ASEAN Australia Development Cooperation Program (AADCP) Regional Partnerships Scheme

Final Project Report

Strengthening Aquatic Animal Health Capacity and Biosecurity in ASEAN 370-021

Final Project Report
August 2007

TABLE OF CONTENTS

1. GLOSSARY OF ACRONYMS AND ABBREVIATIONS

AA	Aquatic Animal
AaBV	*Astacus* bacilliform virus
AADCP:RPS	ASEAN Australia Development Cooperation Program: Regional Partnership Scheme
AAH	Aquatic Animal Health
AAHB	Aquatic Animal Health Branch (Singapore)
IAAHRI	Inland Aquatic Animal Health Research Institute (Thailand)
AAPQIS	Aquatic Animal Pathogen Quarantine Information System
ACFS	Agricultural Commodity and Food Standards (Thailand)
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
ASEC	ASEAN Secretariat
ASWGFi	ASEAN Sectoral Working Group on Fisheries
AusAID	Australian Agency for International Development
AVA	Agri-Food & Veterinary Authority (Singapore)
BADC	Brackhiswater Aquaculture Development Centre (Indonesia)
BADS	Brakhiswater Aquaculture Development Station (Indonesia)
BAFPS	Bureau of Agriculture and Fishery Product Standards
BARFI	Bohol Aquaculture Research Foundation, Inc. (Philippines)
FSPFC	Fish Seed Production and Research Center (Cambodia)
BETP	Bureau of Export and Trade Promotion (Philippines)
BFAR	Bureau of Fisheries and Aquatic Resources (Philippines)
BKD	Bacterial Kidney Disease
BMP	Better Management Practices
BND	Bacilliary Necrosis Disease
BNP	Bacilliary Necrosis in *Pangasius*
BP	Baculovirus penaei
CA	Competent Authority
CAAHRI	Coastal Aquatic Animal Health Research Institute(Thailand)
CdBV	*Cherax destructor* bacilliformvirus
CdSPV	*Cherax destructor* systemic parvo-like virus
CFRDB	Coastal Fisheries Research and Development Bureau (Thailand)
CFRDC	Coastal Fisheries Research and Development Center (Thailand)
CGV	*Cherax giardiavirus*-like virus
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLSU	Central Luzon State University
CqBV	*Cherax quadricarinatus* bacillus virus
DA	Department of Agriculture (Philippines)
DAFF	Australian Government Department of Agriculture, Fisheries and Forestry
DANIDA	Danish International Development Agencies
DC Section	Disease Control Section (Philippines)
DDG	Deputy Director General (Lao, PDR)
DENR-EMB	Department of Environment and Natural Resources-Environmental

	Management Bureau (Philippines)
DFHE	Directorate of Fish Health and Environment (Indonesia)
DG	Director General
DGA	Director General of Aquaculture (Indonesia)
DLD	Department of Livestock Development (Thailand)
DOF	Department of Fisheries
DLF	Department of Livestock and Fisheries (Lao PDR)
DOFIs	Department of Fisheries (Vietnam)
DOH-BFAD	Department of Health-Bureau of Foods and Drugs (Philippines)
DOST-PCAMRD	Department of Science and Technology-Philippine Council for Aquatic and Marine Resources Development (Philippines)
D & Q	Disease and Quarantine Section
DTI-BOI	Department of Trade and Industry-Board of Investments (Philippines)
EHNV	Epizootic Haematopoietic Necrosis Virus
ELISA	Enzyme-Linked Immunosorbent Assay
EUS	Epizootic Ulcerative Syndrome
FAB	The Fisheries and Aquaculture Board of the Philippines
FADC	Freshwater Aquaculture Development Centre (Indonesia)
FAO	Food and Agriculture Organization of the United Nations
FCR	Feed Conversion Ratio
FDC	Fish Disease Commission (Thailand)
FHMQC	Fish Health Management Quarantine Centre (Malaysia)
FHS	Fish Health Section (Philippines)
FiA	Fisheries Administration (Cambodia)
FIQC	Fish Inspection and Quality Control (Myanmar)
FRI	Fisheries Research Institute (Malaysia)
FRS	Fisheries Research Station (Cambodia)
GAP	Good Aquaculture Practices
GAV	Gill-associated virus
GIS	Geographic information systems
GOI	Government of Indonesia
GPS	Global Positioning System
HACCP	Hazarsd Analysis Critical Control Point
HC	Health Certificate
Hepatopancreatic - RLO	Hepatopancreatic rickettsial-like organism
HPV	Hepatopancreatic Parvovirus
IAI	Integrated Aquaculture International
IAS	Invasive Alien Species
IED	Import & Export Division (Singapore)
IFRDC	Inland Fisheries Research and Development Center (Thailand)
IFReDI	Inland Fisheries Research and Development Institute (Cambodia)
IHHNV	Infectious Hypodermal and Haematopoietic Necrosis Virus
IHNV	Infectious haematopoietic necrosis virus
IMNV	Infectious Myonecrosis Virus
IMS	Information Management System
IPNV	Infectious pancreatic necrosis virus
IRA	Import Risk Analysis
ISED	Inspection Services and Epidemiology Division (Singapore)
IT	Information Technology

