

# National strategies for aquatic animal health management

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## Introduction

Globally, capture and culture fisheries contribute significantly towards food security, poverty alleviation, economic development and supporting livelihoods. In 2004, total global fish production was in excess of 140 million metric tonnes valued over US\$ 80 billion. Aquaculture contributes more than 45% of global fish food consumption and is the fastest growing food producing sector. The annual growth rate for aquaculture is 8-10% compared to 3% for live stock and 1.6% for capture fisheries. Hand in hand, the global trade in fish and fishery products is expanding and is worth over US\$ 70 billion. Rapidly developing aquaculture and ever expanding global trade, in the era of globalization and trade liberalisation, presents several challenges. One of the key problems is the emergence and spread of serious aquatic animal pathogens. Intensive aquaculture practices tend to provide a platform for the emergence of pathogens, while global trade in aquatic animals and their products offer avenues for trans-boundary spread of pathogens. The risk of pathogen transfer is generally considered greater for movement of live aquatic animals than for movement of dead product. Irrespective of the disease risks involved, aquaculture and global trade will continue to intensify and expand.

Aquatic animal diseases are a major risk and a primary constraint to the growth of the aquaculture sector in many countries in the Asia-Pacific region. The epidemic spread and devastating impacts of aquatic animal diseases such as epizootic ulcerative syndrome (EUS) in freshwater fish; viral nervous necrosis (VNN) in marine fish; white spot syndrome virus (WSSV) in penaeid shrimps; white tail disease (WTD) in *Macrobrachium rosenbergii* and the emerging Taura syndrome virus (TSV) in *Penaeus vannamei*; in Asia have clearly demonstrated the vulnerability of aquaculture systems to infectious disease emergencies. More recently, the widespread mass mortalities of koi and common carp in Indonesia and Japan due to infection with koi herpes virus (KHV) have re-emphasized the impact that emerging diseases can have on local economies. The increasing globalisation and trade volume of the aquaculture sector has created new mechanisms by which pathogens and diseases may be introduced or spread to new areas. Known and unknown disease problems may arise quickly in any country's aquaculture sector, often with serious economic, social and ecological consequences, but may be difficult or impossible to eliminate once established.

## Regional and international agreements and standards

Over the years, several regional and international instruments have been developed to help national governments to meet the international standards set by the World Trade Organization under the Agreement on the Application of Sanitary and

Phytosanitary Measures (SPS Agreement). The WTO-SPS Agreement sets out the basic rules for food safety and animal and plant health standards. The basic aim of the SPS Agreement is to maintain the sovereign right of any government to provide the level of health protection it deems appropriate, but to ensure that these sovereign rights are not misused for protectionist purposes and do not result in barriers to international trade. For animal (including aquatic animal) health and zoonoses, the WTO recognises the standards developed by the World Organisation for Animal Health (Office International des Epizooties, or OIE) as a reference within the SPS Agreement. The OIE develops normative documents relating to rules that its member countries can use to protect themselves from diseases without setting up unjustified sanitary barriers. The main normative documents produced by the OIE for aquatic animals are the Aquatic Animal Health Code (Aquatic Code) and the Manual of Diagnostic Tests for Aquatic Animals (Aquatic Manual). The aim of the Aquatic Code is to assure the sanitary safety of international trade in aquatic animals (fish, molluscs and crustaceans) and their products. The code provides details of health measures to be used by the veterinary or other competent authorities of importing and exporting countries so that the transfer of pathogenic agents for animals or humans is minimized but unjustified sanitary barriers are avoided. The Aquatic Code provides general and disease specific provisions that OIE Member Countries can adopt to prevent and control aquatic animal disease.

A framework for animal health management in the Asia-Pacific region has been developed by NACA and partners such as FAO and OIE. The Asia Regional Technical Guidelines (TG) provides the most comprehensive framework available for development and implementation of national strategies to address aquatic animal health issues at different levels – local, provincial and national. Three regional guiding documents that take into full consideration the provisions of the WTO-SPS Agreement, the OIE Aquatic Animal Health Code, as well as the FAO Code of Conduct for Responsible Fisheries, were developed and adopted by 21 Asian governments: (i) The Asia Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals and the Beijing Consensus and Implementation Strategy provide the basic framework and guidance for national and regional efforts in reducing the risks of diseases due to trans-boundary movement of live aquatic animals; (ii) the Manual of Procedures, which contains the background material and detailed technical procedures to assist countries and territories in the Asia region in implementing the 'Technical Guidelines' and (iii) the Asia Diagnostic Guide to Aquatic Animal Diseases which contains comprehensive information for disease diagnosis to support implementation of the Technical Guidelines. The Technical Guidelines identify several components for a national strategy, which needs to be in place and operating effectively in trading countries if the risk of international disease spread within the region is to be reduced.

