
		NSW	1	0	1
	Cattle	**National total**	**6**	**0**	**6**
		NT	2	0	2
		Qld	1	0	1
		SA	1	0	1
		Vic	2	0	2
	Chicken	**National total**	**1**	**0**	**1**
		WA	1	0	1
	Crocodile	**National total**	**1**	**0**	**1**
		NT	1	0	1
	Dog	**National total**	**1**	**0**	**1**
		NT	1	0	1
	Donkey	**National total**	**1**	**0**	**1**
		Vic	1	0	1
	Goat	**National total**	**2**	**0**	**2**
		Qld	2	0	2
	Horse	**National total**	**270**	**0**	**270**
		ACT	1	0	1
		NSW	94	0	94
		NT	3	0	3
		Qld	9	0	9
		SA	54	0	54
		Tas	16	0	16
		Vic	64	0	64
		WA	29	0	29
	Pig	**National total**	**64**	**0**	**64**
		NSW	21	0	21
		NT	3	0	3
		Qld	15	0	15
		SA	9	0	9
		Vic	11	0	11
		WA	5	0	5
	Sheep	**National total**	**1**	**0**	**1**
		WA	1	0	1

Continued

Disease	Species	Jurisdiction	Number of investigations	Positive results	Negative results
Leishmaniasis	**Dog**	**National total**	**2**	**0**	**2**
		NSW	1	0	1
		Vic	1	0	1
	Horse	**National total**	**1**	**0**	**1**
		NSW	1	0	1
Lumpy skin disease virus[j]	**Cattle**	**National total**	**134**	**0**	**134**
		NSW	31	0	31
		NT	19	0	19
		Qld	43	0	43
		SA	3	0	3
		Tas	2	0	2
		Vic	3	0	3
		WA	33	0	33
Maedi-visna	**Sheep**	**National total**	**3**	**0**	**3**
		Vic	1	0	1
		WA	2	0	2
Malignant catarrhal fever (wildebeest-associated)	**Cattle**	**National total**	**4**	**0**	**4**
		WA	4	0	4
Menangle virus	**Pig**	**National total**	**6**	**0**	**6**
		Qld	4	0	4
		WA	2	0	2
***Mycobacterium avium* (avian tuberculosis)**	**Bird**	**National total**	**2**	**0**	**2**
		NSW	1	0	1
		Vic	1	0	1
	Chicken	**National total**	**2**	**0**	**2**
		NSW	1	0	1
		WA	1	0	1
	Ostrich	**National total**	**1**	**1**	**0**
		Vic	1	1	0
Mycobacterium bovis	**Cattle**	**National total**	**4**	**0**	**4**
		Tas	1	0	1
		WA	3	0	3
	Pig	**National total**	**1**	**0**	**1**
		WA	1	0	1
	Sheep	**National total**	**1**	**0**	**1**
		WA	1	0	1

Continued

j Includes disease investigations of animals exhibiting clinical signs potentially consistent with lumpy skin disease. Sampling of animals as part of additional active surveillance activities are not included in this total.

Disease	Species	Jurisdiction	Number of investigations	Positive results	Negative results
Mycobacterium caprae	Sheep	**National total**	**1**	**0**	**1**
		WA	1	0	1
Mycobacterium tuberculosis complex	Cattle	**National total**	**10**	**0**	**10**
		NSW	3	0	3
		WA	7	0	7
	Pig	**National total**	**1**	**0**	**1**
		WA	1	0	1
	Sheep	**National total**	**1**	**0**	**1**
		WA	1	0	1
Mycoplasma iowae	Chicken	**National total**	**5**	**0**	**5**
		WA	5	0	5
New World screw-worm fly (*Cochliomyia hominivorax*)	Sheep	**National total**	**5**	**0**	**5**
		NT	1	0	1
		Qld	2	0	2
		WA	2	0	2
Newcastle disease virus	Bird	**National total**	**398**	**0**	**398**
		NSW	177	0	177
		NT	15	0	15
		Qld	58	0	58
		SA	21	0	21
		Tas	8	0	8
		Vic	45	0	45
		WA	74	0	74
Nipah virus	Horse	**National total**	**4**	**0**	**4**
		Vic	4	0	4
	Pig	**National total**	**3**	**0**	**3**
		Qld	2	0	2
		WA	1	0	1
Old World screw-worm fly (*Chrysomya bezziana*)	Sheep	**National total**	**3**	**0**	**3**
		NT	1	0	1
		Qld	2	0	2