KHV	Koi Herpes Virus
KHVD	Koi Herpes Viral Disease
KLIA	Kuala Lumpur International Airport (Malaysia)
KUSTEM	Kolej Universiti Sains dan Teknologi Malaysia/ College University of Science and Technology Malaysia
LARReC	Living Aquatic Resource Research Centre (Lao, PDR)
LFF	Live food finfish
LKIM	Lembaga Kemajuan Ikan Malaysia/Fisheries Development Authority of Malaysia
MAC	Marine Aquarium Council (Philippines)
MADC	Marine Aquaculture Development Centre (Indonesia)
MAO	Municipal Agricultural Office (Philippines)
MARD	Department of Animal Health (Vietnam)
MBV	*Penaeus monodon*-type Baculovirus
MFO	Municipal Fisheries Office (Philippines)
MIPRS	Ministry of Industry and Primary Resources (Brunei Darussalam)
MMAF	The Minister Marine Affairs and Fisheries (Indonesia)
MOFI	Ministry of Fisheries (Vietnam)
MrNV	*Macrobrachium rosenbergii* Nodavirus
MSGS	Monodon Slow Growth Syndrome
MSX	Multinucleate Sphere X disease
MTU	Mobile Technical Unit
NA	National Assembly
NAC	National Advisory Committee
NACA	Network of Aquaculture Centres in Asia-Pacific
NACAAH	National Advisory Committee of Aquatic Animal Health (Vietnam)
NADAREP	National Directorate of Aquatic Resources Exploitation and Protection (Vietnam)
NAFC	National Agriculture and Fisheries Council (Philippines)
NAFIQAVED	National Fisheries Quality Assurance and Veterinary Directorate (Vietnam)
NaFisH	National Fish Health Research Centre (Malaysia)
NAHC	National Animal Health Centre (Lao PDR)
NARI	National Aquatic Research Institute (Lao PDR)
NC	National Committee
NFRDI	National Fisheries Research and Development Institute (Philippines)
NGOs	Non Governmental Organizations
NHP	Necrotising hepatopancreatitis
NHPB	Necrotising hepatopancreatitis bacterium
NIMBB	National Institute for Molecular Biology and Biotechnology (Philippines)
NLD	National List of Diseases
NORAD	Norwegian Agency for Development Cooperation
NSRI	Natural Sciences Research Institute (Philippines)
OIE	Office International des Epizooties/World Organisation for Animal Health
OMV	*Oncorhynchus masou* virus
PAO	Provincial Agricultural Office (Philippines)
PCR	Polymerase chain reaction
PDR	Peoples Democratic Republic (Lao)
PFO	Provincial Fisheries Office (Philippines)

PIBV	*Pacifastacus leniusculus* bacilliform virus
PK-CFRDC	Phuket Coastal Fisheries Research and Development Centre (Thailand)
PPPBUK	Pusat Pengeluaran dan Penyelidikan Benih Udang Kebangsaan (Malaysia)
PPPIL	Pusat Pengeluaran dan Penyelidikan Ikan Laut (Malaysia)
PPTAP	Pusat Penyelidikan Ternakan Air Payau
Prof. Org	Professional Organization
PVDA	Philippine Veterinary Drug Association
PVMA	Philippine Veterinary Medical Association
R&D	Research and Development (Myanmar)
RIA	Research Institute for Aquaculture (Vietnam)
RIMP	Research Institute of Marine Products (Vietnam)
RSIV	Red Seabream Iridovirus
QAAD	Quarterly Aquatic Animal Diseases Report
QO	Quarantine Officer
QPD	Quality Control Division (Cambodia)
SAAB	Good Aquaculture Practices Certificate
SEAFDEC- AQD	Southeast Asian Fisheries Development Center- Aquaculture Department
SMV	Spawner-isolated mortality virus
SOM-AMAF	Senior Official Meeting for ASEAN Ministers on Agriculture and Forestry
SOP	Standard operating procedures
SPF	Specified Pathogen Free
SPLAM	Malaysian Aquaculture Farm Certification Scheme
SPS	Sanitary and Phytosanitary (WTO) Agreement
SVCV	Spring Viraemia of Carp Virus
systemic RLO	Systemic rickettsial-like organism
TG	FAO/NACA Asia regional technical guidelines
TIU	Technical Implementation Unit
TOR	Term of Reference
TSV	Taura Syndrome Virus
UMT	University of Terengganu
UP Diliman	University of the Philippines Diliman
UPLB-BIOTECH	University of the Philippines Los Baños-BIOTECH
UPM	Universiti Putra Malaysia
UP-MSI	University of the Philippines Marine Science Institute
UPV	University of the Philippines in the Visayas
VHS	Viral Haemorrhagic Septicaemia
VNNV	Viral Encephalopathy and Retinopathy
VPH	Veterinary Public Health (Philippines)
XSV	Extra small virus
VRI	Veterinary Research Institute (Malaysia)
WAHIS	The World Animal Health Information System
WTD	White Tail Disease
WTO	World Trade Organization
WSSV	White Spot Syndrome Virus
YHV	Yellow Head Virus

2. FOREWORD

This final report of the project "Strengthening Aquatic Animal Health Capacity and Biosecurity in ASEAN" (AADCP:RPS 370-021) contains two parts:

(A) Recommended Minimum Operational Requirements for Implementing National Aquatic Animal Health Strategies within ASEAN and
(B) ASEAN progress in the implementation of National Aquatic Animal Health Strategies.

Part A of this document is the result of the working group discussions during the Second Policy Workshop of the project held in Bali-Indonesia from 7-10 May 2007. This section identifies the minimum operational requirements for implementing national aquatic animal health strategies within ASEAN.

Part B of this document is a compilation of the information on the status of implementation of various elements contained in national aquatic animal health strategies within ASEAN. As a part of the project activity, information was submitted by project participants and collated by NACA Secretariat.

