

National aquatic animal health plans: the Australian experience

E.-M. Bernoth, I. Ernst & B. Wright

Office of the Chief Veterinary Officer, Australian Government Department of Agriculture, Fisheries and Forestry, GPO Box 858, Canberra ACT 2601, Australia

Summary

Following a major pilchard (*Sardinops sagax*) mortality event in 1995, Australia recognised the need for a national approach to aquatic animal health, particularly with respect to disease response. Cooperation between industry and government led to the development of AQUAPLAN, Australia's National Strategic Plan for Aquatic Animal Health. Under AQUAPLAN, institutional arrangements for the national technical response to aquatic animal health emergencies were developed based on existing arrangements for terrestrial animal health. The number and range of Australian Aquatic Veterinary Emergency Plan (AQUAVETPLAN) manuals are rising steadily; these are manuals that outline Australia's approach to national disease preparedness and propose the technical response and control strategies to be activated. Additional resources include standard diagnostic techniques and a disease field identification guide. Simulation exercises provide training to respond to aquatic emergency animal disease events. While resource issues and addressing governance remain priorities for the further implementation of AQUAPLAN, the highest priority is the development of a formal arrangement between governments and private sectors on the response to an aquatic emergency animal disease event.

Keywords

AQUAPLAN – Aquatic animal health – AQUAVETPLAN – Australia – Disease control – Emergency animal disease – Strategic plan.

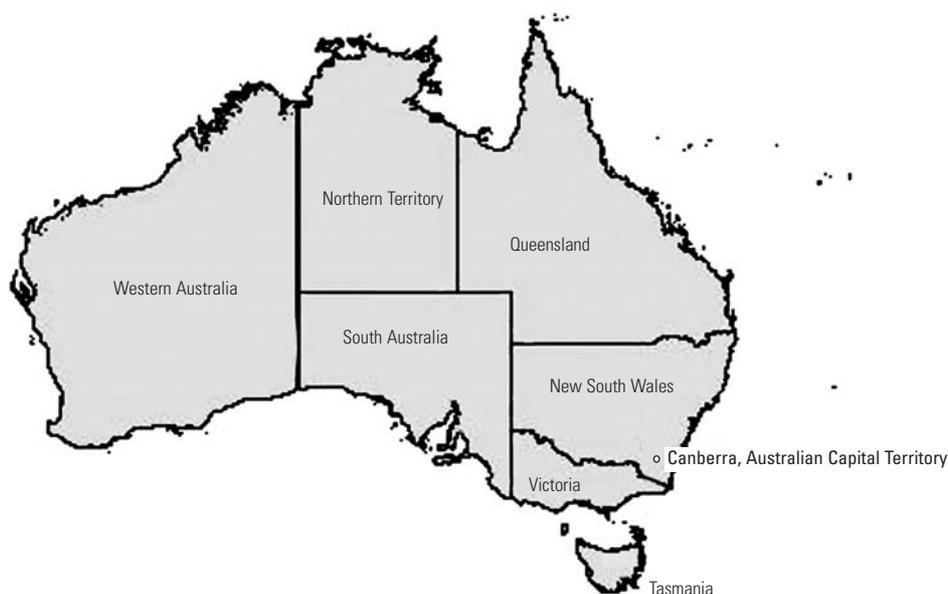
Background and introduction

The Constitution of the Commonwealth of Australia provides that the Australian Government may make laws on quarantine and international animal health matters, including disease reporting, export certification and trade negotiations. Australia's states and territories have sovereign powers in matters affecting their rural industries, including animal disease control within their borders. Figure 1 shows a map of Australia with the borders between its states and territories.

Following a major pilchard (*Sardinops sagax*) mortality event in 1995, the need for a cross-border approach to aquatic animal health, in particular to disease response, was formally acknowledged. The then Standing

Committee on Fisheries and Aquaculture reported to its Ministerial Council that priority should be given to developing a national response mechanism for fisheries and aquaculture emergencies. Subsequently, several comprehensive reviews were published that critically assessed and made recommendations for Australia's national response to fisheries and aquaculture emergencies, notably in the following areas:

- quarantine policies and arrangements, including for aquatic animal quarantine (Nairn *et al.* [17], Nunn [19])
- imported fish and fish products (Higgins [16])
- management of incursions of pests, weeds and diseases (2).

**Fig. 1****Map of Australia showing the political borders between its states and territories**

Australia is a federation of states. Under the Australian Constitution, the Australian Government is responsible for quarantine and international animal health matters, including disease reporting, export certification and trade negotiation. State and territory governments are responsible for animal disease control within their own boundaries

In its response to the Nairn and Higgins reports, the Australian Government recognised that:

‘there should be a national approach [to fish health] jointly developed by the Commonwealth, states and industry that includes quarantine, research and education and public awareness as key components’ (1).

In 1997, following a Cabinet decision relating to the Nairn and the Higgins reports, the Australian Government allocated AU\$ 6.7 million over four years to the then Commonwealth Department of Primary Industries and Energy, now the Australian Government Department of Agriculture, Fisheries and Forestry (DAFF), to implement the recommendations of both reports. Of the total sum, AU\$ 2.7 million was allocated to develop a comprehensive aquatic animal health plan for Australia and to address management procedures for aquatic animal disease emergencies. The Australian Government subsequently provided another AU\$ 3 million between 2001 and 2004 under its Federal Budget Initiative ‘Building a National Approach to Animal and Plant Health’, to enable the implementation of specific projects.

To achieve the goal of developing an aquatic animal health plan, the then Commonwealth Minister for Primary Industries and Energy appointed a joint industry/government committee, the Fish Health Management Committee (FHMC). It was established as an

interim body pending a decision on long-term administrative and funding arrangements. Under the oversight of FHMC, industries and governments developed a detailed framework for the management of aquatic animal health in Australia: AQUAPLAN, Australia’s National Strategic Plan for Aquatic Animal Health 1998-2003 (3). Between 1998 and 1999, stakeholders from governments and the private sector signed on to AQUAPLAN 1998-2003, which was finally endorsed by Ministers in 1999.

AQUAPLAN 1998-2003 was a broad, comprehensive strategy that outlined objectives and projects to develop a national approach to emergency preparedness and response and to the overall management of aquatic animal health in Australia. It described initiatives ranging from border controls and import certification through to enhanced veterinary education and improved capacity to manage incursions of exotic diseases, the latter coordinated under AQUAVETPLAN, the Australian Aquatic Veterinary Emergency Plan.

Between 1998 and 2001, FHMC convened annual AQUAPLAN 1998-2003 Stakeholder Workshops to review progress and determine priorities for the upcoming year. These priorities were translated into annual work plans and subsequently endorsed by FHMC’s parent Standing Committee. AQUAPLAN 1998-2003 represented a world first in proactive management of aquatic animal health. Details on some of its outputs are presented below.

AQUAPLAN – A Five Year Review (4), released in 2002, reviewed the achievements of all eight AQUAPLAN 1998-2003 programmes. The review found that considerable progress had been made, that significant benefits had been delivered to the industry, that many of the original projects had become core work of several agencies, and that the plan's integrated approach was required for Australia to remain competitive. However, the review also noted that several priority areas within aquatic animal health remained to be addressed.

Between 2000 and 2002, an extensive process of review and stakeholder consultation led to the formal suggestion of establishing the Aquatic Animal Health Committee (AAHC) to replace FHMC. In September 2002, Australia's Primary Industries Standing Committee (PISC) endorsed the establishment of the AAHC as the primary industry/government interface for policy, communication and awareness related to aquatic animal health issues.

