

AQUATIC ANIMAL HEALTH

Australia's national aquatic animal health arrangements are in place to support aquaculture productivity, product quality, trade, fisheries resource management and biodiversity.

This chapter describes Australia's aquatic animal health status, which is maintained through the continued application of scientifically based biosecurity initiatives. In addition, a range of surveillance and research activities, together with disease emergency preparedness programs, operate to maintain the excellent health status of Australia's aquatic animal populations.

7.1 Status of aquatic animal health in Australia

Australia has a robust reporting system for aquatic animal diseases of national significance. Australia's National List of Reportable Diseases of Aquatic Animals¹²⁵ includes all the diseases currently reportable to the World Organisation for Animal Health (OIE) and other aquatic animal diseases of national significance.

Consistent and accurate reporting is important to demonstrate Australia's claims to freedom from diseases of international significance – to support trade of seafood products and to justify our biosecurity measures. Our disease reporting demonstrates transparency to trading partners and a commitment to disease management and biosecurity.

In 2017, ten fish diseases, seven mollusc diseases, nine crustacean diseases and two amphibian diseases were reportable to the OIE. Australia is free from most of these diseases. Australia's status

¹²⁵ www.agriculture.gov.au/animal/aquatic/reporting/reportable-diseases

for each OIE-listed aquatic animal disease in 2017 is shown in Table 7.1. For OIE-reportable diseases that are present, the maps in Figure 7.1 indicate states and territories from which those diseases are reported.

Australia's status in relation to other nationally reportable aquatic animal diseases in 2017 is listed in Table 7.2.

| Table 7.1 Australia's status for OIE-listed diseases of aquatic animals, 2017 | |
|---|--------------------|
| Disease or agent | Status |
| Finfish diseases | |
| Epizootic haematopoietic necrosis disease | Last reported 2012 |
| Infection with <i>Aphanomyces invadans</i> (epizootic ulcerative syndrome) | Last reported 2017 |
| Infection with <i>Gyrodactylus salaris</i> | Never reported |
| Infection with HPR-deleted or HPR0 infectious salmon anaemia virus | Never reported |
| Infection with salmonid alphavirus | Never reported |
| Infectious haematopoietic necrosis | Never reported |
| Koi herpesvirus disease | Never reported |
| Red sea bream iridoviral disease | Never reported |
| Spring viraemia of carp | Never reported |
| Mollusc diseases | |
| Infection with abalone herpesvirus | Last reported 2011 |
| Infection with <i>Bonamia exitiosa</i> | Last reported 2017 |
| Infection with <i>B. ostreae</i> | Never reported |
| Infection with <i>Marteilia refringens</i> | Never reported |
| Infection with <i>Perkinsus marinus</i> | Never reported |
| Infection with <i>P. olseni</i> | Last reported 2017 |
| Infection with <i>Xenohalotis californiensis</i> | Never reported |
| Crustacean diseases | |
| Acute hepatopancreatic necrosis disease | Never reported |
| Crayfish plague (<i>Aphanomyces astaci</i>) | Never reported |
| Infection with yellowhead virus | Never reported |
| Infectious hypodermal and haematopoietic necrosis | Last reported 2017 |
| Infectious myonecrosis | Never reported |
| Necrotising hepatopancreatitis | Never reported |
| Taura syndrome | Never reported |
| White spot disease | Last reported 2017 |
| White tail disease | Last reported 2008 |
| Amphibian diseases | |
| Infection with <i>Batrachochytrium dendrobatidis</i> | Last reported 2017 |
| Infection with ranavirus | Last reported 2008 |

OIE = World Organisation for Animal Health.

Note: Aquatic animal diseases that were reportable to the OIE in 2017 are those listed in the 2017 OIE *Aquatic animal health code*.



Image credit: Animal Health Australia

Table 7.2 Australia's status for other significant diseases of aquatic animals, 2017