The purpose of this document is twofold. Firstly, it provides guidance for countries in ASEAN to implement key elements of national aquatic animal health strategies. Secondly, the compiled status report can be used as a basis for monitoring the progress of national strategy implementation in ASEAN member countries.

3. BACKGROUND

Aquatic animal diseases are of increasing concern in ASEAN because of the social and economic importance of the fishery and aquaculture sectors. In particular, trans-boundary diseases caused by spread of aquatic animal pathogens have caused significant damage in recent years, and are now recognized as a major risk and a primary constraint to the growth of the aquaculture sector, severely impeding both economic and socio-economic development of aquaculture in many ASEAN countries. The aquaculture industries alone provide several billion dollars of export earnings to ASEAN economies, so the economic and social risks are substantial. Aquatic animal pathogens do not respect geopolitical borders and have the potential to cause significant negative impacts on international trade and transport of aquaculture products. Therefore cooperation between States in addressing the issue is essential.

A framework for animal health management in the 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, national and provincial. 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 TG has identified six major components which need to be in place and operating effectively in trading countries if the risk of international disease spread within the region is to be reduced. The six components are underpinned by international agreements, standards and guidelines and require appropriate national legislation, policy and capacity within the region for effective implementation. These components are:

1. Disease surveillance and reporting
2. Import risk analysis
3. Zoning
4. Contingency planning
5. Health certification and quarantine measures
6. Disease diagnostics

The ASEAN Sectoral Working Group on Fisheries (ASWGFi) and the Senior Official Meeting for ASEAN Ministers on Agriculture and Forestry (SOM-AMAF) are responsible for progressing the initiative within ASEAN. A major impediment is the lack of technical expertise and resources to implement the

Technical Guidelines (TG). The TG was endorsed as an ASEAN policy document during the 9th Meeting of the ASEAN Working Group on Fisheries held in 2001.

Specifically, to safeguard against the potentially damaging effects of the introduction of exotic diseases and gain an understanding of how trade negotiating positions may be formulated on the basis of sound science, ASEAN member countries need to develop harmonized approaches to aquatic animal health management and build regional capability in

- epidemiology,
- risk analysis,
- disease surveillance,
- contingency planning, and
- information management and reporting,

related to the biosecurity of aquaculture industries.

Regional cooperation in developing this expertise will contribute to a common understanding of the processes involved and will play a role in the effort to harmonise aquatic animal health standards and protocols. Such cooperation is needed to support the envisioned free movement of products in the region.

ASEAN countries are at different stages of development of national aquatic animal health strategies, that contain action plans of governments and which form the basis for the national-level implementation of the TG. Many countries in ASEAN face significant challenges in the practical implementation of health management strategies, especially in the areas of surveillance, reporting, zoning, contingency planning and risk analysis. This is mainly due to inadequate national capacity and awareness.

4. AADCP-RPS PROJECT IMPLEMENTATION

To make progress towards the *ASEAN Vision 2020*, the Vientiane Action Program (VAP) identified the need for greater economic integration including enhancement of food security and global competitiveness of ASEAN's food, agriculture and forestry products. ASEAN countries are committed to building national capacities to improve their abilities to combat transboundary pathogens.

The ASEAN-Australia Development Cooperation Program's Regional Partnership Scheme (AADCP-RPS) project "Strengthening Aquatic Animal Health Capacity and Biosecurity in ASEAN" responded to the VAP and the recommendations of the 2004 Penang workshop "Building capacity to combat impacts of aquatic invasive alien species and associated pathogens". It also

supported the ASEAN Cooperation Plan goal of assisting ASEAN in addressing trans-national issues, as well as the ASEAN 2020 Vision of enhancing "food security and international competitiveness of food, agricultural and forest products and to make ASEAN a leading producer of these products…".

This project aimed to bridge the development gaps and build capacity across ASEAN countries and contribute significantly towards implementation of Asia Regional Technical Guidelines for responsible movement of live aquatic animals in ASEAN member countries

This project addressed limitations and inconsistencies among ASEAN member countries in abilities to develop and implement harmonized approaches to aquatic animal health management and biosecurity. Raising awareness of this problem and its remedies throughout the ASEAN region, and building regional capacity to assess risks, share information and strengthen networks, are critical to protect aquaculture and other production systems.

The project goal was to enhance the capability of ASEAN member countries to implement ASEAN harmonized national aquatic animal health strategies to manage risks to the biosecurity of fisheries industries particularly those related to trade and impacting on the poor. The project had the following objectives:

1. Development of harmonized approaches to aquatic animal health management and biosecurity in ASEAN.
2. Improving capacity to implement ASEAN harmonized national aquatic animal health and biosecurity strategies

As an effort to bridge the development gaps and build capacity, NACA and AusVet Animal Health Services, in collaboration with other partners i.e. ASEAN Secretariat, Aquatic Animal Health Research Institute (AAHRI), Thailand and Department of Agriculture, Fisheries and Forestry (DAFF), Australia, implemented the ASEAN-Australia Development Cooperation Program's Regional Partnership Scheme (AADCP:RPS) project "Strengthening Aquatic Animal Health Capacity and Biosecurity in ASEAN". This project was managed by Cardno-ACIL Australia Pty Ltd on behalf of AusAID and ASEC.

In order to accomplish the project objectives, series of activities were conducted over 18 months. It consisted of two policy workshops, two training courses and technical mission to four countries. Inter-workshop activity was facilitated by project partners and implementers. Participants of policy workshop and training workshops conducted in-country activities and provided feed back to project partners and implementers.