Between late 2003 and early 2004 the Australian Government funded three workshops that aimed to identify priority health issues, for government and industry, which the aquaculture industry would face from 2005 to 2010. The workshops were held with AAHC and its technical advisory group, the National Aquatic Animal Health Technical Working Group (NAAH-TWG). Participants at the workshops recognised that no single strategy could cover all relevant issues, and that a highly focused strategy was more likely to be adopted and implemented effectively. Therefore, participants ranked the identified issues in order of importance for the next five years, noting that some issues were already covered by other agencies or bodies. The seven highest ranked priority areas thus became the strategies within AQUAPLAN 2005-2010 (5). AQUAPLAN 2005-2010 was endorsed by Ministers in April 2005.

The following three sections describe – in the context of the management of aquatic animal disease emergencies – the institutional arrangements that apply in Australia, examples of achievements made under AQUAPLAN 1998-2003, and progress made to date under AQUAPLAN 2005-2010.

Institutional arrangements

The Australian Constitution

The Australian Constitution confers certain specific powers on the Australian Government. All other powers not so conferred reside with Australia's individual state and territory governments. Through this division of constitutional powers, responsibilities for management of animal health (including aquatic animal health) are

shared between the Australian Government and the state and territory governments. The Australian Government may make laws with respect to trade and commerce with other countries, including animal health matters such as quarantine, disease reporting, and export certification. State and territory governments have sovereign powers in matters affecting their rural industries, including animal disease control within their borders.

The Australian Government also coordinates and advises on national policy and, in some circumstances, provides financial assistance for national animal disease control programmes. State services administer relevant legislation governing livestock identification and movement (within and between states and territories), disease surveillance, diagnosis, reporting and control of notifiable diseases, chemical residues and other programmes.

Australia's institutional arrangements for managing animal health have been developed with consideration given to the practical implications of the division of constitutional powers. This division of constitutional powers, coupled with a desire on the part of the Australian Government and state and territory governments to discuss agricultural matters generally, was a catalyst for the creation of an Australian agricultural ministerial organisation in 1934. This was the first of a number of ministerial councils that have been established over the years to deal with a wide range of primary industries issues, including animal health. The current Primary Industries Ministerial Council (PIMC) consists of ministers who are responsible for agriculture, food, fibre, forestry, fisheries and aquaculture industries/production and rural adjustment policy in the Australian Government, the state and territory governments and in the New Zealand Government. The council is consultative only; final decisions are taken by member governments.

The PIMC is the principal government forum for consultation, coordination and, where appropriate, integration of action by governments on primary industries issues. It is supported in its decisions by advice from a range of sectoral advisory committees, including separate committees with specific responsibilities for plant, animal and aquatic animal health. These institutional structures promote cooperation and consistency in the development of national plant, animal and aquatic animal health policies, especially where trans-border implications for disease management exist.

Institutional arrangements for terrestrial animal and plant health

Australia's current institutional arrangements for aquatic animal health management were established through the initiatives of AQUAPLAN 1998-2003. The chosen models are broadly consistent with pre-existing arrangements for

national management of animal and plant health. These models were chosen because the existing arrangements were considered successful and appropriate for aquatic animal health, and because consistent approaches would provide familiarity for personnel working across animal, aquatic animal and plant sectors (e.g. Chief Veterinary Officers [CVOs] responsible for terrestrial animal and aquatic animal health).

The responsibility for national management of terrestrial animal and plant health is divided between committees and organisations that are responsible for the separate areas of policy development, technical advice, programme implementation and emergency response coordination. Detailed information on these committees and organisations can be found on the DAFF website under <http://www.daff.gov.au/animal-plant-health>.

Policy development

The Animal Health Committee (AHC) and Plant Health Committee (PHC) are responsible for providing high level strategic policy development, operational strategies and standards for government policy development within the committee structures of PIMC. Membership of these committees includes representatives of the Commonwealth Scientific and Industrial Research Organisation (CSIRO), the Australian Government, state and territory governments (for animal health, these are the CVOs), Animal Health Australia (AHA) and Plant Health Australia (PHA) – see below.

Technical advice

The Animal Health Committee is assisted by its Subcommittee on Animal Health Laboratory Standards (SCAHLs). SCAHLs represents the activities of the veterinary laboratory network of Australia and New Zealand. The primary goal of SCAHLs is to facilitate the networking of government, CSIRO and private and university animal health laboratories and to establish, implement and monitor professional and technical standards within these laboratories. Similarly, PHC is supported by a Subcommittee on Plant Health Diagnostic Standards.

Programme implementation

Programme implementation for animal and plant health is undertaken by AHA and PHA. These not-for-profit public companies have been formed to work on behalf of their members to manage projects and coordinate the development of national animal and plant health capability in areas such as emergency preparedness, surveillance, and education and training. Membership of AHA and PHA includes the Australian Government, state and territory governments, livestock (or plant) industry organisations and service delivery organisations.

Emergency response coordination

Emergency response coordination for animal diseases and plant pests is provided by the Consultative Committees for Emergency Animal Diseases (CCEAD) and Emergency Plant Pests (CCEPP), respectively. The CCEAD and CCEPP coordinate a national, technical response to emergency animal disease and plant health incidents in Australia.

The CCEAD membership comprises the Australian CVO, state and territory CVOs, representatives from the Australian Quarantine and Inspection Service (AQIS), Biosecurity Australia, the CSIRO's Australian Animal Health Laboratory (AAHL) and industry bodies. Animal Health Australia also attends meetings. CCEAD is chaired by the Australian CVO.

Where applicable, the CCEAD and CCEPP advise the National Management Group (a committee of senior government decision-makers) on response policy. The response policies will generally be based on the Australian Veterinary Emergency Plan and Australian Emergency Plant Pest Response Plan. Responses to animal disease and plant pest emergencies may invoke funding mechanisms through cost-sharing arrangements that have been agreed between government and industry for the terrestrial animal and plant sectors.

Institutional arrangements for aquatic animal health

Policy development and programme implementation: Aquatic Animal Health Committee

The AAHC is Australia's primary industry/government interface for policy, communication and awareness related to aquatic animal health issues. Membership of AAHC includes the Australian Government, state and territory governments, CSIRO AAHL, and representatives of fisheries and aquaculture industry sectors. Observers from New Zealand and AAHC's parent committee are invited to attend AAHC meetings. Representation on AAHC is at the level of CVO (or similar senior delegate) for state and territory governments, and senior representatives of the principal industry organisations for the fisheries and aquaculture sectors. It has been customary for the Australian CVO to take the role of committee chair.

AAHC has a key role in reviewing and refining national aquatic animal health policies and programmes. In the context of AAHC's role, aquatic animal health refers to the management of pathogens and diseases that may affect aquaculture production, fisheries resources or aquatic wildlife. AAHC's specific responsibilities include:

- taking a lead role in reviewing and refining national aquatic animal health policies and programmes

- coordinating action on identified emerging aquatic animal health issues and making recommendations for policy development and management
- maintaining oversight of the implementation of AQUAPLAN 2005-2010
- managing national initiatives for emergency aquatic animal disease response preparedness, e.g. through developing and maintaining AQUAVETPLAN
- carrying out a coordinating role across the states and territories through existing processes
- providing comment as required to existing processes for providing advice on international quarantine and import risk assessments.

AAHC's role differs from the equivalent sectoral committees for animal and plant health because its activities are not supported by an organisation responsible for programme implementation, such as AHA or PHA. This difference has two important effects on the structure and role of AAHC:

- industry consultation is achieved directly through industry representation on AAHC as opposed to indirect representation through an AHA or PHA equivalent
- responsibility for programme implementation rests with AAHC or directly with stakeholders rather than with an AHA – or PHA – equivalent organisation for aquatic animal health.