| Disease or agent | Status |
|---|--------------------|
| Finfish diseases | |
| <i>Aeromonas salmonicida</i> – atypical strains | Last reported 2007 |
| Bacterial kidney disease (<i>Renibacterium salmoninarum</i>) | Never reported |
| Channel catfish virus disease | Never reported |
| Enteric redmouth disease (<i>Yersinia ruckeri</i> – Hagerman strain) | Never reported |
| Enteric septicaemia of catfish (<i>Edwardsiella ictaluri</i>) | Last reported 2014 |
| Epizootic haematopoietic necrosis – European catfish virus/European sheatfish virus | Never reported |
| Furunculosis (<i>Aeromonas salmonicida</i> subsp. <i>salmonicida</i>) | Never reported |
| Grouper iridoviral disease | Never reported |
| Infectious pancreatic necrosis | Never reported |
| Infectious spleen and kidney necrosis virus (ISKNV)-like viruses | Last reported 2015 |
| Piscirickettsiosis (<i>Piscirickettsia salmonis</i>) | Never reported |
| Viral encephalopathy and retinopathy | Last reported 2017 |
| Whirling disease (<i>Myxobolus cerebralis</i>) | Never reported |
| Mollusc diseases | |
| Infection with <i>Bonamia</i> species | Last reported 2017 |
| Infection with <i>Marteilia sydneyi</i> | Last reported 2017 |
| Infection with <i>Marteilioides chungmuensis</i> | Never reported |
| Infection with <i>Mikrocytos mackini</i> | Never reported |
| Infection with ostreid herpesvirus 1 microvariant | Last reported 2017 |
| Iridoviroses | Never reported |
| Crustacean diseases | |
| Acute hepatopancreatic necrosis disease | Never reported |
| Gill-associated virus | Last reported 2017 |
| <i>Monodon</i> slow growth syndrome | Never reported |