The first policy workshop was held in Bangkok from 3-6 April 2006. Eighteen participants from 10 ASEAN member countries attended the first workshop. Resource persons from NACA, AAHRI, SEAFDEC, AusVet, and ASEAN presented resource papers and facilitated working group discussions. During the first policy workshop participants analyzed the status of aquatic animal health management plans, capacities and institutional arrangements in ASEAN members, identified gaps, and prepared an overall work plan to build consensus and support preparation of harmonized national strategies for aquatic animal health and biosecurity in ASEAN. Two workgroups examined the present status of ASEAN member countries in fish health management and biosecurity from policy and technical perspectives. The outputs of workgroups discussion from the first policy workshop were further developed into an action plan and work program indicating the activity, dateline and responsibilities. The NACA secretariat and AusVet developed several documents and sent to workshop participants to assist them in their identified tasks.

Two training programs to ASEAN member countries on Strengthening Aquatic Animal Health Capacity and Biosecurity in ASEAN were conducted. The first training in Singapore (7-13 May 2006) focused on epidemiological principles, study design and surveillance while the second training, for the same group of ASEAN participants in Ho Chi Minh City, Vietnam (4-10 February 2007), focused on contingency planning, zoning and risk analysis. The two training programs were aimed at building the capacity of officers from ASEAN member countries involved in supporting the development of national aquatic animal health strategies.

Technical support was provided to Cambodia, Lao PDR, Myanmar and Vietnam during the inter-workshop period to assist in preparation of the national strategies. The technical support was implemented through technical missions - Cambodia (2-9 July 2006), Lao PDR (11-18 July 2006), Myanmar (3-9 September 2006), and Vietnam (4-9 December 2006). Some of the key tasks accomplished include:

- Framework for national strategy on aquatic animal health management developed
- National priorities concerning aquatic animal health identified
- Institutions and their aquatic animal health responsibilities identified
- Tentative national aquatic animal health committees formed
- National list of diseases developed
- Capacity (Laboratory and personnel) for national list of diseases evaluated
- Framework for passive surveillance developed
- Framework for contingency planning developed

- List of national staff trained in aquatic animal health developed and national networks formed
- Project proposal for piloting surveillance developed

The second policy workshop was held from 7-10 May 2007 in Bali, Indonesia. It was attended by 17 participants from 9 ASEAN member countries and resource experts from AusVet and NACA. ASEAN member country representatives presented progress made against action plans developed at the first policy workshop. Two working groups discussed minimum operational requirements needed for implementing national aquatic animal health strategies within ASEAN. In the plenary session the two workgroups discussed approaches towards harmonization within ASEAN and agreed to produce two documents as outputs of the project:

1. Recommended Minimum Operational Requirements for Implementing National Aquatic Animal Health Strategies within ASEAN and
2. Compiled ASEAN Progress in the Implementation of National Aquatic Animal Health Strategies.

The Recommended Minimum Operational Requirements for Implementing National Aquatic Animal Health Strategies within ASEAN is expected to provide guidance for countries in ASEAN to implement key elements of national aquatic animal health strategies. The Compiled ASEAN Progress in the Implementation of National Aquatic Animal Health Strategies, can be used as a basis for monitoring the progress of national strategy implementation in ASEAN member countries by the ASWGFi and other relevant ASEAN mechanisms.

5. OUTPUTS

Part A: Recommended Minimum Operational Requirements for Implementing National Aquatic Animal Health Strategies within ASEAN

Part B: ASEAN progress in the implementation of National Aquatic Animal Health Strategies

Part A: Recommended Minimum Operational Requirements for Implementing National Aquatic Animal Health Strategies within ASEAN

A.1. 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*. 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.

Minimum Operational Requirements

- Identify existing competent authorities/National Agencies with responsibilities for import/export permits, quarantine, health certificate, diagnosis, surveillance, regional and international reporting, zoning, contingency planning and capacity building
- Identify one central coordinating agency or central competent authority to implement national strategies on aquatic animal health management
- Play a lead role in policy development (e.g. legislation) in support of National Strategy implementation
- Coordinate with appropriate national agencies and initiate a mechanism for the development and implementation of national strategy (e.g. formation of National Advisory Committee, implementation of surveillance, health certification, quarantine, etc)
- Formulate organizational structure with responsibilities for implementation of national strategies on aquatic animal health. Responsibilities may be delegated to more than one agency but ensure that their activities/functions do not overlap.
- Prepare contact list with complete details for all the responsible agencies, including name of contact person
- Ensure funding support for the implementation of National Strategy
- Establish formal communication channels with regional and international organization (ASEAN, OIE, NACA, FAO) that deal with aquatic animal health matters

- Establish a mechanism to review the progress made under the National Strategy to support compliance to regional and international guidelines and standards
- Establish official mechanism to review and comment on regional and international guidelines and standards (e.g. OIE Code and OIE Manual)

A.2. Legislation

Legislative support, in the form of written legal documents outlining the powers of 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 procedure, 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)).

Minimum Operational Requirements

- Review the existing legislation/regulation (e.g. livestock, fisheries, wildlife, agriculture) in order to assess its appropriateness for implementing key elements of the national aquatic animal health strategy
- Review the existing legislation for compliance with international requirements
- Identify the gaps and issues
- Facilitate consultation with relevant stakeholders while developing new regulations/legislation to fill the identified gaps
- Develop a clear working plan for drafting new legislation, as appropriate
- Ensure endorsement by the government for the new regulations developed
- Disseminate regulations to relevant target audience
- Recruit and train staff to disseminate legislation to relevant people and enforce implementation of legislation.
- Create mechanisms and capacity for periodic review of legislation to meet the national and international requirements.