Continued

Disease	Species	Jurisdiction	Number of investigations	Positive results	Negative results
Paratuberculosis	**Alpaca**	**National total**	**2**	**0**	**2**
		NSW	1	0	1
		Vic	1	0	1
	Camel	**National total**	**1**	**0**	**1**
		Qld	1	0	1
	Camelid	**National total**	**2**	**0**	**2**
		NSW	1	0	1
		WA	1	0	1
	Cattle	**National total**	**149**	**26**	**123**
		NSW	18	4	14
		NT	1	0	1
		Qld	33	0	33
		Vic	60	22	38
		WA	37	0	37
	Goat	**National total**	**20**	**1**	**19**
		NSW	10	0	10
		Vic	6	1	5
		WA	4	0	4
	Sheep	**National total**	**70**	**36**	**34**
		NSW	8	4	4
		Vic	20	14	6
		WA	42	18	24
Peste des petits ruminants virus	**Goat**	**National total**	**1**	**0**	**1**
		SA	1	0	1
	Sheep	**National total**	**2**	**0**	**2**
		NSW	1	0	1
		WA	1	0	1
Porcine epidemic diarrhoea virus	**Pig**	**National total**	**7**	**0**	**7**
		WA	7	0	7
Porcine reproductive and respiratory syndrome virus	**Pig**	**National total**	**24**	**0**	**24**
		NSW	2	0	2
		NT	1	0	1
		Qld	8	0	8
		Vic	2	0	2
		WA	11	0	11

Continued

Disease	Species	Jurisdiction	Number of investigations	Positive results	Negative results
Post-weaning multi-systemic wasting syndrome	**Pig**	**National total**	**3**	**0**	**3**
		NT	1	0	1
		WA	2	0	2
Pullorum disease	**Bird**	**National total**	**1**	**0**	**1**
		WA	1	0	1
	Chicken	**National total**	**9**	**0**	**9**
		NSW	1	0	1
		WA	8	0	8
Rabies virus	**Cattle**	**National total**	**2**	**0**	**2**
		Tas	2	0	2
	Horse	**National total**	**6**	**0**	**6**
		Tas	6	0	6
	Sheep	**National total**	**2**	**0**	**2**
		WA	2	0	2
***Salmonella* abortus-equi**	**Horse**	**National total**	**2**	**0**	**2**
		WA	2	0	2
***Salmonella* enteritidis in poultry**	**Chicken**	**National total**	**22**	**1**	**21**
		NSW	7	1	6
		Qld	8	0	8
		WA	7	0	7
Salmonellosis (*Salmonella* Abortusovis)	**Sheep**	**National total**	**23**	**0**	**23**
		NSW	1	0	1
		WA	22	0	22
Seneca Valley virus (Senecavirus A)	**Pig**	**National total**	**1**	**0**	**1**
		WA	1	0	1
Sheep pox or goat pox	**Goat**	**National total**	**2**	**0**	**2**
		NSW	1	0	1
		WA	1	0	1
	Sheep	**National total**	**2**	**0**	**2**
		NSW	1	0	1
		Qld	1	0	1

Continued

Disease	Species	Jurisdiction	Number of investigations	Positive results	Negative results
Surra (*Trypanosoma evansi*)	**Cattle**	**National total**	**8**	**0**	**8**
		NT	4	0	4
		Qld	1	0	1
		WA	3	0	3
	Horse	**National total**	**2**	**0**	**2**
		NT	1	0	1
		WA	1	0	1
	Sheep	**National total**	**1**	**0**	**1**
		WA	1	0	1
Swine vesicular disease virus	**Pig**	**National total**	**1**	**0**	**1**
		WA	1	0	1
***Taenia saginata* (Cysticercus bovis)**	**Cattle**	**National total**	**1**	**0**	**1**
		SA	1	0	1
***Teschovirus* A (porcine enteroviral encephalomyelitis)**	**Pig**	**National total**	**6**	**0**	**6**
		Qld	2	0	2
		SA	1	0	1
		Vic	1	0	1
		WA	2	0	2
Theileriosis (*Theileria parva* or *T.annulata*)	**Cattle**	**National total**	**2**	**0**	**2**
		Qld	1	0	1
		WA	1	0	1
Transmissible gastroenteritis	**Pig**	**National total**	**6**	**0**	**6**
		WA	6	0	6