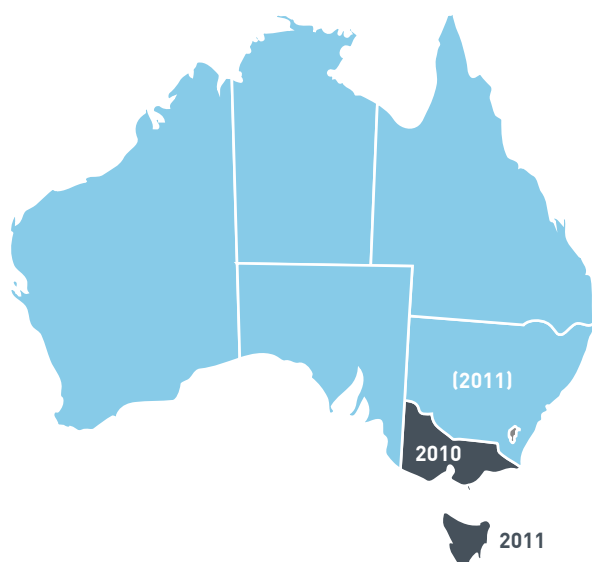
Epizootic haematopoietic necrosis



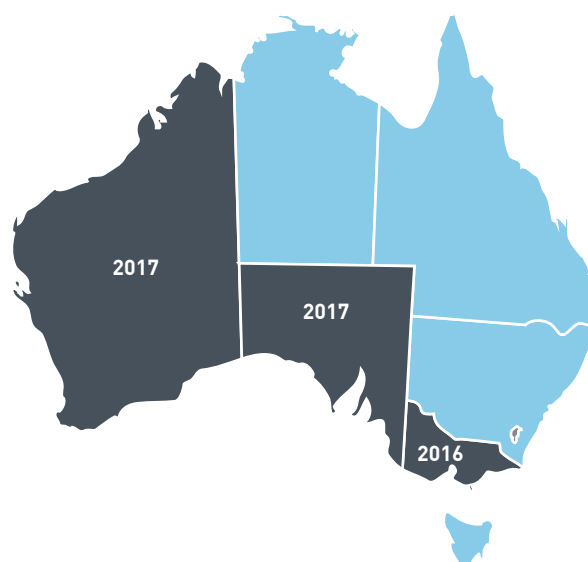
Epizootic ulcerative syndrome



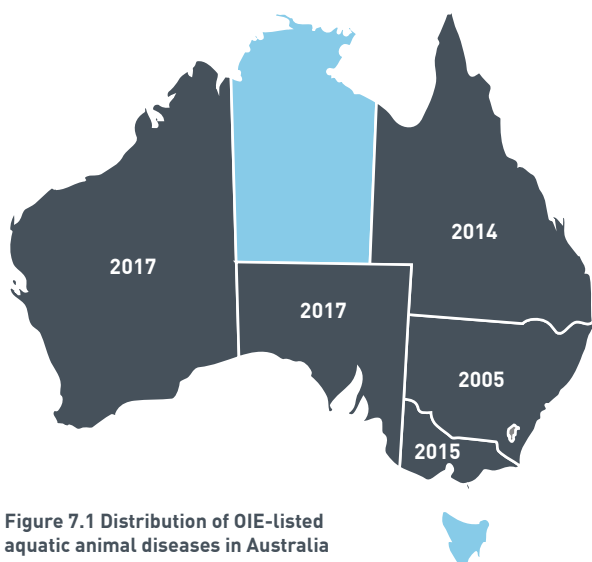
Infection with abalone herpesvirus



Infection with *Bonamia exitiosa*



Infection with *Perkinsus olseni*



Infectious hypodermal and haematopoietic necrosis

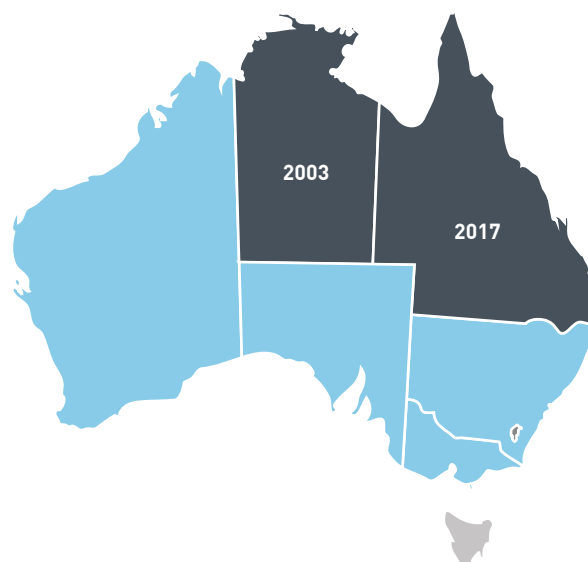


Figure 7.1 Distribution of OIE-listed aquatic animal diseases in Australia

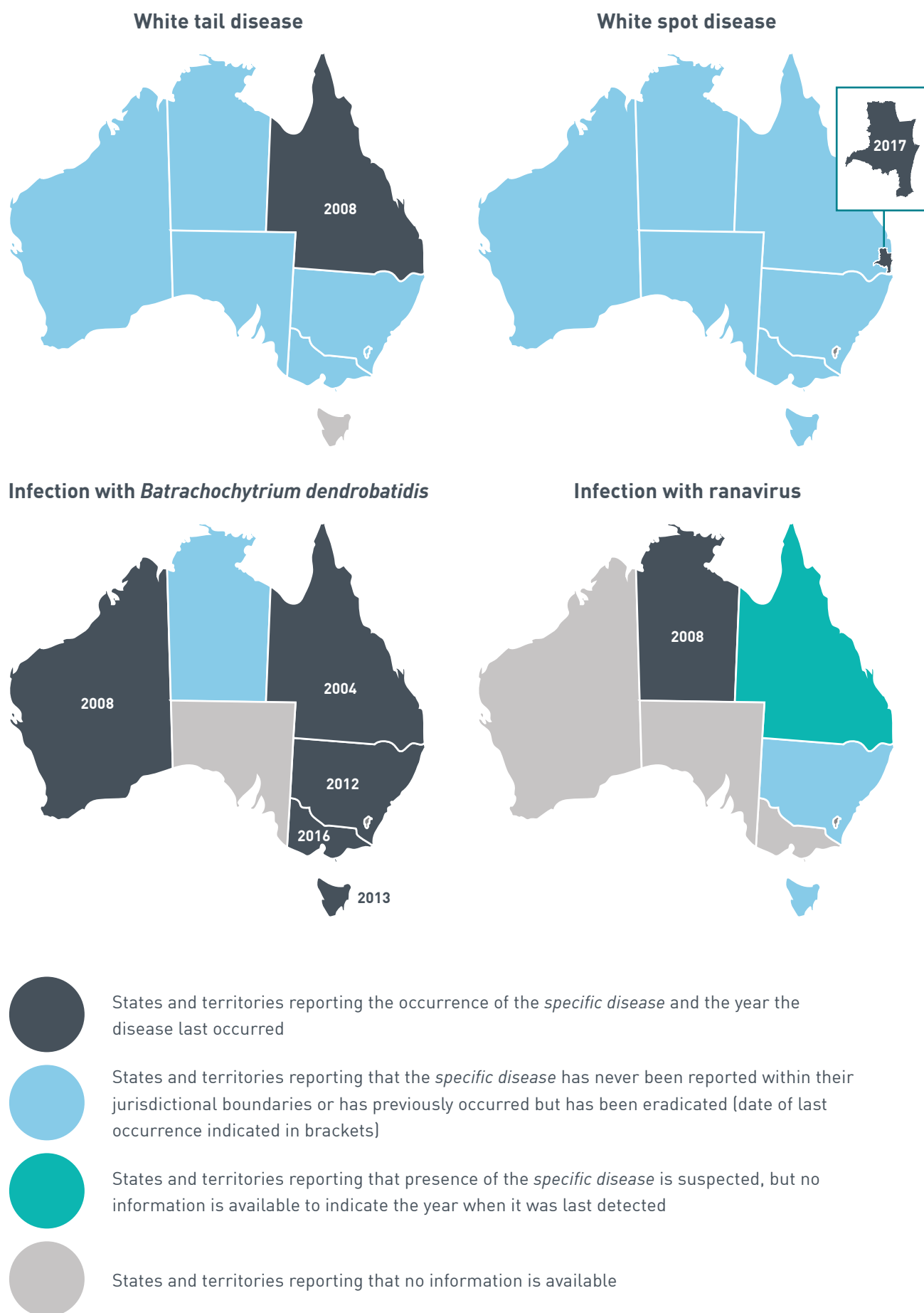


Figure 7.1 Distribution of OIE-listed aquatic animal diseases in Australia

7.2 National aquatic animal health policy and programs

Australia's national aquatic animal health policy and programs are developed from sound scientific evidence. The Sub-Committee on Aquatic Animal Health (SCAAH) is an advisory committee to the Animal Health Committee (AHC) (see Section 1.1.1). It supports AHC in its animal health policy deliberations by providing robust scientific and technical advice on aquatic animal health issues. SCAAH comprises representation from the Australian Government, the state and Northern Territory governments, the New Zealand Government, the Commonwealth Scientific and Industrial Research Organisation Australian Animal Health Laboratory (AAHL) and Australian universities. The AHC reports to the National Biosecurity Committee for high-level endorsement of decisions and policy (see Figure 1.1 for the structure of animal health management organisations and committees).

7.2.1 AQUAPLAN 2014–2019

*AQUAPLAN 2014–2019*¹²⁶ is Australia's third national strategic plan for aquatic animal health. It outlines the priorities to strengthen Australia's arrangements for managing aquatic animal health, and to support sustainability, productivity, market access and, ultimately, the profitability of Australia's aquatic animal industries. AQUAPLAN is a collaborative initiative that is developed and implemented by the Australian, state and territory governments, and aquatic animal industries. The Australian Government Department of Agriculture and Water Resources coordinates AQUAPLAN programs. AHC and SCAAH, in close collaboration with industry, oversee the national implementation of AQUAPLAN activities and projects.

AQUAPLAN 2014–2019 has five objectives:

- improving regional and enterprise-level biosecurity
- strengthening emergency disease preparedness and response capability
- enhancing surveillance and diagnostic services

- improving availability of appropriate veterinary medicines