A.3. National Advisory Committee (NAC)

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. The members need not always be aquatic animal health experts. 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

Minimum Operational Requirements

- The Competent Authority with the main responsibility for Aquatic Animal Health will initiate the necessary steps for the establishment of National Advisory Committee
- Identify key national stakeholders who could contribute to the functioning of national advisory committee
- Develop criteria for appointment/selection (e.g. institution, expertise,…) of members on the national advisory committee
- Initiate a series of consultations with the identified group
- Invite expertise from other countries to share information
- Develop TOR for the national advisory committee
- Set up tentative National Advisory Committee with TOR (identifying the responsibilities of the Advisory group including setting up of working group, taskforce, etc.)
- Seek endorsement from the government for the NAC
- Ensure legislative support from the government for the functioning of NAC
- Ensure funding support to the functioning of NAC
- Ensure NAC meets on a regular basis and provide advice to the CAs on development/ implementation of the National Strategies
- Develop mechanisms for regular review and evaluation of NAC

A.4. National List of Important 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. While 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 national economy
- Diseases exotic to the country
- Diseases present in neighboring countries in view of shared water sheds and porous land boarders;
- Existing international (OIE) and regional (QAAD) disease lists; and
- List of diseases considered important by the ASEAN countries.

Minimum Operational Requirements

- National Advisory Committee/Competent Authority will facilitate national consultation for the purpose of developing diseases listing criteria and a flow chart for the process of developing/ revising National List
- Establish criteria for inclusion of diseases in the national list:
    - Population at risk (species cultured, species imported, wild species traded);
    - Impact of diseases (% mortality, economic loss, non-treatable, trading, public health);
    - Likelihood of a serious occurrence (e.g. considering existing distribution, management systems)
    - International requirement for reporting (e.g. OIE & QAAD)
    - Ecological impact
- Consult regional (QAAD) or international (OIE) listed diseases
- Set up a task force within the NAC to develop the National List
- Consult with NAC to get comments
- Develop a final list and seek endorsement from the government
- Formalization and endorsement by the appropriate authority
- Publish the list to promote public and technical awareness
- Share and distribute the National List to trading partners
- Review the list regularly (e.g. every 2 years) with provision of inclusion of new emerging diseases that are of importance to the country or deletion of diseases based on scientific information
- Develop diagnostic capacity and resource material for diseases listed in the National List

A.5. Surveillance, Reporting, Information Management System and Communication

Surveillance is defined as a systematic series of investigations of a given population of aquatic animals to detect the occurrence of disease for control purposes, and which may involve testing samples of a population. General (passive) surveillance is the ongoing work, which maintains a continuous watch over the disease profile of a population so that unexpected and /or unpredicted changes can be recognized. 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, analyzed and used for mounting an early response.

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. Practical and effective surveillance systems coupled with early warning and early response, are critical to the effective management of disease emergencies. Disease surveillance should be an integral and key component of all national/state aquatic animal health services. 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.

Implementation of a practical surveillance and early response 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. A good surveillance system has several benefits:

- Forms the basis for all national disease control programs
- Helps to meet regional and international reporting requirements
- Helps to meet trade requirements (e.g. health certificates)
- Helps to initiate and prioritise development of capacity, infrastructure and resource material

Minimum Operational Requirements

- CA/NAC review the existing surveillance and reporting system in the country
- CA/NAC initiates consultations to improve/initiate surveillance and reporting system in the country, as appropriate

- Establish the purpose and type of surveillance, as appropriate to the country
- Identify key aquaculture commodities and sources of disease information (e.g. farmers, researchers, extension workers, diagnostic laboratories)
- Recruit and train staff to develop surveillance and reporting skills
- Register farms/aquaculture facilities
- Develop extension materials and list of contact persons
- Develop appropriate levels of diagnostic capability and facilities for the national list of disease
- Prepare standard reporting forms and train field officers
- Produce supporting materials (e.g. Level I or II diagnostic material) for stakeholders (e.g. farmers, extension workers)
- Establish mechanisms for field investigations including transport, adequate communication system, field diagnostic kits, etc
- Promote/enhance farmer awareness through extension methods, including disease cards, surveillance updates, seminars, training etc.
- Establish clear flow charts for reporting of disease information from farms to the national database
- Establish mechanisms so that researchers report about new diseases to the national surveillance system
- Establish mechanisms for processing and analyzing disease information collected through surveillance system for the purpose of reporting, extension, identifying emerging/exotic diseases, supporting certification and quarantine, supporting contingency planning and zoning.
- Establish mechanisms with clear responsibilities for preparing disease reports for submission to regional and international organizations
- Establish national database (information management system)
- Establish communication channels to provide feedback to farmers to improve disease treatment, prevention and control.

A.6. Contingency Planning and Emergency Preparedness

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.

Through a well-documented contingency plan agreed upon by all major stakeholders, it should be possible to minimize the impact of an aquatic animal disease emergency. Contingency planning, early warning and early response are critical to the effective management of disease emergencies. The aim of early

warning is to rapidly detect the introduction of an exotic pathogen or a sudden increase in the incidence of any disease. Emergency response is identified as all actions that would be targeted at rapid and effective eradication/containment/mitigation of an emergency disease outbreak.