## Key components of a national strategy

The national strategic plan normally provides the basic framework and principles on which to implement a comprehensive health management strategy. The strategic plan covers most of the issues that need to be implemented at the farm/state/national level. The national strategic plan usually identifies the roles and responsibilities of different stakeholders at the state and national levels. The following section provides a brief insight into some of the key components that are essential in a national strategy.

### Competent authority

A competent authority (CA) as mentioned in the OIE's Aquatic Animal Health Code means the national veterinary services, or other authority of a member country, having the responsibility and competence for ensuring or supervising the implementation of the aquatic animal health measures recommended in the OIE's Aquatic Animal Health Code (e.g. issuing health certificates, disease surveillance and reporting, quarantine, risk analysis, zoning). Key institutions identified under the CA should have the capacity and expertise to develop national policy and legislation and support implementation of various elements contained in the national strategies on aquatic animal health management and bio-security. The CA must ensure effective networking and communication with relevant institutions and stakeholders for the purpose of implementing effective national aquatic animal health strategies.

### Legislative support

Legislative support in the form of written legal documents outlining the powers of the CA to facilitate implementation of national aquatic animal health strategies is very important. The laws in aquatic animal health should cover aquatic animal movement, import-export, quarantine and health certification procedures, destruction of diseased stock, compensation, etc. Countries that have environmental or conservation policies or regulations, which impact upon the movement of live aquatic animals, must take these policies and regulations into consideration when framing separate aquatic animal health protection legislation. Legislation that covers aquatic animal health issues must also clearly address jurisdictional responsibility and ensure that it is consistent with international standards and obligations (e.g., the OIE's International Aquatic Animal Health Code and the World Trade Organization's Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement)).

### National Advisory Committee

The National Advisory Committee for Aquatic Animal Health is a forum for communication and coordination among government, academia, industry, private sector and other concerned groups for consideration of issues of aquatic animal health, disease control, and welfare. The objective of establishing a national advisory committee is to provide a formal mechanism to drive the process of national strategy development and implementation. Members of such a committee should have a broad understanding of the concept of health management. They should be also aware of the negative consequences of

not having a national strategy on national economies, trade and livelihood of fish farmers. Among others, the benefits of having national committee include:

- It highlights the importance a country places on aquatic animal health.
- It provides a formal framework and process to drive the development and implementation of national strategy.
- It identifies roles and responsibilities of different stakeholders.
- It ensures some degree of implementation of aquatic animal health programmes.
- It provides for wider participation and ownership to different institutions.

### National list of diseases

The national list of diseases is a tool to collate and disseminate information on diseases of national importance for the purpose of developing national disease control strategies, and complying with regional and international disease reporting requirements. Having a national list of diseases allows the development of national strategies (e.g. surveillance, contingency planning) around some of these diseases. When developing a national list, considerations must be given to some of the following key criteria:

- Cultured and traded species in the country.
- Economic impact of diseases on farmers and the national economy.
- Diseases exotic to the country.
- Diseases present in neighbouring countries in view of shared watersheds and porous land borders.
- Existing international (OIE) and regional (QAAD) disease lists.

### Surveillance and disease reporting

Surveillance is defined as a systematic collection, analysis and dissemination of health information of a given population of aquatic animals and is an ongoing process involving handling of health information from different sources, including surveys.

Surveillance is not same as surveys. Passive (general) surveillance is the collection, analysis and dissemination of existing disease information. It includes all the routine disease investigation activities that may be undertaken in a country/state such as field investigations of disease incidents and results of laboratory testing. It is important that passive surveillance is undertaken on a continuous basis throughout a country/state and that the disease information produced is effectively captured, analysed and used for mounting an early response.