- improving education, training and awareness.

Each objective is supported by activities to address specific aquatic animal health issues associated with infectious diseases of finfish, molluscs and crustaceans. The plan covers aquatic animal health issues relevant to aquaculture, commercial fisheries, recreational fisheries, the ornamental fish industry, the tourism industry and the environment.

Significant achievements in 2017 included:

- endorsement and publication of *Aquaculture farm biosecurity plan: generic guidelines and template*¹²⁷ (see Section 7.2.3)
- release of a mobile phone app version of the *Aquatic animal diseases significant to Australia: identification field guide*. The app is available for download on iOS, Android and Windows platforms¹²⁸
- development of positive control materials for 32 PCR assays and internal controls for molecular tests to detect important endemic and exotic pathogens
- strengthening of the national first-response capability by including specific aquatic animal disease expertise within the National Biosecurity Response Team
- further development of industry–government response arrangements for emergency aquatic animal diseases (see Section 7.3.1).

7.2.2 Antimicrobial use and resistance in aquaculture

The Australian Government has released its first National Antimicrobial Resistance Strategy (see Section 9.1). The Strategy provides a framework to guide actions on antimicrobial resistance and use, and coordinate activities among stakeholder groups, including the aquaculture sector.

There are no registered antibiotics for use in Australia for food-producing aquaculture species. Instead, a permit-based system allows only a

¹²⁷ www.agriculture.gov.au/fisheries/aquaculture/farm-biosecurity-plan

¹²⁸ www.agriculture.gov.au/animal/aquatic/guidelines-and-resources/aquatic_animal_diseases_significant_to_australia_identification_field_guide

¹²⁶ www.agriculture.gov.au/animal/aquatic/aquaplan

few types of antibiotics for use. The Department of Agriculture and Water Resources continues to monitor and regulate frameworks for the appropriate use of antimicrobials to prevent development of antimicrobial resistance and ensure the aquaculture sector has access to appropriate veterinary chemicals for responsible and sustainable farming.

7.2.3 Development of a biosecurity plan template

Under *AQUAPLAN 2014–2019*, SCAAH developed the *Aquaculture farm biosecurity plan: generic guidelines and template*.