A contingency plan is an agreed response management plan and set of operational procedures that would be adopted in the event of an aquatic animal disease emergency. It outlines responsibilities and actions to be taken. Some of the important components of a contingency plan include:

- technical plans (e.g. manuals on general disease control procedures and strategies for specific diseases);
- support plans (e.g. financial, resource); and
- operational plans (e.g. management manual, diagnostic resources, training resources).

All components include clearly designated responsibilities.

Minimum Operational Requirements

- CA initiate the meeting with relevant agencies to assess the need for contingency plan (e.g. generic or specific contingency plan)
- Identify power and skills of the relevant organizations to be involved in implementing a contingency plan
- Establish a national emergency task force (skilled and competent staff)
- Establish a national disease crisis centre
- Seek government support to ensure adequate legal power for the emergency task force (e.g. quarantine of farms, destruction of stock)
- Prepare list of exotic/endemic diseases for which contingency plans need to be developed
- Develop plan of actions for emergency:
    - Quick notification procedures and response
    - Mobilization and communication
    - Rapid field investigation
    - Enforcing movement restrictions (e.g. sick animals, water, equipment, risk people, etc)
    - Involve livestock people in emergency disease control activities
    - Communication by task force managers to the CA, NAC, government, stakeholders and the public.
    - Establish mechanisms for monitoring for freedom
- Develop appropriate legislation and mechanisms for compensation
- Maintain competency of staff and a register of competent trained staff
- Establish communication with livestock experts to share experience and expertise

A.7. Aquatic Animal Health Certification

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. Although some serious pathogens are host specific, many show little host specificity in the same environment (marine or freshwater), culture and wild animals. Because of the diversity of species, the purposes for which the aquatic animals are being traded (import-export, local market), and other variable factors, HC should be comprehensive and be able to accommodate all the required information. Model health certificates are provided in the OIE Code and in the *Standard Operating Procedures for Health Certification and Quarantine Measures for the Responsible Movement of Live Food Finfish within ASEAN*.

Minimum Operational Requirements

- Identify institutions with responsibilities for providing health certificate
- Provide legislative support to empower certification
- Develop skill and knowledge of the certification body
- Identify a list of species which require health certification (e.g. cultured, wild & ornamental species, import & export)
- Identify a list of quarantine diseases with reference to national list of diseases
- Develop the procedures including forms for health certification
- Establish clearly defined mechanisms to receive, process and consider applications for issuance of HCs for the export of live aquatic animals and their products
- Establish clearly defined mechanisms for validation of HCs for the import of live aquatic animals and their products
- Determine conditions for issuing, suspending, cancelling or refusing a HC
- Advise importers and exporters of the process
- Have the power to issue HCs based on inspection of premises and/or consignments
- Appoint technically qualified inspectors to inspect premises and/or consignments for the purpose of HC
- Develop the format of the HC/model HC (The Health Certificate shall comprise the following details)
    - A unique reference number.
    - Name, address, contact details and registration number of exporter.
    - Name, address and country of importer.
    - Location(s) of production or capture.
    - Country and place of trans-shipment (if appropriate).
    - Mode of transport.

- Species identification, mass, quantity or number and whether captured or cultured.
- Declaration by CA of health status including:
  - Date and place of inspection of consignments.
  - Inspection and test results for listed diseases.
  - Statement that fish in the consignment are free from signs or other evidence of listed diseases and are healthy.
  - Date and place of issue, signatory and official stamp of CA

- Approve laboratories that meet standards for health certification
- Register importers and exporters

A.8. Aquatic Animal Quarantine

Quarantine is defined as a process which 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).

Minimum Operational Requirements

- Identification of institutions with responsibility for quarantine
- Provide legislative support to empower quarantine
- Develop the skills and knowledge of the quarantine agency and staff
- Identify list of diseases for which quarantine is necessary
- Develop procedures, including forms for quarantine
- Approve government/private holding facilities that meet standards for quarantine purposes
- Register importers and exporters
- Develop quarantine measures based on risk analysis, a list of quarantinable disease, a list of susceptible species, etc
- Identify ports of entry and exit

- Identify existing or create/set-up new quarantine facility (government and private)
- Develop criteria for registration & recognition of government and private quarantine facility accreditation
- Establish procedures for dealing with quarantinable diseases
- Develop quarantine procedures which are clear and transparent
- Develop flowcharts of the certification and quarantine systems
- Develop the capacity of quarantine officers and supporting staff
- Develop resource materials (e.g. disease cards) to support quarantine officers
- Establish clear communications regarding import/export procedures
- Set up bilateral arrangements, as necessary
- Review of existing quarantine procedures and technique regularly to meet regional (ASEAN) and international requirement and guidelines

A.9. 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.

Note: this discussion also applies to compartmentalization. Zoning applies when subpopulations are divided on a geographical basis, whereas with compartmentalization, the subpopulations are separated by management practices related to biosecurity.

Minimum Operational Requirements

- Assess the needs and purpose to implement zoning
- Develop legislation for zoning enforcement
- Identify diseases from the national disease list for which zoning will be effective as a disease control tool
    - Limited distribution of disease occurrence compared to population at risks (register farms and species)
    - Disease spread can be managed by restricting movement
- Identify areas suitable to zone based on natural and/or political boundaries (border/maps). For compartmentalization, the criteria for inclusion of an enterprise in a compartment should be identified.
- Develop procedures for zoning that are consistent with OIE Code

- Communicate with other ASEAN countries about national zoning policies and programs

A.10. Import Risk Analysis

The importation of live aquatic animals involves a degree of disease risk to the importing country. In wider term involving new species, it also involves the threat to local species. Import Risk Analysis (IRA) is the process by which hazards 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 Competent Authority and stakeholders.

