





Department of Agriculture, Fisheries and Forestry Australia

# 5

## AQUATIC ANIMAL HEALTH

The health management of finfish, molluscs, crustaceans and amphibians is an essential element of maintaining fisheries resources and biodiversity in Australia.

This chapter provides details on the status of aquatic animal health in Australia. It describes the Australian reporting system for aquatic animal diseases, national aquatic animal health policy, aquatic animal disease emergency preparedness, the Australian Aquatic Veterinary Emergency Plan (AQUAVETPLAN), surveillance, disease events in 2010, and Asia–Pacific regional initiatives on aquatic animal health.

### 5.1 Status of aquatic animal health in Australia

Australia has a reporting system for aquatic animal diseases of national significance. All the diseases currently reportable to the World Organisation for Animal Health (OIE) and other aquatic animal diseases of national concern are included on Australia's National List of Reportable Diseases of Aquatic Animals.<sup>67</sup>

In 2010, nine fish diseases, seven mollusc diseases, seven crustacean diseases and two amphibian diseases were reported to the OIE. Australia is free from most of these diseases. Australia's status for each OIE-listed aquatic animal disease in 2010 is shown in Table 5.1. The distribution of OIE-listed diseases that are present in Australia, based on state and territory reporting of findings in their jurisdictions is shown in Figure 5.1.

The other aquatic animal diseases of national significance to Australia and their status in 2010 are listed in Table 5.2.

<sup>67</sup> [www.daff.gov.au/animal-plant-health/aquatic/reporting/reportable-diseases](http://www.daff.gov.au/animal-plant-health/aquatic/reporting/reportable-diseases)

**Table 5.1 Australia's status for OIE-listed diseases of aquatic animals, 2010**

<b>Disease or agent</b>	<b>Status</b>
<b>Finfish diseases</b>	
Epizootic haematopoietic necrosis	Locally present
Epizootic ulcerative syndrome ( <i>Aphanomyces invadans</i> )	Locally present
Gyrodactylosis ( <i>Gyrodactylus salaris</i> )	Never reported
Infectious haematopoietic necrosis	Never reported
Infectious salmon anaemia	Never reported
Koi herpesvirus disease	Never reported
Red sea bream iridoviral disease	Never reported
Spring viraemia of carp	Never reported
Viral haemorrhagic septicaemia	Never reported
<b>Mollusc diseases</b>	
Infection with abalone herpes-like virus	Locally present
Infection with <i>Bonamia exitiosa</i>	Never reported
Infection with <i>Bonamia ostreae</i>	Never reported
Infection with <i>Marteilia refringens</i>	Never reported
Infection with <i>Perkinsus marinus</i>	Never reported
Infection with <i>Perkinsus olseni</i>	Locally present
Infection with <i>Xenohaliotis californiensis</i>	Never reported
<b>Crustacean diseases</b>	
Crayfish plague ( <i>Aphanomyces astaci</i> )	Never reported
Infectious hypodermal and haematopoietic necrosis	Locally present
Infectious myonecrosis	Never reported
Taura syndrome	Never reported
White spot disease	Never reported
White tail disease	Locally present
Yellowhead disease	Never reported
<b>Amphibian diseases</b>	
Infection with <i>Batrachochytrium dendrobatidis</i>	Locally present
Infection with ranavirus	Locally present

OIE = World Organisation for Animal Health

Note: Aquatic animal diseases reported to the OIE in 2010 are those listed in the OIE's 2009 *Aquatic Animal Health Code*. The OIE requires reporting on diseases listed in the 2010 code from January 2011



Figure 5.1 Distribution of OIE-listed aquatic animal diseases within Australia

**Table 5.2 Australia's status for other significant diseases of aquatic animals, 2010**

Disease or agent	Status
<b>Finfish diseases</b>	
<i>Aeromonas salmonicida</i> — atypical strains	Locally present
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> )	Reported in 2010 from native fish in an aquarium facility also holding imported exotic fish. Not detected in wild fish.
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
Piscirickettsiosis ( <i>Piscirickettsia salmonis</i> )	Never reported
Viral encephalopathy and retinopathy	Locally present
Whirling disease ( <i>Myxobolus cerebralis</i> )	Never reported
<b>Mollusc diseases</b>	
Akoya oyster disease	Never reported
Infection with <i>Bonamia</i> species	Locally present
Infection with <i>Marteilia sydneyi</i>	Locally present
Infection with <i>Marteilioides chungmuensis</i>	Never reported
Infection with <i>Mikrocytos mackini</i>	Never reported
Iridoviroses	Never reported
<b>Crustacean diseases</b>	
Gill-associated virus	Locally present
Milky lobster disease	Never reported
<i>Monodon</i> slow growth syndrome	Never reported

### 5.1.1 National aquatic animal health policy

Australia's Animal Health Committee is responsible for public policy and government decision making on aquatic animal health. The Subcommittee on Aquatic Animal Health supports the Animal Health Committee in its policy deliberations by providing robust scientific and technical advice on aquatic animal health issues. Subcommittee members represent the Australian Government; the states, Northern Territory and New Zealand governments; the Commonwealth Scientific and Industrial Research Organisation (CSIRO) Australian Animal Health Laboratory (CSIRO-AAHL); and Australian universities (one representative).