Technical advice: National Aquatic Animal Health Technical Working Group

AAHC is supported in its activities by the provision of scientific and technical advice from its technical advisory committee, NAAH-TWG. This group comprises a core membership of Australian Government, CSIRO AAHL and state and territory government representatives with expertise in aquatic animal health. Other aquatic animal health experts from government and non-government agencies – including specialists from academia, industry and the private sector – may also be invited to participate. NAAH-TWG's functions include the provision of technical advice for the development of AQUAVETPLAN manuals, managing the development of standard diagnostic procedures, and providing scientific and technical advice to AAHC as required.

Emergency response coordination: Aquatic Consultative Committee on Emergency Animal Disease

Under AQUAPLAN 1998-2003, the coordination of the national technical response to aquatic emergency animal disease (EAD) events was incorporated into the scope of CCEAD which – when convened for an aquatic animal

disease emergency – becomes the Aquatic CCEAD. This advisory committee is made up of the Australian CVO as chair, representatives from AQIS and Biosecurity Australia, the CVO (or the director of the fisheries department) in each state and territory government, and the head of CSIRO AAHL. Technical representatives from industry may also be invited to participate with observer status.

CCEAD's mission is to co-ordinate the national technical response to terrestrial and aquatic animal health emergencies in Australia in an effective and efficient manner, so as to meet international and domestic policy and legal obligations concerning management of such emergencies, and coordinate national approaches to problems of public health or trade significance in animals as required.

Not every EAD event necessitates the involvement of CCEAD. As mentioned earlier, states and territories have sovereign powers in animal disease control within their borders. Only in certain cases would a national response be mounted, commencing with the activation of CCEAD. Typically, the CVO (or the director of the fisheries department) of the state or territory in which the disease has occurred would ask the chair of CCEAD (the Australian CVO) to convene CCEAD if an EAD is suspected to be caused by a disease exotic to Australia, or if the EAD threatens to cross jurisdictional boundaries. The latter is a likely scenario for many aquatic animal diseases.

The Aquatic CCEAD shares information about the evolution of events until it decides the disease or threat no longer exists or a national response is no longer required, at which time the responsibility for the issue may be handed to other agencies, for example, AAHC.

Reporting framework

AAHC ultimately reports to PIMC, but there are two layers of committees between AAHC and PIMC, consistent with reporting lines in terrestrial animal and plant health: PISC and its Primary Industries Health Committee (PIHC).

Membership of PISC comprises the heads of Australian and New Zealand government agencies responsible for policy and regulatory issues that fall within the PIMC's ambit. PISC supports the PIMC in achieving the council's objectives, and develops cooperative and coordinated approaches to matters of concern to the council. PISC is advised by four subsidiary committees, of which the PIHC has prime responsibility for health issues. A permanent, technical committee, the PIHC meets independently of PISC and provides ongoing support to PISC and the PIMC on the management of a range of issues, including animal health and aquatic animal health, product integrity and safety, forest health, and plant health.

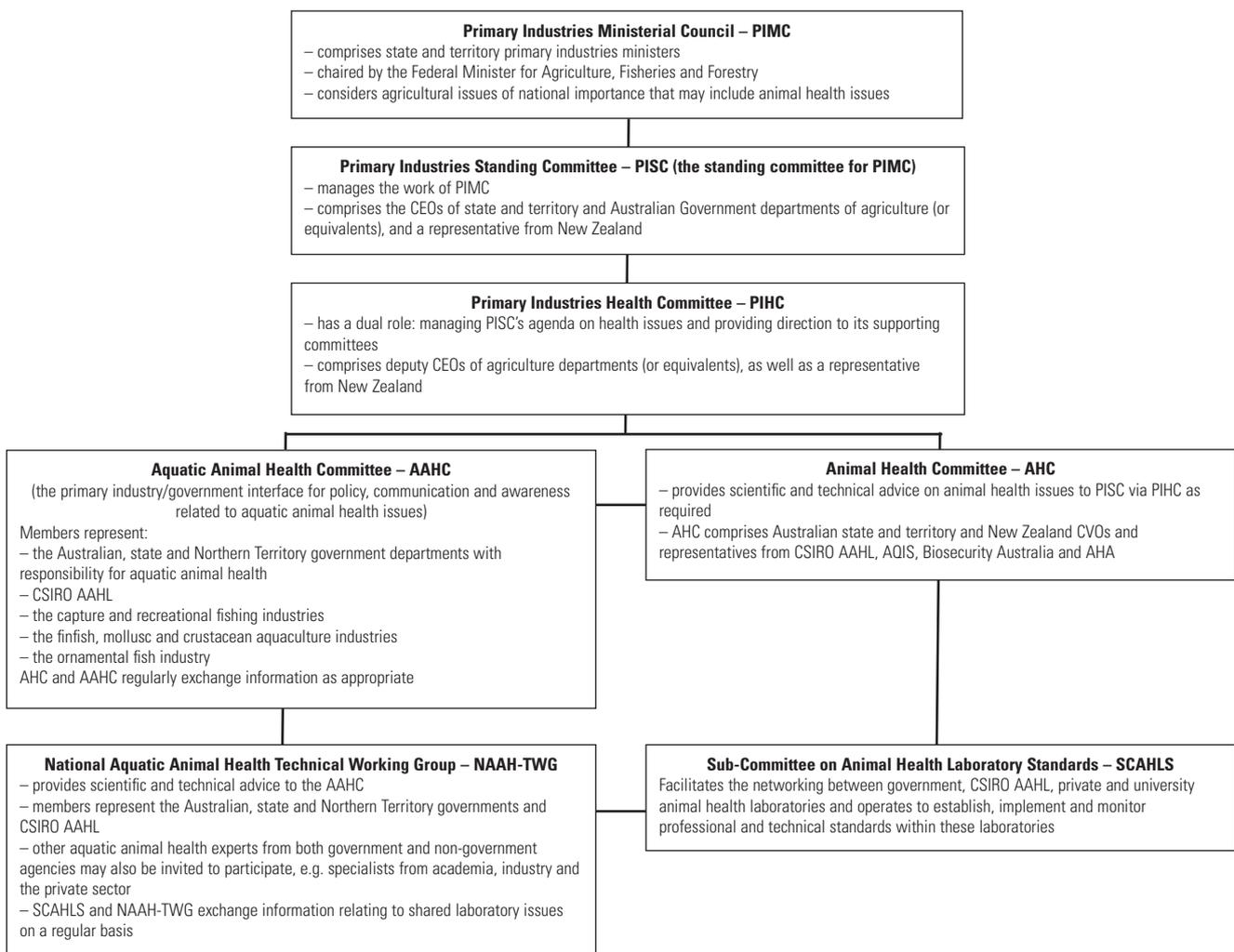
Although animal, plant and aquatic animal health issues are dealt with through the PIMC committee structures, it is recognised that many of these issues may be of importance for natural resource management. AAHC in particular therefore has informal reporting lines to committees under the Natural Resources Management Ministerial Council structure that sits parallel to PIMC. Figure 2 shows the hierarchy of the major committees that deal with national animal and aquatic animal health issues in Australia.

AQUAPLAN 1998-2003

AQUAPLAN 1998-2003 represented a world first in the proactive management of aquatic animal health. Jointly developed by a wide range of Australia's aquatic animal

industry sectors and Australia's Commonwealth and state and territory governments, the plan comprised eight key programmes:

- 1) international linkages
- 2) quarantine
- 3) surveillance, monitoring and reporting
- 4) preparedness and response
- 5) awareness
- 6) research and development
- 7) legislation, policies and jurisdiction
- 8) resources and funding.



AHA: Animal Health Australia
AQIS: Australian Quarantine and Inspection Service
CEO: Chief Executive Officer
CSIRO AAHL: Commonwealth Scientific and Industrial Research Organisation Australian Animal Health Laboratory
CVO: Chief Veterinary Officer

Fig. 2
Hierarchy of the major committees that deal with national terrestrial animal and aquatic animal health issues in Australia

Each programme was implemented through a series of priority projects. Many stakeholders contributed to the implementation of AQUAPLAN's projects, including the Australian Government and state and territory governments, educational institutions, the commercial and recreational fishing sectors, the aquaculture sector and the wider public.