Typical risk analysis process involves four components: hazard identification, risk assessment, risk management and risk communication. Major action to limit the risk of importation includes health certification and the presence of established health management protocols at the source of export.

Minimum Operational Requirements

- Building awareness to policy makers
- Determine the appropriate level of risk assessments that needs to be undertaken (scoping exercise)
- Establish mechanisms to identify the need for Risk Analysis
- Must be done when new species is introduced or when requirements are more stringent than the OIE standards
- Document existing technical capability to conduct Risk Analysis in the country (aquatic and terrestrial animals)
- Develop register of trained people
- Identify gaps in skills and getting it done by training or outsourcing
- Conduct further training as needed
- Establish committee/ taskforce/ panel to conduct Risk Analysis
- Identify gaps in disease data
- Improve surveillance and reporting system to provide data for risk assessment
- Establish communication with live stock experts to share experience and expertise

A.11. Awareness Program

Building awareness of policy makers, government, fish farmers, and other stakeholders in aquaculture about the threat of aquatic animal diseases and means to minimize the risk is essential to ensure effective implementation of national aquatic animal health strategies. Such national awareness programs could have a wide range of activities such as training, seminars, workshops and publication of information through various media.

Minimum Operational Requirements

- Identify target audiences including CA, NAC, field officers, farmers/fishers, feed and drug distributors, retailers and wholesalers , university researchers, lab personnel
- Identify key messages for different target audiences tailored to specific groups, e.g. for CA & NAC: Socio-economic & ecological impact, status of diseases, risks/threats and trends of diseases, WTO SPS; for farmer: economic impact; how to prevent and control, how to contact, how to collect and submit samples, how to recognize diseases through disease cards
- Develop and implement extension plan for each audience through relevant methods
- Take into account strategic timing of message delivery
- Train the staff to have appropriate extension skills to implement extension plan

A.12. Diagnostic Capability

Ensuring adequate diagnostic capacity in terms of laboratory and trained technical personnel is very essential for implementing national aquatic animal health strategies. Attempts should be made to establish or have access to level I, II and III diagnostic capacity for all the national listed diseases. . Using advanced diagnostic capabilities will increase the probability of obtaining valid and rapid results about the disease outbreak or disease agent to support the most appropriate response. However, development of advanced diagnostic capability will depend on financial support and availability of trained human resources. It may be more cost effective in the short-term for some countries to enter agreements with other countries to provide the higher level diagnostic services.

Minimum Operational Requirements

- CA initiates a process to identify and categorize the diagnostic capability of the existing laboratories in the country
- Develop and maintain capability to detect emerging diseases in the country
- Identify and recruit trained personnel to existing laboratories

- Build capacity of personnel in advanced diagnostics relevant to the national list of diseases
- Build infrastructure/laboratory to meet the minimum requirements to implement national strategies, especially, to support certification, surveillance, quarantine and risk analysis
- Develop and standardize diagnostic protocols for diseases in the national list
- Produce quality operational manuals:
    - laboratory procedures
    - information flow for the purpose of surveillance and reporting
- Develop laboratory recording system to identify accession/submission with results
- Each country should work towards establishing one or more national reference laboratories with capacity for level I, II and III diagnostics
- Establish communication/linkage to more advance laboratory within or outside of the region
- Establish mechanisms to report results back to submitter and farmers/fishers
- Summarize and analyze results and report to CA for surveillance and international/regional reporting purposes
- Notify immediately diagnosis of emerging diseases to CA

A.13. Funding

Funding is necessary to implement an effective national strategy. CA and NAC should make efforts to raise the profile of aquatic animal health management at the national level and secure sustained funding support.

Minimum Operational Requirements

- Securing of funds is a CA responsibility
- Budget justification for funding from government for key elements
- Identify other sources of revenue for funding

Part B: Compiled ASEAN progress in the implementation of National Aquatic Animal Health Strategies

B.1. Competent Authority

The purpose of this section is to compile the available information regarding Competent Authority (CA) in ASEAN member countries. As defined in Aquatic Animal Health Code, Competent Authority 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 Aquatic Animal Health Code.

The responsible authorities for aquatic animal health management in ASEAN vary from country to country, but most mandates lie within the ministries or departments responsible for agriculture, livestock and/or fisheries. This authority may have many competent authorities which have responsibilities for different aspects of fish health management such as quarantine, surveillance and monitoring, counseling, reporting, conducting training, etc.

In order to effectively minimize the entry and spread of infectious diseases, CA for aquatic animal health needs to be clearly assigned. This CA should be capable of facilitating networking and communication amongst all the relevant stakeholders in the country for the purpose of implementing an effective national strategy on aquatic animal health.