AQUAPLAN 2005–2010 was Australia's second national strategic plan for aquatic animal health. The plan aimed to maximise Australia's ability to control aquatic animal disease outbreaks, maintain market access, support quality assurance and improve the productivity and sustainability of Australia's aquatic animal production industries. AQUAPLAN 2005–2010 concluded in mid-2010. It is currently being reviewed, with the review being overseen by the Subcommittee on Aquatic Animal Health. The review will report on the plan's development and implementation, and future approaches to aquatic animal health, including the possible need for a successor strategy. Information on AQUAPLAN 2005–2010 is available on the website of the Australian

Government Department of Agriculture, Fisheries and Forestry.<sup>68</sup> Some recent achievements of AQUAPLAN 2005–2010 are described below.

An objective of AQUAPLAN Strategy 1 was to create a consistent system of diagnosis and reporting of aquatic animal diseases across Australia. As part of meeting this objective, diagnostic proficiency testing for aquatic animal diseases was established in 2010 within the Australian National Quality Assurance Program, which previously addressed diagnostic proficiency testing only for terrestrial animal diseases. The program tests the proficiency of laboratories using molecular (polymerase chain reaction) methods to detect white spot syndrome virus, yellowhead virus and gill-associated virus of prawns; viral encephalopathy and retinopathy and viral haemorrhagic septicaemia of fish; and abalone viral ganglioneuritis. Nonviable samples are used in the proficiency testing procedures. The program is being run to National Association of Testing Authorities (NATA) standards and is expected to earn NATA accreditation in 2011.

AQUAPLAN Strategy 4 aimed to improve education and training in the aquatic animal health sector. An outcome from this strategy in 2010 was the establishment of a national training scheme for practising aquatic animal health professionals. The scheme aims to 'improve knowledge and skills in aquatic animal health management to support Australia's fishing and aquaculture industries, including the aquarium sector'. Funding is available on a competitive basis to support Australian aquatic animal health professionals to undertake short, focused training activities, within Australia or overseas. The first round of applications has been considered, and funding has been awarded for activities including training in advanced molecular biology techniques, training in epidemiology, pathologist accreditation and a forum for aquatic animal health laboratory technicians.

## 5.2 Aquatic animal disease emergency preparedness

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

The national response to aquatic animal disease emergencies is coordinated by the Aquatic Consultative Committee on Emergency Animal Diseases (Aquatic CCEAD), which helps to ensure that the most effective technical response is implemented.

The Aquatic CCEAD comprises:

- the Australian Chief Veterinary Officer
- representatives from the Australian Quarantine and Inspection Service
- representatives from Biosecurity Australia
- the chief veterinary officer (or the director of the fisheries department) in each state and territory government
- the head of CSIRO-AAHL.

Technical representatives from industry may also be invited to participate.

The Aquatic CCEAD met twice in 2010, in response to an *Edwardsiella ictaluri* disease event and a syndrome of high mortality in a population of Pacific oysters (described below).

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 will bring together a broad range of resources to help fisheries, aquaculture and aquatic animal health authorities address disease incidents.

### 5.2.1 AQUAVETPLAN

AQUAVETPLAN is a series of technical response plans that describe the proposed Australian approach to an aquatic EAD event. These manuals provide background information and guidance on how to respond to a disease outbreak in Australia. AQUAVETPLAN is based on the Australian Veterinary Emergency Plan (AUSVETPLAN) series for terrestrial animal diseases. Disease strategy manuals allow aquatic and terrestrial animal health professionals to respond appropriately to EADs in Australia. Operational procedures manuals address important procedural issues and complement the disease strategy manuals. Manuals are considered for revision every five years or in the event of significant new developments.

The disease strategy manuals for white spot disease and viral haemorrhagic septicaemia were revised in 2010 and are currently in the process of review and endorsement.