The purpose of this plan is to:

- reduce the risk of diseases being introduced into farms (entry-level biosecurity)
- reduce the risk of diseases spreading within farms (internal biosecurity)
- reduce the risk of diseases escaping from farms (exit-level biosecurity)
- provide emergency response protocols for a disease outbreak (all levels of entry, internal and exit biosecurity)

The document is the basis for development of sector-specific biosecurity plan guidelines. These guidelines will be tailored to each sector's production systems and disease hazards. Plans for the oyster and abalone sectors have been developed and are expected to be ready for implementation by the end of 2017. The Australian Prawn Farmers Association is developing a sector-specific biosecurity plan consistent with the generic Aquaculture Farm Biosecurity Plan. Expressions of interest for other industries to develop potential plans are being assessed.

7.2.4 Domestic proficiency-testing program

The Proficiency Testing Program for Aquatic Animal Disease for Australian laboratories, established in 2010, enables Australian laboratories to assess their capabilities to correctly detect priority aquatic animal diseases using molecular methods. The program is funded by the Department of Agriculture and Water Resources and implemented by AAHL in partnership with the Australian National Quality

Assurance Program (see Section 5.2.4). Participants include private, university and state/territory government laboratories.

The program was reviewed in 2013 and 2015. The review found that participating laboratories experience a range of benefits including providing a benchmark to support reproducibility and validation of tests, aiding in strengthening competencies and effective laboratory techniques, and supporting accreditation.

Based on the review findings, the Department of Agriculture and Water Resources has funded renewal of the program from 2017 to 2019. Australian laboratories can participate in proficiency testing for the following eight aquatic animal diseases over three annual rounds of testing:

- abalone herpesvirus
- yellow head virus genotype 1
- ostreid herpesvirus 1 microvariant
- nervous necrosis virus
- white spot syndrome virus
- megalocytiviruses
- *Bonamia exitiosa*
- *Perkinsus olseni*

Program results have confirmed that Australia has strong diagnostic capabilities for these priority aquatic animal diseases.

7.2.5 Strengthening surveillance

In July 2015, the **Agricultural Competitiveness White Paper** (see Section 4.2.2) resulted in a commitment of \$200 million to 'improve biosecurity surveillance and analysis to better target critical biosecurity risks, including in northern Australia'. The biosecurity surveillance and analysis initiative contributes to four broad themes: strengthening surveillance, community-based action, improving scientific capability, and improving information and analysis. Under the theme of strengthening surveillance, the White Paper funds the following initiatives:

- onshore surveillance to enhance Australia's existing aquatic animal health by improving the early detection of pests and diseases, and to generate information to improve trade and market access

- offshore surveillance to minimise biosecurity risks to Australia by undertaking at-risk surveillance, intelligence gathering and capacity-building activities
- modern diagnostics activities to increase and improve diagnostic services, skills and tools.

The Department of Agriculture and Water Resources is managing several projects under the White Paper for both aquatic animal health and marine pests. Current aquatic animal health projects include:

- Onshore and modern diagnostics:
 - validation of molecular tests for several aquatic diseases
 - national surveillance for megalocytiviruses
 - Neptune – a comprehensive database of Australian aquatic animal pathogens and diseases
 - active disease surveillance for southern aquatic animal industry sectors
 - review of Australia’s passive surveillance system for aquatic animal diseases
 - update of the *Aquatic animal diseases significant to Australia: identification field guide* 4th edition (web and mobile phone app versions).
- Offshore projects:
 - Asia–Pacific laboratory proficiency testing for aquatic animal diseases.

7.3 Aquatic animal disease emergency preparedness

Australia’s national system for preparing for, and responding to, aquatic emergency animal diseases (EADs) encompasses all activities relating to disease surveillance, planning, monitoring and response. These activities are carried out by the Australian Government, state and territory governments, aquatic animal industries, universities, CSIRO, private veterinarians and laboratories.

7.3.1 Aquatic animal disease response arrangements

The Aquatic Consultative Committee on Emergency Animal Diseases (Aquatic CCEAD) coordinates the national response to aquatic animal disease emergencies, which helps ensure the most effective technical response. The Aquatic CCEAD comprises:

- the Australian Chief Veterinary Officer
- representatives from the Department of Agriculture and Water Resources
- the Chief Veterinary Officer (or the director of the fisheries department) in each state and territory government
- the Director of AAHL.

As with terrestrial animal disease emergencies, operational responsibility for the response to an aquatic EAD in an Australian state or territory primarily lies with the relevant jurisdiction. Each state and territory government brings together a broad range of resources to help fisheries, aquaculture and aquatic animal health authorities address disease incidents. Experts from other jurisdictions may be called in to assist in the response, if required. The Department of Agriculture and Water Resources provides a national coordination role for response activities through chairing and supporting the operation of the Aquatic CCEAD. The Aquatic CCEAD assesses the current situation and provides advice on the management of the outbreak until it is collectively decided that the disease is no longer a threat and that a national response is no longer required.