Continued

Disease	Species	Jurisdiction	Number of investigations	Positive results	Negative results
Transmissible spongiform encephalopathies (bovine spongiform encephalopathy, chronic wasting disease of deer, feline spongiform encephalopathy, scrapie)	**Cattle**	**National total**	**232**	**0**	**232**
		NSW	22	0	22
		NT	6	0	6
		Qld	68	0	68
		SA	8	0	8
		Tas	6	0	6
		Vic	103	0	103
		WA	16	0	16
	Goat	**National total**	**7**	**0**	**7**
		Tas	1	0	1
		Vic	6	0	6
	Sheep	**National total**	**220**	**0**	**220**
		NSW	33	0	33
		Qld	11	0	11
		SA	20	0	20
		Tas	3	0	3
		Vic	128	0	128
		WA	25	0	25
Trypanosomosis (tsetse fly associated)	**Dog**	**National total**	**1**	**0**	**1**
		SA	1	0	1
Turkey rhinotracheitis	**Bird**	**National total**	**1**	**0**	**1**
		NSW	1	0	1
Vesicular exanthema	**Pig**	**National total**	**1**	**0**	**1**
		WA	1	0	1

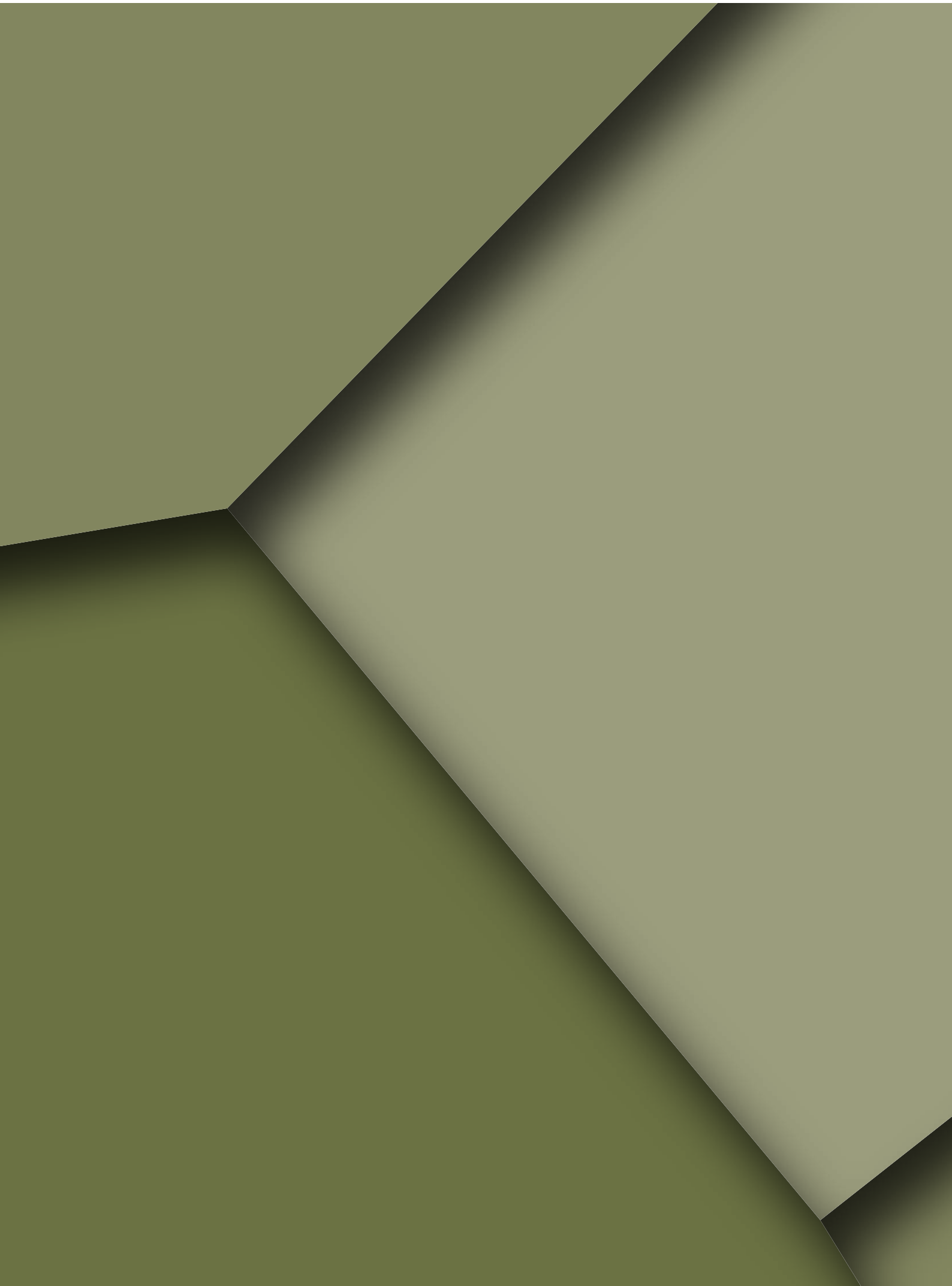
Continued

Disease	Species	Jurisdiction	Number of investigations	Positive results	Negative results
Vesicular stomatitis	**Cattle**	**National total**	**73**	**0**	**73**
		NSW	33	0	33
		Qld	16	0	16
		SA	4	0	4
		Tas	3	0	3
		Vic	13	0	13
		WA	4	0	4
	Deer	**National total**	**1**	**0**	**1**
		NSW	1	0	1
	Goat	**National total**	**3**	**0**	**3**
		NSW	2	0	2
		SA	1	0	1
	Pig	**National total**	**2**	**0**	**2**
		WA	2	0	2
	Sheep	**National total**	**15**	**0**	**15**
		NSW	3	0	3
		Qld	2	0	2
		SA	5	0	5
		WA	5	0	5
Warble fly infestation	**Sheep**	**National total**	**2**	**0**	**2**
		Qld	2	0	2

Continued

Disease	Species	Jurisdiction	Number of investigations	Positive results	Negative results
West Nile virus (clinical disease)	**Alpaca**	**National total**	**1**	**0**	**1**
		SA	1	0	1
	Bird	**National total**	**7**	**0**	**7**
		NSW	7	0	7
	Camelid	**National total**	**1**	**0**	**1**
		NSW	1	0	1
	Cattle	**National total**	**3**	**0**	**3**
		SA	1	0	1
		Vic	2	0	2
	Chicken	**National total**	**1**	**0**	**1**
		WA	1	0	1
	Dog	**National total**	**1**	**0**	**1**
		WA	1	0	1