Active surveillance (targeted surveillance) refers to active collection of disease data following a structured surveillance design, often targeting specific diseases. Active surveillance

collects specific information about a defined disease or condition so that its level in a defined population can be measured or its absence reliably substantiated. Disease surveillance should be an integral and key component of all national aquatic animal health strategies. This is important for early warning of diseases, planning and monitoring of disease control programs, provision of sound aquatic animal health advice to farmers, certification of exports, international reporting and verification of freedom from diseases. It is particularly vital for animal disease emergency preparedness. Information generated from surveillance systems must be housed in a national database, from where the CA will be able to make use of the surveillance data for the purpose of implementing national disease control programs or for meeting regional and international disease reporting obligations.

Implementation of surveillance systems will directly and indirectly contribute to improved disease diagnosis, better research collaborations, reliable advice to primary producers, capacity building at the level of extension workers and primary producers, development of an early warning and emergency preparedness system.

Disease reporting and information sharing can go a long way in minimizing the impact of serious aquatic animal health emergencies. By international agreement, diseases listed by the OIE should be reported by member countries and are subject to specified health measures that are intended to limit disease spread and assure sanitary safety of international trade in aquatic animals and their products. The NACA/FAO/OIE Quarterly Aquatic Animal Disease (QAAD - Asia-Pacific) reporting system lists all diseases listed by the OIE plus diseases of concern to the region. The information generated through the regional reporting system, participated by 21 countries, provides information on important diseases in the Asia-Pacific region and also serves as an early warning system for emerging pathogens (e.g. KHV, TSV).

### **Emergency preparedness and contingency planning**

A disease emergency exists when a population of aquatic animals is recognized as undergoing severe mortality events, or there is otherwise an emerging disease threat where urgent action is required. Infectious disease emergencies may arise in a number of ways, including: introductions of known exotic diseases, sudden changes in the pattern of existing endemic diseases, or the appearance of previously unrecognized diseases.

A contingency plan is an agreed management strategy and set of operational procedures that would be adopted in the event of an aquatic animal disease emergency. This should be developed during "peace time" (i.e. not at time of emergencies). When there is an emergency, the response should proceed according to the plans that have been developed. For effectively dealing with aquatic animal health emergencies, governments should have the capability to develop contingency plans and build the required operational capacity to effectively implement the plan. Through a well-documented contingency action plan agreed upon by all major stakeholders, it would be possible to minimize the impact of an aquatic animal disease emergency. Mere establishment of contingency plan without appropriate skills and capacity development would be of little value.

The aim of early warning is to allow the recognition of a potential threat and a rapid detection of a disease emergency. For establishing an effective early warning program, a strong technical capability is a fundamental requirement in the areas of disease diagnostics, disease surveillance, epidemiological analysis, aquatic animal health information systems, national and international disease reporting and information communication and sharing. Early response is identified as all actions that would be targeted at rapid and effective eradication/containment/mitigation of an emergency disease outbreak. The responses may be of different types depending on the disease agent and the likely impact. Operational capabilities at different levels (farm/village/province/national) are vital to mount an effective early response.

### **Quarantine and health certification**

Quarantine is defined as maintaining a group of live aquatic animals in isolation with no direct contact with other aquatic animals, in order to undergo observation for a specified length of time and, if appropriate, conducting tests and treatment, including proper treatment of the waste waters. Quarantine process involves pre-border, border and post-border activities, including pre-movement certification, movement, confinement on arrival, checking during confinement, releases, and subsequent monitoring as appropriate. The purpose of applying quarantine measures is to facilitate trans-boundary trade in living aquatic animals, while minimizing the risk of spreading infectious diseases. An effective system of quarantine measures also increases protection of surrounding resources (e.g., harvest fisheries, non-exploited species and other components of the environment).

Health certificates are documents issued by the CA of the exporting country attesting to the health status of a consignment of live aquatic animals. A health certificate is a legal document which is used especially for the purpose of applying quarantine measures in trans-boundary trade of live aquatic animals and their products, for minimizing the risk of spread of infectious diseases. Health certification is also one of the strategies aimed to protect the natural environment and native fauna from the deleterious impacts of exotic species and/or diseases. Because of the diversity of species, the purposes for which the aquatic animals are being traded (import-export, local market), and other variable factors, health certificates should be comprehensive and be able to accommodate all the required information. Model health certificates are provided in the OIE Code.