The Aquatic CCEAD has met on 31 occasions since 1 December 2016 and throughout 2017 to coordinate response, surveillance and biosecurity activities for the white spot disease outbreak in farmed prawns from southeast Queensland. The white spot disease event in Queensland is discussed in Section 7.4.1. The Aquatic CCEAD continues to meet and provide technical expertise to Queensland as the response progresses.

7.3.2 Aquatic Deed

Emergency response agreements outline how responses to emergency pest and disease outbreaks should be managed and paid for. Three emergency response agreements have been developed in Australia, to cover animal diseases,

plant pests, and pest and disease emergencies with predominantly environmental impacts. These are formal agreements between governments only, in the case of the environment agreement, and industry and government in the case of the animal disease and plant pest agreements. Each agreement details the roles and responsibilities of participants, including who should contribute to the costs of a response, and what the contributions should be (according to agreed formulas) (see Section 6.1.1).

The Department of Agriculture and Water Resources is working closely with the aquatic animal industry and state and territory governments to develop an Aquatic EAD Response Agreement (an 'Aquatic Deed'). Animal Health Australia is being funded by the Department of Agriculture and Water Resources to employ a project officer for four years (2014–2018) to oversee the development of the Deed. The Aquatic Deed is intended to improve management of aquatic animal diseases and, in doing so, aims to reflect good public policy for governments and a sound business proposition for industry.

In 2017, work towards developing the Aquatic Deed was accelerated with the Department of Agriculture and Water Resources dedicating additional resources to the project. A draft Aquatic Deed was largely completed in 2017 and all prospective parties will work together in 2018 towards to finalise some outstanding policy issues and progress towards and ratification of the Deed. The deed addresses six desirable elements that form the framework of the Aquatic Deed:

- *Participation and cooperation* – parties to the deed would commit to joint decision making both during a response and in peacetime for risk-mitigation activities.
- *Risk management* – parties would commit to improving biosecurity practices to prevent disease outbreaks and to have appropriate capabilities in place should there be an outbreak.
- *Detection and response* – the deed would provide incentives for early reporting to facilitate earlier detection and response to disease, which will provide an increased likelihood of a successful response. Systems will also be in place to ensure response activities are rapid, cost-

effective and represent the shared biosecurity objectives of all parties. Response objectives will include containment and eradication, as well as an option to transition to ongoing management if needed.

- *Arrangements to share response costs* – costs of a response will be shared equitably among those who benefit. This includes the ability to reimburse owners who have experienced direct losses associated with measures aimed at achieving an agreed response objective.
- *Training* – industry and government personnel will be supported to participate in response training as part of their ongoing responsibilities under the deed.
- *Communication and awareness* – industry and governments will work together to raise awareness of risk mitigation and biosecurity measures and formulate agreed communication messages during a response.

Further information about the project can be found on the Animal Health Australia website.¹²⁹

7.3.3 AQUAVETPLAN

The Australian Aquatic Veterinary Emergency Plan (AQUAVETPLAN) is a series of technical response plans that describe the proposed Australian approach to an aquatic EAD event. The plans provide technical information and preferred policy approaches to guide responses to a disease outbreak in Australia. AQUAVETPLAN aligns with the Australian Veterinary Emergency Plan (AUSVETPLAN), which is for terrestrial animal disease responses. Disease strategy manuals provide guidance for animal health professionals to respond appropriately to outbreaks of specific EADs in Australia. Operational manuals address important procedural issues (e.g. destruction, disposal and decontamination) and complement the disease strategy manuals.

Manuals are considered for revision every five years or in the event of significant new developments. Revisions of three disease strategy manuals were progressed in 2017: viral encephalopathy and retinopathy, withering syndrome of abalone

¹²⁹ www.animalhealthaustralia.com.au/what-we-do/emergency-animal-disease/development-emergency-aquatic-animal-disease-response-arrangements

and infectious salmon anaemia. The revision of two operational manuals, those covering decontamination and disposal, commenced in 2017 and are due to be completed in 2018. These operational manuals will be revised partly by considering lessons learnt from the 2016–2017 EAD response to white spot disease in prawns.

AQUAVETPLAN manuals can be downloaded from the Department of Agriculture and Water Resources website.¹³⁰

7.4 Disease events in 2017

7.4.1 White spot disease

Mass mortalities and clinical signs of white spot disease in giant tiger prawns (*Penaeus monodon*) on a farm on the Logan River, Queensland, were reported in late November 2016. On 1 December 2016, the presence of white spot syndrome virus was confirmed by AAHL and an immediate notification was made to the OIE. By February 2017, seven properties, all along the Logan River, were confirmed as being infected with white spot syndrome virus.