Achievements across the eight key programmes have contributed to the management of aquatic animal disease emergencies in Australia. Some of the key achievements occurred through Programmes 3, 4 and 5, and some of these are discussed below. A fuller account of achievements under AQUAPLAN 1998-2003 is provided in the five-year review (4) and the background section of AQUAPLAN 2005-2010 (5).

Programme 3: surveillance, monitoring and reporting

The objective of this programme was to consolidate information on, and protect, Australia's aquatic animal health status. One of the mechanisms to achieve this was 'facilitating the detection and reporting of, and response to, aquatic animal disease outbreaks'(3).

National List of Reportable Diseases of Aquatic Animals

The management of enzootic diseases within Australia's states and territories is the responsibility of each individual state or territory, and each state and territory has its own legislative requirements for reporting disease outbreaks in fish and other aquatic animals. However, there had been little formal exchange of information on aquatic animal diseases occurring in various jurisdictions. In addition, a streamlined process was required for Australia to discharge its disease notification obligations to the World Organisation for Animal Health (OIE).

As a matter of urgency, the Australian Government and the state and territory governments therefore established a National List of Reportable Diseases of Aquatic Animals. They agreed that diseases listed must meet at least one of the following criteria:

- be internationally listed by the OIE in the *Aquatic Animal Health Code* (the *Aquatic Code*)
- be reportable to the OIE and the Network of Aquaculture Centres in Asia-Pacific (NACA) under a regional reporting scheme
- be of national and genuine concern to Australia.

Since mid 1998, all states and territories report on a quarterly basis – with information provided by month – the status in their jurisdiction of the listed diseases,

information that the Australian Government subsequently uses to make the required disease notifications to the OIE and the OIE/NACA quarterly aquatic animal disease reporting system.

The Australian Government and the state and territory governments also endorsed a review process for alterations to the list that requires final endorsement of any changes by PISC. Since its inception in 1998, the list has been modified several times, usually following changes to the list of aquatic animal diseases in the OIE *Aquatic Code*. The latest version is available on the DAFF website (9).

Standard diagnostic techniques

Under Programme 3, standard diagnostic techniques (SDTs) for priority diseases and standard operating procedures (SOPs) for different aspects of diagnostic procedures were developed. Together they serve to improve the consistency of laboratory diagnostic results, thereby enhancing confidence in diagnostic results and enabling a more rapid – and appropriate – response to aquatic animal disease emergencies.

Under AQUAPLAN 1998-2003, SDTs were developed for a large number of fish, mollusc and crustacean diseases, some of them exotic and some endemic in parts of Australia. Funding available under the Australian Government Federal Budget Initiative 'Building a National Approach to Animal and Plant Health' and the Fisheries Research and Development Corporation (FRDC) supported the development of many of the SDTs. By the end of 2004, SDTs had been developed for the following diseases:

- a) fish diseases: aquatic birnavirus infection, epizootic ulcerative syndrome, infectious salmon anaemia, nodavirus infection, piscirickettsiosis, spring viraemia of carp, yersiniosis
- b) mollusc diseases: bonamiosis, haplosporidiosis, maritelliosis
- c) crustacean diseases: crayfish plague, spawner-isolated mortality virus disease, white spot disease.

In addition, three SOPs were developed under AQUAPLAN 1998-2003:

- virus isolation and collection
- submission of finfish samples
- design and implementation of health testing protocols.

Australian SDTs and SOPs are authored and peer-reviewed by experts in aquatic animal health, sometimes involving international experts in the field. They are consistent with methods outlined (where they exist) in the OIE *Manual of Diagnostic Tests for Aquatic Animals*, but they may differ

where special procedures and interpretation are necessary to adjust to local circumstances.

Programme 4: preparedness and response

The objectives of this programme were to develop effective institutional arrangements to manage emergency aquatic animal diseases in Australia as well as a series of manuals and operational instruments that outline methods and protocols to manage emergency aquatic animal disease outbreaks.

The role of the Consultative Committee for Emergency Animal Diseases

One priority project under Programme 4 was the formal inclusion of aquatic animal disease emergency management into the CCEAD operating guidelines. In August 2002, PISC endorsed a set of new operating guidelines for Australia's CCEAD, clearly assigning and detailing CCEAD's role as the coordinating body providing the technical link between the Australian Government, state and territory governments and industry for the national technical response to terrestrial as well as aquatic animal health emergencies.

Following on from this, another project under Programme 4 was to ensure that state and territory arrangements complied with, and operated within, the CCEAD structure. A suspected incursion of white spot syndrome virus in Darwin in the Northern Territory in late 2000 provided a practical opportunity against which to assess the progress of this project. Following the incident, *post mortem* exercises were conducted with DAFF staff, state and territory CVOs, directors of fisheries, and industry. These exercises reviewed not only the response to the specific incident, but also made recommendations for CCEAD's future responses to aquatic animal disease emergencies. The Final Report on the Post Mortem Exercises on the Emergency Management Response to Evidence of White Spot Virus in Australia (2002) included a set of CCEAD-endorsed recommendations that were subsequently endorsed by PISC. Amongst other things, the final report recommended that an education and training programme on the CCEAD process be developed and undertaken by all participants of CCEAD, including industry. Using monies available through the FRDC and the Federal Budget Initiative 'Building a National Approach to Animal and Plant Health', DAFF staff subsequently delivered this training.

Disease simulation exercises

Programme 4 also included the conduct of a simulation exercise especially to test the communication flow between affected agencies during the response to an emergency aquatic animal disease event. AQUAPLAN 1998-2003 saw several simulation exercises conducted by DAFF staff for

different state governments and different aquaculture industry sectors, the latter including salmonids, prawns, redclaw, marron, edible oysters, pearl oysters and abalone. Each exercise was tailored to the needs and aims of the particular jurisdiction and included discussions, table-top exercises and field days. More information on the value of disease simulation exercises can be found elsewhere in this publication (12).

Federal Budget Initiative 'Building a National Approach to Animal and Plant Health' and FRDC funding was also obtained for the planning of a multi-state exercise. The Murray Darling Basin was chosen as a case study because this river system connects four states (Queensland, New South Wales, Victoria and South Australia) and the Australian Capital Territory. This larger exercise, Exercise Tethys, was held in November 2003 and simulated a disease outbreak in the silver perch aquaculture industry. Over eighty staff from eight government jurisdictions and three industry bodies participated in the two-day exercise. The primary aim of Exercise Tethys was to address inter-jurisdictional communication and response coordination. The simulation's scenario saw the outbreak occur in three states and required:

- involvement of 'disease-free' states and territories through disease surveillance activities and participation in national decision-making and resource allocation
- industry participation at national and state level
- activation of virtual State Disease Control Headquarters
- activation of the Aquatic CCEAD.

The simulation took place in an operational environment and participants performed the same roles as they would in an emergency. Emergency operations centres were also established and participants were required to meet and make timely and effective response decisions. The report (13) on the outcomes from Exercise Tethys highlighted that communication is a vital part of any emergency response and made detailed recommendations on how current communication systems and procedures could be improved. It also stressed that training activities are important for all jurisdictions and recommended that future training activities encompass a range of roles and responsibilities across a range of personnel. Additional recommendations targeted operating systems and procedures within individual jurisdictions. Exercise Tethys also highlighted other concerns, including the need to address compensation and cost-sharing issues within the aquaculture industry. The PISC endorsed the report's recommendations and participating authorities continue to implement them, thereby improving pre-existing frameworks and resources and developing more robust communication systems and procedures for an emergency response.