	Donkey	**National total**	**1**	**0**	**1**
		Vic	1	0	1
	Horse	**National total**	**323**	**0**	**323**
		ACT	1	0	1
		NSW	154	0	154
		NT	1	0	1
		Qld	6	0	6
		SA	72	0	72
		Vic	64	0	64
		WA	25	0	25
	Sheep	**National total**	**2**	**0**	**2**
		WA	2	0	2

ACT = Australian Capital Territory; NSW = New South Wales; NT = Northern Territory; Qld = Queensland; SA = South Australia; Tas = Tasmania; Vic = Victoria; WA = Western Australia



Acronyms and Abbreviations

AAWS	Australian Animal Welfare Strategy
ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
ABLV	Australian bat lyssavirus
ABS	Australian Bureau of Statistics
ACDP	Australian Centre for Disease Preparedness
ACVO	Australian Chief Veterinary Officer
AHA	Animal Health Australia
AIV	avian influenza virus
AMR	antimicrobial resistance
AOAV	avian orthoavulavirus
BHV	bovine herpesvirus
BSE	bovine spongiform encephalopathy
BVDV	bovine viral diarrhoea virus
CSIRO	Commonwealth Scientific and Industrial Research Organisation
EADRA	Emergency Animal Disease Response Agreement

HPAI	high pathogenicity avian influenza
ISKNV	infectious spleen and kidney necrosis virus
JEV	Japanese encephalitis virus
LPAI	low pathogenicity avian influenza
MRA	movement-regulated area
NABSnet	Northern Australia Biosecurity Surveillance Network
NAIWB	National Avian Influenza Wild Bird
NAMP	National Arbovirus Monitoring Program
NAQS	Northern Australia Quarantine Strategy
NBRT	National Biosecurity Response Team
NLIS	National Livestock Identification System
NSDIP	National Significant Disease Investigation Program
NSHMP	National Sheep Health Monitoring Project
PCR	polymerase chain reaction
PPMV	pigeon paramyxovirus
RASP	Robotic Antimicrobial Susceptibility Platform
RHDV	rabbit haemorrhagic disease virus
RNA	ribonucleic acid
TSE	transmissible spongiform encephalopathy
WHA	Wildlife Health Australia
WOAH	World Organisation for Animal Health
WSD	white spot disease
WSSV	white spot syndrome virus

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