Containment was immediately implemented for all affected farms, along with response and surveillance plans with a view to eradication. In May 2017, destruction of stock and disposal and decontamination of ponds on all affected farms were complete, and all ponds on the affected farms will lie fallow until May 2018 to assist with virus eradication.

The Queensland Government conducted delimitation surveillance from March to July 2017 and detected the virus in wild crab and prawn populations in the Logan River, Brisbane River and Moreton Bay. In response, the Queensland Government has implemented movement restrictions prohibiting raw prawns, marine yabbies and marine worms being moved from the restricted area, which extends from Caloundra to the New South Wales border. High-value crustacean products, solely for human consumption, are exempted from this movement restriction. Fishing

remains prohibited near land-based prawn farms and waterways within the restricted area.

The Queensland and New South Wales governments conducted surveillance outside the restricted area from April to July 2017, and all prawn and crab samples returned negative results for white spot syndrome virus. Between August and September 2017, the Queensland Government resumed surveillance within the movement-restricted area and all samples tested negative.

These test results suggest that the disease-control activities may have been effective in containing the virus and preventing further spread. However, they are considered to be interim results and no conclusions can be drawn as to whether the virus has or has not established in wild crustacean populations.

A national surveillance plan for white spot syndrome virus has been endorsed by the Aquatic CCEAD. The plan outlines a staged approach to surveillance that ultimately aims to demonstrate Australia's freedom from white spot syndrome virus, should the virus not establish in the wild. The plan identifies specific sample sites around Australia that will be surveyed, based on an assessment of risk factors.

The cause of the outbreak is yet to be determined.

In response to the white spot disease outbreak, the Department of Agriculture and Water Resources suspended the importation of uncooked prawns into Australia for a period of six months, effective from January 2017. In July 2017, this suspension lapsed and new enhanced import measures were implemented. These measures allow for the safe resumption of trade in uncooked prawns and prawn products, with strict testing and inspection requirements to ensure biosecurity risks are managed.

A range of biosecurity measures, implemented at the Australian border and after border crossing by the Department of Agriculture and Water Resources, in collaboration with state governments, is part of a concerted effort to reduce risks of reintroduction of the disease.

¹³⁰ www.agriculture.gov.au/animal/aquatic/aquavetplan



Image credit: iStock

7.4.2 Hepatopancreatitis in farmed tiger prawns

Penaeus monodon mortality syndrome, a syndrome of chronic mortality of farmed prawns, was first reported on a farm in Queensland in March 2015, followed by another case on a separate farm in Queensland in January 2016. During the 2016–2017 season, three new detections were made on Queensland prawn farms. Although gross clinical signs, histopathological changes and the presence of toxin genes were suggestive of acute hepatopancreatic necrosis disease (an OIE-listed disease), the reported causative bacterial agent of acute hepatopancreatic necrosis disease, *Vibrio parahaemolyticus*, was not found in these cases. Instead, a separate species of *Vibrio* bacterium has been identified. Experimental inoculation trials have commenced at AAHL to investigate the possible agent and determine its effect on live prawns.

7.4.3 Pacific oyster mortality syndrome

Pacific oyster mortality syndrome is caused by the ostreid herpes virus 1 microvariant. The disease has caused high mortalities of farmed Pacific oysters (*Crassostrea gigas*) in Europe, New Zealand, Korea and Australia. It does not affect other species of oysters. There are no known food safety or human health implications associated with Pacific oyster mortality syndrome.

The disease was first detected in farmed Pacific

oysters in an estuary (Georges River) in New South Wales in 2010, and subsequently detected in two other estuaries in New South Wales in 2011 (Parramatta River) and 2013 (Hawkesbury River). In late January 2016, it was detected in hatcheries and oyster production areas in southeast Tasmania. Wild Pacific oysters from the Derwent River estuary were also affected.

Tasmanian Pacific oyster industry production was valued at \$23 million in 2014–15. The Tasmanian industry supplied the majority of Pacific oyster spat to oyster farms in New South Wales and South Australia before the 2016 outbreak. The Tasmanian Government conducted state delimitation surveillance and the surveillance results were used to establish infected zones and movement restrictions to limit spread of the disease.

Two outbreaks of Pacific oyster mortality syndrome occurred in the same infected areas during summer 2016–2017, the first in early December 2016 and January 2017, and the second in late March 2017. To date, the disease has not spread outside the known infected areas.

A joint industry and government working group meets once every six months to provide additional national coordination and communication between industry and government on issues of significance to health management in the Pacific oyster industry.