AQUAVETPLAN

One of the major achievements of Programme 4 of AQUAPLAN 1998-2003 was the development of AQUAVETPLAN, Australia's Aquatic Veterinary Emergency Plan. AQUAVETPLAN is a series of manuals that outline Australia's approach to national disease preparedness and propose the technical response and control strategies to be activated in a national aquatic animal disease emergency. The manuals provide guidance based on sound analysis, linking policy, strategies, implementation, coordination and emergency management plans. The components of AQUAVETPLAN and further details about the contents of the manuals are outlined in Figure 3 and Table I.

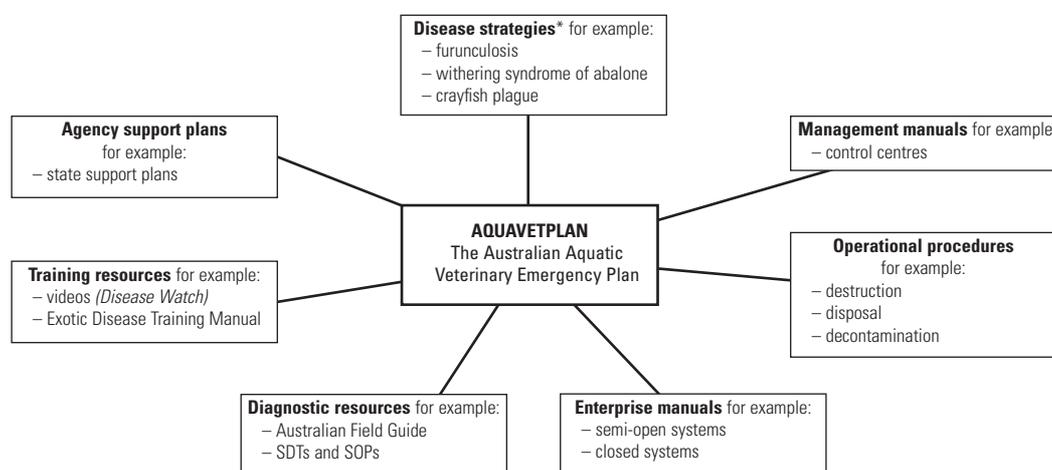
AQUAVETPLAN manuals are developed by Australian aquatic animal health experts with extensive stakeholder consultation. Each manual undergoes a formal endorsement process through government (PISC) and private sector committees. A key benefit of the plan lies in the fact that the manuals are prepared during 'peace time' so that the information is readily available in the event of an actual emergency. The manuals remain working documents that are updated as required and take into account research, experience and field trials, and cover emerging disease threats.

Under AQUAPLAN 1998-2003, quite a range of AQUAVETPLAN manuals in various categories were developed, many of them supported through funding available under the Federal Budget Initiative 'Building a National Approach to Animal and Plant Health' and the FRDC. By the end of 2004, the following manuals had been developed and formally endorsed (they were subsequently published on the DAFF website [8]):

- a) disease strategies – fish: furunculosis, viral encephalopathy and retinopathy, viral haemorrhagic septicaemia, whirling disease
- b) disease strategies – crustaceans: crayfish plague, white spot disease
- c) operational procedures: destruction, disposal
- d) enterprise manuals: open, semi-open, semi-closed, closed
- e) management manuals: control centres.

Diagnostic resources are also part of AQUAVETPLAN. They are discussed under Programme 3 (SDTs and SOPs) and Programme 5 (Field Guide), respectively.

More information on the value of disease contingency plans such as AQUAVETPLAN can be found elsewhere in this publication (14).



* Disease strategies

These contingency plans have three sections, i.e.:

1. Nature of the disease
2. Principles of control and eradication; and
3. Preferred control policies in Australia. Currently, disease strategies are available for:
 - a) fish diseases: furunculosis, viral encephalopathy and retinopathy, viral haemorrhagic septicaemia, whirling disease
 - b) mollusc diseases: withering syndrome of abalone
 - c) crustacean diseases: crayfish plague, white spot disease

STD: standard diagnostic procedure

SOP: standard operating procedure

Fig. 3
Components of AQUAVETPLAN, Australia's Aquatic Veterinary Emergency Plan

Table I
Manuals developed as part of Australia's Aquatic Veterinary Emergency Plan (AQUAVETPLAN)

Manual	Contents
Management manuals	<p>Control centres management</p> <p>The manual outlines the organisational response during the investigational alert, operational and stand-down phases of an aquatic EAD event, addressing legislative, management and resource issues. The manual lists the immediate duties of field officers, senior managers, the CVO (or director of the fisheries department, where appropriate) and other staff, in each phase</p>
Operational procedures manuals	<p>Destruction</p> <p>Preventing the spread of disease might require the efficient and humane killing of stock. The manual provides guiding principles on the decision to destroy stock and the choice and application of appropriate techniques</p> <p>Disposal</p> <p>The safe transport and disposal of carcasses, animal products, materials and wastes is an important part of any aquatic EAD response. The manual details best Australian practice and provides guidance on the selection of disposal sites and methods for transportation of materials for disposal</p>
Enterprise manuals	<p>The manual guides the rapid development of aquatic EAD control strategies according to the four types of production systems affected:</p> <p>Open (e.g. catchment, estuarine, marine)</p> <p>Semi-open (e.g. cage cultures, shellfish)</p> <p>Semi-closed (e.g. introduced and native freshwater fish, hatcheries, raceways)</p> <p>Closed (e.g. aquaria)</p> <p>The manuals provide brief information on industry practices and structures and outline approaches to be considered in the fact of an aquatic EAD event</p>

Programme 5: awareness

Programme 5 of AQUAPLAN 1998-2003 aimed to increase awareness of aquatic animal health issues. Within this programme, a key achievement was the development of the first edition of the Australian Aquatic Animal Disease Identification Field Guide. The field guide was developed by DAFF staff, in close cooperation with industry, states and territories, other Commonwealth agencies, the scientific community and the general public. It provided an informative account of the diseases and organisms that threaten Australia's aquatic animal industries. It also contained information on diseases in other parts of the world and how they could affect Australian industries. The key feature of the field guide was that it targeted the very people whose interests and livelihoods depend on Australia having a healthy aquatic environment, the people who have day-to-day contact with aquatic animal life and are therefore well-placed to undertake the necessary monitoring and surveillance. The first edition of the field guide enhanced Australia's ability to manage aquatic animal disease emergencies by increasing awareness, facilitating rapid reporting of events and, therefore, facilitating a more rapid response to emergency events. A second edition was produced under AQUAPLAN 2005-2010 (see below).

AQUAPLAN 2005-2010

AQUAPLAN 2005-2010 comprises seven strategies under which priority projects have been identified to achieve the plan's objectives. Together, these objectives will assist in maximising Australia's ability to control aquatic animal disease outbreaks, maintain market access, support quality assurance and improve the productivity and sustainability of Australia's aquatic animal production industries. Wherever possible, the projects included in AQUAPLAN 2005-2010 link into existing terrestrial animal health arrangements in order to avoid duplication and to maximise sensible use of resources. The seven AQUAPLAN 2005-2010 strategies are to:

- enhance the integration and scope of aquatic animal health surveillance in Australia
- harmonise approaches to aquatic animal health in Australia
- establish an emergency animal disease response agreement for Australian aquaculture industries
- enhance education and training in the aquatic animal health sector
- establish welfare standards for aquaculture

- ensure appropriate use of therapeutics for aquatic animal health management
- make aquatic animal health a key component of ecologically sustainable development.

The discrete objectives under each of these strategies are shown in Table II.

As with AQUAPLAN 1998-2003, regular stakeholder reviews of AQUAPLAN 2005-2010 are conducted to assess

the plan's continued relevance and to prioritise its individual projects.