### **Import risk analysis**

The importation of live aquatic animals always involves a degree of disease risk to the importing country. Import risk analysis (IRA) is the process by which hazards (e.g. pathogens) associated with the introduction of a particular animal are identified, the paths and likelihood of introduction and establishment are described, consequences are defined and management options are assessed. The results of these analyses are communicated to the CA and stakeholders (importer/exporter). Typical risk analysis process involves four components: hazard identification, risk assessment, risk management and risk communication. Import decisions based on scientific risk analysis will minimize the risk of introducing exotic pathogens to the country.

## Zoning

Zoning is a program for delineating areas within countries on the basis of aquatic animal disease status. The advantage of zoning is that it allows for part of a nation's territory to be identified as free of a particular disease, rather than having to demonstrate that the entire country is free. In the past, outbreaks of disease could impact on trade from the entire country, but by zoning, restrictions may only apply to animals and products from the infected area. Zoning is particularly helpful for diseases where eradication is not a feasible option.

## Role of NACA

NACA is an intergovernmental organization, owned by its member governments, of which there are currently 17. The objective of NACA is the expansion of sustainable aquaculture and small-scale aquatic resources management, through the promotion of science-based best practices in policy, sector management and farm management. NACA operates under the principle of Technical Cooperation among Developing Countries. The regional program is formulated by the governments, through its Governing Council; with the advice of a Technical Advisory Committee; and a wide range of government, industry and non-government stakeholders, and implemented by the Secretariat and network participants. Aquatic animal health management is one of NACA's core programmes, through which support is provided for cooperation, capacity building and improved communications among countries in addressing aquatic disease problems. The purpose of NACA's regional Aquatic Animal Health Program in the 21 participating countries is to "Reduce risks of aquatic animal disease impacting on livelihoods of aquaculture farmers, national economies, trade and human health". The regional health program of NACA provides technical assistance to countries to implement practical national aquatic animal health strategies.

## Conclusions

Strong national commitment and continuous awareness and capacity building at producer, disease support and decision making levels are critical for ensuring effective implementation of a national aquatic animal health strategy. National governments should specifically address issues of developing a sustainable process to suit the existing resources of the country. Countries should consider strengthening national aquatic animal health networks, make effective use of the existing information (e.g. research publications, reports of research institutions, reports in meetings and conferences, reports of private sector laboratories), improve communication between CA and aquatic animal health personnel, build capacity and awareness on diagnosis and implement simple and practical surveillance systems. Commitment and proactive approaches by national governments can only make implementation of responsible aquatic animal health management strategies a reality. Implementation of national strategies including surveillance, disease reporting and contingency planning should be seen as national programs and not as projects of individual institutions or organizations in which all stakeholders have a role to play.

## International Cosmos Prize for Professor Phan Nguyen Hong, National University of Education of Vietnam

"Professor Phan Nguyen Hong from the National University of Education of Vietnam has won the international Cosmos Prize for his contribution to saving mangrove forests.



The most significant fact is that Hong's work has helped revive many Mangrove forests destroyed in war time".

Hong was selected from 131 candidates from 25 countries to become the first Vietnamese scientist to receive the award - and prize money of US\$380,000. The award ceremony was held in the Japanese city of Osaka. The prize is awarded annually by the Expo 90 Commemorative Foundation to an individual or team who contributes to the interdependence of life and the global environment.

"His 40-year research project plays an important role in protecting bio-diversity and reducing global warming," said Mai Sy Tuan, dean of the National University's Faculty of Biology. "It helps humans discover the best way to preserve harmony with nature." Nguyen Lan Dung, chairman of the General Biology Association, said the prize was an honour for all Vietnamese scientists. "The most significant fact is that Hong's work has helped revive many mangrove forests destroyed in war time," he added.

The 73-year-old professor is a pioneer in the study of the bio-ecology of tropical wetlands in Vietnam. He began his research in 1964 to solve the long-term effects of the chemical war on mangroves. Hong went on to establish Can Gio Province's Biosphere Reservation Centre. He also helped local residents replant mangrove forests in eight different provinces and improved their living standards by using the forest wetlands to raise aquatic products. He established more than 400 classes in 10 coastal provinces to train fishermen in new ways of raising sea products and planting mangroves. Hong has published 20 books about preserving the mangrove ecosystem and become a top-ranking expert in Asian wetland systems.

He intends to continue his studies on coastal forest conservation and contribute to marine resource protection and poverty reduction. "I'll donate part of my prize money to support scientific research for university teaching staff and students," said Hong.

Source: Vietnam News.