AQUAVETPLAN manuals can be downloaded from the website of the Australian Government Department of Agriculture, Fisheries and Forestry.<sup>69</sup>

68 [www.daff.gov.au/animal-plant-health/aquatic/aquaplan](http://www.daff.gov.au/animal-plant-health/aquatic/aquaplan)

69 [www.daff.gov.au/animal-plant-health/aquatic/aquavetplan](http://www.daff.gov.au/animal-plant-health/aquatic/aquavetplan)

## 5.2.2 Surveillance

Each jurisdiction in Australia is responsible for surveillance activities within its borders. Passive surveillance may include regular health monitoring and investigation of fish kills. Active surveillance is conducted for specific purposes — for example, for particular industries for export certification, or for specific diseases of importance to Australia. Active surveillance activities are conducted to OIE standards or using methods required to meet export market requirements.

Two examples of active surveillance programs are described below.

### *Tasmanian Salmonid Health Surveillance Program*

Tasmania provides a general diagnostic service for all aquatic animal species. The service provides disease investigation and laboratory support for diagnosis of disease events, and coordination and support for surveillance and certification programs. Since 1998, a comprehensive and targeted health surveillance program (the Tasmanian Salmonid Health Surveillance Program) has covered the Tasmanian salmonid farming industry. Objectives of the program include:

- demonstrating freedom from salmonid diseases considered to be exotic to Tasmania (but not necessarily Australia)
- monitoring significant endemic diseases and their causative agents to support evidence for regional biosecurity in Tasmania
- investigating significant or unusual disease events in a rapid and efficient manner.

### *Abalone viral ganglioneuritis surveillance in South Australia*

Passive and active surveillance is conducted in South Australia to confirm freedom from abalone viral ganglioneuritis (AVG). Samples have been taken from each actively producing abalone farm in the state and will be individually tested by polymerase chain reaction at CSIRO-AAHL. Results from all samples to date have been negative for AVG. Wild abalone will be collected from seven fishing blocks in the Southern Zone Abalone Fishery in early 2011, with selective sampling for any unhealthy animals. The program will continue to support South Australia's understanding of its AVG status by using surveillance methods that meet OIE standards.

## 5.3 Disease events in 2010

### 5.3.1 Infection with *Edwardsiella ictaluri*

*Edwardsiella ictaluri* was confirmed after deaths of wild-caught native Australian black catfish (*Neosilurus ater*) in an aquarium facility. The facility also held imported aquarium fish. The affected black catfish were treated with antibiotics and subsequent testing did not find any *E. ictaluri* infection in the surviving fish. *E. ictaluri* was not isolated from samples of other aquarium fish in the facility, or from a large number of newly collected wild black catfish and other species from the original collection site.

### 5.3.2 Infection with abalone herpes-like virus

AVG (listed by the OIE as infection with abalone herpes-like virus) was reported from wild abalone in Victoria in early 2010. These cases were a continuation of a disease outbreak initially reported from wild abalone populations in 2006. No known extension in the range of the disease in wild abalone populations occurred in Victoria during 2010.

AVG was confirmed in an abalone processing facility in Tasmania in late 2010. The facility was destocked and decontaminated. There were no reports of AVG from farmed abalone in Australia in 2010.

### 5.3.3 Pacific oyster mortality syndrome

A syndrome of increased mortality in Pacific oysters (*Crassostrea gigas*) was reported from the Georges River, New South Wales, in late 2010. Ostreid herpesvirus 1 (OsHV-1) was found in association with the mortalities. Although uncharacterised herpes viruses have been reported from oysters in Australia previously, this is the first report of OsHV-1 from Australia. Emergency response measures, including movement restrictions on oysters and oyster farming equipment, were implemented at the affected estuary and investigations began to determine the distribution of OsHV-1 in Australia.

Reports on these events were provided to the OIE and the Network of Aquaculture Centres in Asia–Pacific (NACA) through the Asia–Pacific Regional Quarterly Aquatic Animal Disease Reporting Program.

## 5.4 Regional aquatic animal health initiatives

Australia collaborates with many countries — particularly its neighbours in the Asia–Pacific region — to help improve their aquatic animal health. Cooperation occurs through Australia’s membership of the Food and Agriculture Organization of the United Nations (FAO), the Association of Southeast Asian Nations, the Asia–Pacific Economic Cooperation forum and NACA. Participation in these forums ensures that Australia is actively engaged in projects that address aquatic animal disease threats to the region.

The Asia Regional Advisory Group on aquatic animal health (established under NACA) advises group members on aquatic animal health management. Members of the advisory group include aquatic animal disease experts, the OIE, the FAO and collaborating regional organisations. An Australian Government officer serves as a member on the advisory group and participated in the group’s 9th meeting in Bangkok in November 2010.