Key projects under AQUAPLAN 2005-2010 that are relevant to the management of aquatic animal disease emergencies include:

- the development of a national protocol for the investigation of fish kills
- the integration of Australia's aquatic animal disease laboratory diagnosis and reporting activities

Table II
Summary of strategies and objectives of AQUAPLAN 2005-2010 *Source: (5)*

Strategy	Objectives
Enhanced integration and scope of aquatic animal health surveillance in Australia	Identify needs and gaps with respect to surveillance requirements for specific industry sectors Develop cost-effective surveillance systems tailored to address the identified gaps and needs Have a surveillance information system (organised and readily accessible at a national level) that addresses the deficiencies found in the first two objectives Improve investigation and reporting of major (wild) fish kills Create a consistent system of aquatic animal disease laboratory diagnosis and reporting across Australia
Harmonisation of approaches to aquatic animal health in Australia	Harmonise the framework for aquatic animal emergency disease management in Australia Implement a common approach to zoning for disease control and market access Implement a common approach for managing pathogens associated with the translocation of live aquatic animals across Australia Harmonise any new legislative, code of practice or quality assurance approaches as they are initiated in aquaculture
Enhancement of aquatic animal emergency disease preparedness and response framework	Agree on an approach to the establishment of an aquatic emergency animal disease response agreement for Australian aquaculture industries Ensure the scientific and technical accuracy of AQUAVETPLAN
Education and training in the aquatic animal health sector	Clearly define the current and future needs for aquatic animal health support among Australia's aquaculture industries (established and emerging) If required, modify the current education and training structures to ensure that the needs of the first two objectives are met Develop an accreditation and competency scheme for aquatic animal health service providers Provide training in the framework and operational aspects of aquatic animal disease
emergency management	
Welfare standards for aquaculture	Develop a scientifically based and harmonised approach to aquatic animal welfare policies across Australia Increase awareness of aquatic animal welfare issues within industry Assist international standard-setting bodies in developing welfare guidelines and standards that are scientifically based
Appropriate use of therapeutics for aquatic animal health management	Ensure the availability and safe use of therapeutics for cultured aquatic animals in Australia
Aquatic animal health management as part of ecologically sustainable development	Ensure that market opportunities are not lost due to the use of suboptimal health management practices in aquaculture Raise awareness about disease issues associated with imported live aquatic animals

- the development of formally endorsed Australia and New Zealand Diagnostic Procedures (ANZSDPs)
- the review of existing AQUAVETPLAN manuals and development of new manuals
- the publication of a second edition of the Australian Aquatic Animal Disease Identification Field Guide
- the development of on-farm emergency response reference material.

Progress in the implementation of these projects is discussed below. Further details of AQUAPLAN 2005-2010 and its progress so far are available on the DAFF website (6).

National investigation and reporting protocol for fish kills

Fish kill incidents, the significant and sudden death of non-mammalian aquatic animals in the wild, are known to occur in natural waterways across Australia. Their occurrence may indicate significant environmental changes, disease incidents or major pollution events. Each state and territory has operational responsibility for the response to fish kill incidents within its borders. However, the investigation and reporting of these incidents may involve coordination within and between jurisdictions, including agencies responsible for fisheries, agriculture and primary industries, environment and environmental protection.

Under Strategy 1 of AQUAPLAN 2005-2010, a national workshop was held to draft a national protocol for the investigation and reporting of fish kills (funding was provided through FRDC and the Australian Government's Federal Budget Initiative 'Securing the Future: Protecting our Industries from Biological, Chemical and Physical Risks') (18). The protocol was subsequently endorsed by government departments dealing with primary industries and natural resource management (at Commonwealth and state and territory levels) and published in hard copy and in CD ROM format (10). The protocol aims to engender a consistent national approach to the investigation and reporting of fish kills through the provision of recommended minimum standards. The protocol will facilitate both the improved management of these emergency events and future prevention of such incidents.

Laboratory diagnosis and reporting

The integration of Australia's aquatic animal disease laboratory diagnosis and reporting activities continues to be a high priority for AQUAPLAN's stakeholders. Progress in meeting this objective has been made under

Strategy 1 of AQUAPLAN 2005-2010 using funding available through the 'Securing the Future' Federal Budget Initiative (see above) and the FRDC. A project on the establishment of a national aquatic animal health diagnostic network has been completed, with state and territory government laboratories, the CSIRO AAHL, and private and academic institution laboratories working in aquatic animal health agreeing to participate. These laboratories were subsequently invited to participate in a national laboratory proficiency (ring) testing pilot programme. This pilot programme targeted testing for three priority aquatic animal diseases (white spot syndrome, epizootic haematopoietic necrosis and nodavirus infection in finfish) using polymerase chain reaction techniques.

Enhancement of Australia and New Zealand Standard Diagnostic Procedures

As mentioned earlier, SDTs and SOPs were developed under AQUAPLAN 1998-2003 to facilitate standardisation of test methodology and the interpretation of results. However, SDTs can also undergo a formal process of endorsement through NAAH-TWG and AAHC and thus become Australia and New Zealand Standard Diagnostic Procedures (ANZSDPs). The primary function of ANZSDPs is to facilitate the performance of test procedures and to ensure consistency among laboratories using methods selected for their optimal accuracy, sensitivity, specificity and robustness. Secondary purposes are to provide the methods to be used in external proficiency test programmes and to aid the development of documentation for quality systems.

In November 2005, NAAH-TWG published a 'Guide for Authors' of aquatic ANZSDPs (20). This Guide explains that the development of ANZSDPs should be limited to procedures that enable testing for:

- regulatory or industry-driven programmes for the control of diseases
- the export of animals or animal products
- major endemic diseases affecting a significant proportion of national aquatic animal populations
- diseases for which no OIE standard exists, or an OIE standard is not applicable to Australia
- significant zoonotic diseases.

The Guide also explains that an ANZSDP will include only those test methods that are in routine use for the disease under consideration. As such, they are not appropriate for specialised procedures used only by Reference Laboratories or for exotic diseases where the test capability is limited to AAHL or the New Zealand National Centre for Disease

Investigation. For some exotic diseases, there may be occasions when it is appropriate to prepare an ANZSDP that will include comments about the disease and sample collection, especially when related strains of the organisms are endemic. Test procedures lacking adequate evaluation or standardisation data generally will not be recognised for inclusion as ANZSDPs.

In 2006, NAAH-TWG held a special one-day workshop to determine what action was necessary for the future development and revision of ANZSDPs for aquatic animal diseases. The key conclusions of the workshop included:

- that standard diagnostic procedures for aquatic animal diseases are useful and are required under Australian conditions
- that NAAH-TWG needs to upgrade the existing procedures for the development and revision of ANZSDPs for aquatic animal diseases
- that securing funding for the writing, editing and reviewing of ANZSDPs is a critical issue
- that a part-time executive officer is required to drive the development and editorial process.

The revision or completion of current and draft aquatic ANZSDPs was subsequently given a priority ranking by NAAH-TWG. Ten documents in particular were given highest priority, and work on these texts was supported by monies from the 'Securing the Future' Federal Budget Initiative (see above). The following aquatic ANZSDPs and 'other procedures' are nearing completion:

- betanodavirus (aquatic ANZSDP)
- *Bonamia* (aquatic ANZSDP)
- crayfish plague (aquatic ANZSDP)
- finfish sampling ('other procedure')
- marteiliosis (aquatic ANZSDP)
- *Piscirickettsia* (aquatic ANZSDP)
- vibriosis ('other procedure')
- virus isolation ('other procedure')
- white spot syndrome virus (aquatic ANZSDP)
- yersiniosis ('other procedure').