Affected farmers were provided financial support for disease diagnosis by the Australian Government through the Immediate Assistance Fund. The



Image credit: Department of Agriculture and Water Resources

Fisheries Research and Development Corporation (FRDC) funded a range of oyster-related research projects, including a grant to establish a Future Oysters Cooperative Research Centre Project to address technical disease issues.

7.5 Research and development

The Australian aquatic animal industry has seen strong financial growth in the past two years, with the gross value of production rising from \$2.8 billion (2014–15) to over \$3.0 billion (2015–16). The aquaculture industry continues to grow and currently contributes \$1.2 billion to the Australian economy, accounting for 42% of the total value of aquatic animal production, which includes commercial wild fisheries.

The FRDC invests in areas of research and development that are intended to benefit all sectors of Australian fisheries: the commercial sector (wild catch, aquaculture and processing), the recreational sector and the Indigenous sector.

The FRDC continues to lead national research and development infrastructure addressing whole-of-industry and community priorities, including sustainable fishing, improved productivity and profitability for fishing and aquaculture, and development of new and emerging aquaculture growth opportunities.

The FRDC's Aquatic Animal Health and Biosecurity Subprogram was established specifically to develop, support and manage national aquatic animal health and biosecurity-related research, and research into new and emerging aquaculture species.

A few major aquatic animal disease outbreaks that occurred during 2017 increased the awareness of biosecurity and research and development needs. These are essential for the profitability, productivity and sustainability of Australia's aquatic animal industries, and to protect Australia's natural resources and biodiversity.

More information including the Aquatic Animal Health and Biosecurity Subprogram research and development plan can be found on the Subprogram website.¹³¹

7.6 Regional aquatic animal health initiatives

Australia collaborates with many countries, particularly its neighbours in the Asia-Pacific region, to help improve aquatic animal health. Australia's cooperation extends through its membership of the Network of Aquaculture Centres in Asia-Pacific (NACA), the Food and Agriculture Organization of the United Nations, the OIE Regional

¹³¹ frdc.com.au/Partners/Subprograms-advisory-groups/Aquatic-health-and-biosecurity

Representation for Asia and the Pacific, Secretariat of the Pacific Community, the Association of Southeast Asian Nations and the Asia-Pacific Economic Cooperation forum. Participation in these forums ensures that Australia is actively engaged in projects that address aquatic animal disease threats to the region.

7.6.1 Network of Aquaculture Centres in Asia-Pacific

NACA focuses on building capacity in aquaculture production through education and training, improving support to government institutions, and facilitating effective research and development and information sharing. The improvement of aquatic animal health management in the region is a key priority activity for NACA. The Asia Regional Advisory Group on Aquatic Animal Health was established under the auspices of NACA to provide advice to member countries on aquatic animal health management. Members of the Advisory Group include aquatic animal disease experts, the OIE, the FAO and collaborating regional organisations, and a representative from the Department of Agriculture and Water Resources. The advisory group meets annually and its report is available on the NACA website.¹³²

Active participation in the advisory group of NACA provides Australia with improved knowledge and intelligence of new and emerging threats while promoting regional cooperation to mitigate biosecurity risks. Through NACA, Australia also facilitates joint regional and international initiatives to build capacity in the region for aquatic animal diagnostic, health surveillance, disease reporting and EAD response activities.

7.6.2 International standards

Australia continues to contribute strongly to the development of international aquatic animal health standards of the OIE. The Department of Agriculture and Water Resources seeks comment from a network of Australian experts on draft standards proposed by the OIE Aquatic Animal Health Standards Commission. Australia's official responses to the OIE are provided through Australia's Delegate, the Australian Chief Veterinary Officer.

Australia also provides aquatic animal disease experts to a number of OIE ad hoc groups, and a departmental officer is the current President of the Aquatic Animal Health Standards Commission.

7.6.3 Regional proficiency testing program

The Australian Government is funding, through the **Agricultural Competitiveness White Paper**, and jointly managing with AAHL, an aquatic animal disease proficiency testing program for laboratories in the Asia-Pacific region. The Australian Government previously funded a regional aquatic proficiency testing project from 2012 to 2014. Review of that program indicated that it was successful in achieving its objective to strengthen regional capability to diagnose important aquatic animal diseases that affect trade, productivity and the environment. The review also indicated that there is an ongoing need for an aquatic proficiency testing program in the Asia-Pacific region.

The current program will allow more than 30 laboratories in 14 countries to further improve the accuracy and reliability of testing for 10 pathogens of significance to the region. The first round of testing is scheduled to take place in May 2018.

The project will be reviewed on completion to determine its effect on diagnostic capability, the benefits to individual participants, and likely models for ongoing participation by laboratories.

¹³² enaca.org



Image credit: Arthur Mostead