Enhancement of AQUAVETPLAN

The review of AQUAVETPLAN ensures that manuals remain accurate and appropriate for use in an emergency response. In 2007, AAHC agreed on a process for both routine and urgent reviews of AQUAVETPLAN manuals

and the prioritisation of new manuals. Under this process, five AQUAVETPLAN manuals are currently undergoing review, amongst them the AQUAVETPLAN Management Manual: Control Centres Management. This review will consider the management of terrestrial animal health, plant health and marine pest emergencies in Australia to harmonise emergency response procedures across these sectors. This will enable personnel trained in one sector to function in the response to an emergency in another sector, broadening Australia's capacity for response to a wide range of animal and plant emergencies. Under AQUAPLAN, the publication of a new manual (the AQUAVETPLAN Operational Procedures Manual: Decontamination) is expected in early 2008.

Aquatic Animal Diseases Significant to Australia: Identification Field Guide

As a consequence of ongoing changes to Australia's National List of Reportable Diseases of Aquatic Animals as well as an increased knowledge of the diseases covered in the first edition of the *Australian Aquatic Animal Disease Identification Field Guide*, a second, revised, edition became a priority towards the end of AQUAPLAN 1998-2003. However, the second edition, now entitled *Aquatic Animal Diseases Significant to Australia: Identification Field Guide*, was not merely to be an updated version of the first. Rather, it was:

- to be published in CD ROM format, rather than print medium, thereby reducing production and distribution costs allowing for wider dissemination of the product and periodic revision in line with ongoing changes
- to allow printing of fact sheets of individual diseases
- to be accessible via the internet
- to have a greater focus on the technical audience (e.g. farm managers and staff, and border protection officers), while remaining relevant to a non-technical audience.

DAFF secured monies for this project under the 'Securing the Future' Federal Budget Initiative (see above). The second edition was published on CD ROM in 2004 and is freely available on the DAFF website (15). It was produced in consultation with members of industry, research institutes and the Australian and state and territory governments.

This second edition quickly became a very attractive resource that was commended not just in Australia. DAFF therefore cooperated with NACA and a number of fish health experts from various organisations in the Asia-Pacific to produce a version more broadly applicable to the Asia-Pacific region. The *Aquatic Animal Diseases Significant to Asia-Pacific: Identification Field Guide* (2007) (7) provides fisheries and aquaculture managers, recreational fishers,

border protection staff, environmentalists, students of aquatic animal health, and fisheries management with a reference guide to support decisions on aquatic animal health. The regional field guide covers all diseases listed in the OIE/NACA quarterly aquatic animal disease reporting system (all aquatic animal diseases listed in the OIE *Aquatic Code* plus diseases of regional concern).

On-farm reference material for aquatic emergency animal diseases

In the 2006 stakeholder review of AQUAPLAN 2005-2010, the development of emergency response reference material targeted at the on-farm or industry level was accorded a high priority. This project was not an original AQUAPLAN project, but was added to the plan following this 2006 review. An emergency simulation exercise and standard operating procedure for an unexplained stock mortality at an aquaculture facility has been developed under this project. The material outlines the steps to be taken in the response to a disease outbreak of unknown origin causing mass mortalities of aquaculture stock. The material is suitable for use by a range of industry staff – including farm managers, shift managers, senior technicians, owner-operators and consultant-trainers – on all types of aquaculture hatcheries and grow-out farms.

Lessons learned

AQUAPLAN has significantly enhanced Australia's capability to manage aquatic animal health and in particular aquatic animal disease emergencies. However, this success and, ironically, the lack of recent serious aquatic animal disease incidents, have resulted in problems sustaining initial enthusiasm and commitment.

Ongoing commitment is required from all parties to invest in national programmes (e.g. AQUAPLAN and AQUAVETPLAN), national structures (e.g. NAAH-TWG and AAHC) and the physical and human resources that underpin them. However, while strong in-kind contributions have been made, financial resources for the implementation of AQUAPLAN have been less than ideal. Fisheries and aquaculture industries compete for governmental support with the much larger Australian livestock sector, for which animal diseases may present serious potential economic and/or public health impacts. Therefore, decisions to invest in aquatic animal health programmes are often made against the competing priorities of terrestrial animal disease management, where the consequences associated with disease incidents may be significantly higher.

Australia's aquatic animal industries are geographically diverse (e.g. prawns in the north and north-east; salmon in the south) and often share little common, or national, interest. In aquaculture, many industries are emerging and significant tactical investments are needed to develop markets and help these businesses grow. Together, these factors can make it difficult to convince industry and governments that investments should be made in strategic national approaches to aquatic animal health. As explained in the introduction, the impetus for developing AQUAPLAN arose from a truly national aquatic animal health emergency – the massive pilchard die-offs in 1995. The Federal Government has maintained significant in-kind and cash support for AQUAPLAN, but not to the level of the initial years. This is consistent with the Federal Government's general approach to supporting activities on new and emerging issues; however, over time it is expected that such initiatives will be more sustainably resourced by investment from all beneficiaries.

At the state level, aquatic animal industries also face competition with the livestock sector for resources to deal with endemic diseases. And within industries themselves, 'health' is rarely a top priority for investing already scarce resources, given that benefits of investment largely accrue through incidents **not** occurring. Investment into new marketing strategies, for example, promises a quicker and more tangible return.

The problems encountered as a result of insufficient resources can be broadly grouped into two areas, the effectiveness of committees, and the implementation of discrete projects. Obviously, the two are connected.

Whilst representation of governments on AAHC is at the CVO (or similarly senior) level, some jurisdictions now send less senior delegates to AAHC meetings. This is a reflection of the competing priorities faced by CVOs. While in most jurisdictions the CVOs are responsible for aquatic animal health, terrestrial animal health issues are usually of a higher priority. However, less senior delegates are not always familiar with broader animal health issues and may be less aware of how aquatic animal health may benefit from broader animal health initiatives.

AAHC has a programme (AQUAPLAN) implementation function, but no dedicated funding basis to perform this function. Most of the resources that are provided to implement projects are provided as in-kind contributions by stakeholders and, while these contributions are important, they do not provide a basis for sustainable project delivery. The priorities of AQUAPLAN 2005-2010 were developed collaboratively and embraced by governments and industry; however, attaining strong commitment to fund the implementation of individual

projects was not an integral component of the plan's development. The Australian Government Better Practice Guide – Implementation of Programmes and Policy Initiatives (11) published in 2006 advises:

'A policy initiative is more likely to achieve the best possible outcomes when the question of how the policy is to be implemented has been an integral part of policy design. Where this does not receive sufficient and early attention, problems may arise during subsequent implementation. These problems may include: sub-optimal delivery methods; overambitious timeframes; resources not being available when required; inappropriate skills or capability for the initiative; and insufficient contingency planning.'

Consistent with this message, the implementation of AQUAPLAN 2005-2010 would be more effective if new resources were committed and made available rather than provided on an *ad hoc* basis relying on in-kind contributions. However, while the current approach may not be the most effective, it does ensure that AQUAPLAN is implemented efficiently, making maximum use of existing resources.

While the implementation of AQUAPLAN 2005-2010 could be improved in some areas, the adopted approaches have largely been highly successful. Harmonisation with terrestrial arrangements has ensured that new arrangements were easily understood, enabled the adaptation of convincing, existing models, and minimised duplication of effort whilst maximising use of limited resources.

Another successful approach was to provide leadership through clearly identified competent authorities. Within the Australian Government, the Office of the Australian CVO facilitates the development of national policies and strategies and the provision of scientific advice to minimise the potential impacts of diseases on Australia's animal and aquatic animal health. While aquatic animal health does not fall into each state and territory CVO's portfolio, the provision of national leadership through the Australian CVO was welcome and proved successful.

Early and widespread consultation with a wide range of potentially interested stakeholders was beneficial. This extensive consultation drew on resources heavily, but proved worthwhile by ensuring that priorities reflected national needs, that approaches were appropriate and that ownership in AQUAPLAN was engendered. It also succeeded in engaging non-commercial sectors such as the angling community, and developed links with non-primary production agencies with an interest in the environment. From an emergency disease management point of view, embracing such groups is pivotal, as they may be the first to recognise the early warning signs of disease in the wild.

Challenges ahead

While resource issues and addressing governance remain priorities for the further implementation of AQUAPLAN, the highest priority is perhaps the development of a formal arrangement between governments and private sectors on the response to an aquatic emergency animal disease event. Existing models include the Emergency Animal Disease Response Agreement (EADRA) that applies in the terrestrial animal sector. The terrestrial EADRA is a unique government and industry agreement that commits all parties to discharging their biosecurity responsibilities, responding to EAD events, and participating in a cost-sharing mechanism for EAD events. Animal Health Australia is the custodian of the Agreement, which is reviewed on an ongoing basis.

The EADRA provides an innovative means to combine the following approaches to combating EADs:

a) Participation and cooperation

All parties commit to participating in an EAD response through informed and empowered representatives who cooperate to determine and direct the response.

b) Risk management

All parties commit to taking all reasonable steps to minimise the risk of the occurrence of an emergency animal disease through the development and implementation of biosecurity plans.

c) Detection and response

All parties commit to maintaining the capability to ensure early detection of, and an effective response to, an emergency animal disease. The National Animal Health Performance Standards are the basis for determining the level of capability that Parties to the Agreement should maintain.

d) Cost sharing

All parties commit to contributing to funding specified items of the total cost of responding to an EAD by which they are affected. Those 'eligible items' are identified in the Agreement. The Agreement also states that:

- cost sharing is aimed at equitable contributions from all parties, commensurate with their respective resource bases
- cost sharing is not a bottomless pot of money; government and industry party shares are capped
- cost sharing is linked to the category of the disease (see below)

- a party which does not participate does not pay
- the compensation costs included in cost sharing under the Agreement are separate from compensation payable to an owner under state or territory legislation, which may vary from jurisdiction to jurisdiction.

EADs are grouped into four categories, and the eligible costs of a response are shared accordingly, as follows:

- Category 1: diseases that predominantly seriously affect human health and the environment, e.g. rabies (100% of the funding is provided by the collective governments)
- Category 2: diseases with the potential to cause major national socioeconomic consequences, e.g. foot and mouth disease (80% of the funding is provided by government and 20% comes from industry)
- Category 3: diseases with the potential to cause moderate socioeconomic consequences, e.g. classical swine fever (50% of the funding comes from governments and the other 50% from industry)
- Category 4: diseases that cause production losses but that are not expected to significantly affect the national economy, e.g. contagious equine metritis (governments provide 20% of the funding and the relevant livestock industry(s) contribute(s) the remaining 80%).

e) Training

Training is an essential part of preparedness and the efficiency and effectiveness of responses and the Agreement provides for training personnel who take part in an emergency animal disease response. ■

To date, progress under the current AQUAPLAN includes the development of an issues paper providing information on the principles of aquatic animal diseases with respect to inclusion in cost-sharing arrangements. Discussions have used the arrangements existing for the livestock sector (as described above) as a starting point. However, an Emergency Plant Pest Response Deed and an Intergovernmental Agreement on a National System for the Prevention and Management of Marine Pest Incursions are now also in place in Australia and are being examined for aspects of potential applicability in aquatic animal health. This remains a complex issue, with further negotiations still to take place between governments and industry sectors. There are problems with simply adopting the terrestrial EADRA, given some intrinsic differences in the aquatic sector. For example, it is much harder to identify the beneficiaries of a response, with much of the aquatic environment shared between users as different as the commercial capture fisheries, the aquaculture producers, and the public at large, for example, through the recreational sector. There is also a considerable 'public good' component of mounting an EAD response where native fauna is endangered. Similarly, the current categorisation criteria are not directly transposable to aquatic animal diseases, given their strong focus on public health as well as possible effects on the economy at a nationally significant level. However, the project remains a high priority, with the development of such an emergency response agreement expected to facilitate more rapid responses to emergency aquatic animal disease events.

Plans nationaux pour la santé des animaux aquatiques : l'expérience australienne

E.-M. Bernoth, I. Ernst & B. Wright

Résumé

Suite à l'épidémie majeure qui a décimé les populations de sardines (*Sardinops sagax*) en Australie en 1995, ce pays a décidé de se doter d'un dispositif national de protection de la santé des animaux aquatiques, visant notamment à préparer les réponses en cas de foyer. Le Plan stratégique national australien pour la santé des animaux aquatiques (AQUAPLAN) conçu à cette fin est le fruit de la coopération entre les acteurs sectoriels de l'aquaculture et le gouvernement. Dans le cadre d'AQUAPLAN, des accords institutionnels basés sur ceux déjà existants pour la santé des animaux terrestres organisent à l'échelle nationale la réponse technique en cas d'urgence sanitaire chez les animaux aquatiques. Le nombre de manuels produits par le Plan australien pour les urgences sanitaires affectant les animaux aquatiques (AQUAVETPLAN) est en constante

augmentation, de même que leur portée ; ces manuels exposent l'approche australienne en matière de préparation aux maladies ainsi que les réponses techniques et les stratégies de prophylaxie à mettre en œuvre. Parmi les autres ressources du plan figurent la normalisation des techniques de diagnostic et un guide de terrain pour identifier les maladies. Des exercices de simulation permettent de s'entraîner à répondre correctement aux urgences sanitaires affectant les animaux aquatiques. Si la question des ressources et l'examen de la gouvernance sont importants pour parachever la mise en œuvre du plan AQUAPLAN, la toute première priorité est de parvenir à un accord officiel entre les gouvernements et les secteurs privés sur les interventions à mener en cas d'urgence sanitaire affectant les animaux aquatiques.

Mots-clés

AQUAPLAN – AQUAVETPLAN – Australie – Plan stratégique – Prophylaxie – Santé des animaux aquatiques – Urgence zoonositaire.



Planes nacionales de sanidad de los animales acuáticos: la experiencia australiana

E.-M. Bernoth, I. Ernst & B. Wright

Resumen

Tras un episodio que provocó una gran mortandad de sardinias (*Sardinops sagax*) en 1995, Australia entendió que era preciso abordar la cuestión de la sanidad de los animales acuáticos desde una óptica nacional, sobre todo en lo tocante a la respuesta a las enfermedades. La colaboración entre el sector privado y el gobierno se tradujo en la elaboración de AQUAPLAN, que es el plan estratégico australiano en la materia. En aplicación de ese plan, y partiendo de los mecanismos que ya se estaban aplicando en el caso de los animales terrestres, se definió un dispositivo institucional para dar una respuesta técnica en el conjunto del país a las emergencias zoonositarias en animales acuáticos. Gradualmente van creciendo en número y alcance los manuales ligados al plan australiano de emergencias veterinarias en animales acuáticos (*Australian Aquatic Veterinary Emergency Plan: AQUAVETPLAN*). En ellos se describe a grandes rasgos el planteamiento australiano en la materia y se indican las estrategias técnicas de respuesta y control que deben ser activadas para responder a la presencia de enfermedades. Los profesionales disponen además de una serie de técnicas de diagnóstico normalizadas y de una guía para reconocer enfermedades sobre el terreno. También se llevan a cabo simulacros que sirven para impartir formación sobre la respuesta a emergencias sanitarias en animales acuáticos. Para profundizar en la aplicación de AQUAPLAN es muy importante resolver la cuestión de los recursos y la de los mecanismos decisorios, aunque la primera de entre todas las prioridades es la elaboración de un acuerdo oficial entre los sectores público y privado acerca de la respuesta en caso de emergencia zoonositaria en animales acuáticos.

Palabras clave

AQUAPLAN – AQUAVETPLAN – Australia – Control de enfermedades – Emergencia zoonositaria – Plan estratégico – Sanidad de los animales acuáticos.



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