B.1.1. BRUNEI DARUSSALAM

Responsibility	Responsible Authority	Person in Charge	Detail of Contact Address
1. Regional and International reporting	Fisheries Department	Head of Aquaculture Research and Management Division **Mr. Haji Abdul Rajid Metali**	Fisheries Department MIPRS Building Jalan Menteri Besar Berakas Negara Brunei Darussalam. Tel : +6732-382067
2. Import-Export Permits for live aquatic animals	Fisheries Department	Head of Licensing Section **Mr. Ishak Jarudin**	- do -
3. Import-Export Health Certificate for live aquatic animals	Fisheries Department	Head of Disease and Quarantine Section **Ms. Wanidawati Tamat**	- do -
4. Authority managing inspection and quarantine	Fisheries Department	Head of Disease and Quarantine Section **Ms. Wanidawati Tamat**	- do -
5. Quarantine Certificate	Fisheries Department	Head of Disease and Quarantine Section **Ms. Wanidawati Tamat**	- do -
6. Import Risk Analysis	Fisheries Department	Head of Disease and Quarantine Section and Head of Licensing Section	- do -
7. Implementing surveillance/monitoring system	Fisheries Department	Head of Disease and Quarantine Section, Head of Licensing Section, and Head of Aquaculture Development Section. (**Noraini Haji Anggas**)	- do -
8. Mounting emergency response to a major aquatic animal disease outbreak	Fisheries Department	Head of Disease and Quarantine Section, Head of Licensing Section, and Head of Aquaculture Development Section.	- do -

B.1.2. CAMBODIA

Responsibility	Responsible Authority	Person in Charge	Detail of Contact Address
1. Regional and International reporting	Department of Animal Health and Production	Dr. Kao Phal, Director General	# 74, Monivong Blvd, Phnom Penh Mobile: (855) 12 829 283 Tel: (855) 23 427 590 Fax: (855) 23 426 970
2. Import-Export Permits for live aquatic animals	Fisheries Administration (FiA)	Mr. Nao Thuok, Director General	P.O. Box: 562. # 186, Norodom Blvd., Phnom Penh Fax: (855) 23 220 417 Mobile : (855) 12 404727 Email : nao.thuok@online.com.kh
3. Import-Export Health Certificate for live aquatic animals	IFReDI/FiA	Mr. Srun Lim Song, Director	P.O. Box: 562. # 186, Norodom Blvd., Phnom Penh Fax: (855) 23 220417 Mobile: (855) 12 997005 E-mail: limsong@online.com.kh
4. Authority managing inspection and quarantine	IFReDI/FiA	Mr. Srun Lim Song, Director	P.O. Box: 562. # 186, Norodom Blvd., Phnom Penh Fax: (855) 23 220417 Mobile: (855) 12 997005 E-mail: limsong@online.com.kh
5. Quarantine Certificate	IFReDI/FiA	Mr. Srun Lim Song, Director	P.O. Box: 562. # 186, Norodom Blvd., Phnom Penh Fax: (855) 23 220417 Mobile: (855) 12 997005 E-mail: limsong@online.com.kh
6. Import Risk Analysis	IFReDI/FiA	Dr. So Nam, Deputy Director	P.O. Box: 562. # 186, Norodom Blvd., Phnom Penh Fax: (855) 23 220417 Mobile: (855) 12 218031 E-mail : sonammekong2001@yahoo.com
7. Implementing surveillance/monitoring system	IFReDI/FiA	Dr. So Nam, Deputy Director	P.O. Box: 562. # 186, Norodom Blvd., Phnom Penh Fax: (855) 23 220417 Mobile: (855) 12 218031 E-mail : sonammekong2001@yahoo.com
8. Mounting emergency response to a major aquatic animal disease outbreak	IFReDI/FiA	Mr. Srun Lim Song, Director	P.O. Box: 562. # 186, Norodom Blvd., Phnom Penh. Fax: (855) 23 220417 Mobile: (855) 12 997005 E-mail: limsong@online.com.kh

B.1.3. INDONESIA

Responsibility	Responsible Authority	Person in Charge	Detail of Contact Address
1. Regional and International reporting	Directorate of Fish Health and Environment	**Ir. Syamsuddin H. Amin, MM** Director for Fish Health and Environment	Komplek Departemen Pertanian Harsono RM No. 3, Gd B Lt. VI Jakarta Selatan Telephone: 62 21 782 7844 Fax.: 62 21 782 7844 E-mail: dit_kesehatanikan@dkp.go.id
2. Import-Export Permits for live aquatic animals	Directorate General of Aquaculture	**Dr. Made L. Nurdjana** Director General for Directorate General of Aquaculture	Komplek Departemen Pertanian Harsono RM No. 3, Gd B Lt. IV Jakarta Selatan Telephone: 62 21 789 0552 Fax.: 62 21 788 35853 E-mail:dgaq@yahoo.com
3. Import-Export Health Certificate for live aquatic animals	Center of Fish Quarantine	**Ir. Agus Priyono, MSi.** Head for Indonesian Fish Quarantine	Jl. Setu No. 1 Cilangkap Jakarta Timur Telephone/Fax: 62 21 8448506 E-mail: puskari@dkp.go.id
4.	Directorate of Standardization and Accreditation	**Drs. Setia Mangunsong, MM** Director of Standardization and Accreditation	Jl. Medan Merdeka Timur No. 16 – Jakarta Pusat Telephone: 62 21 3519070 ext. 8704 Fax.: 62 21 352 0844 E-mail: dit_standardisasi@dkp.go.id
5.	Animal Husbandry, Fishery and Maritime Service of DKI Jakarta Province	**drh. Edy Setiarto, MS** Head for Marine and Fisheries Service of DKI Jakarta Province	Jl. Gunung Sahari Raya No. 11 Lt 8 Jakarta Telephone: 62 21 600 7251 Fax.: 62 21 624 1617 E-mail: dinaspekanladki@indo.net.id diskanla@yahoo.com
6.	Marine and Fisheries Service of South Sulawesi Province	**Ir. Syahrun, MM** Head for Marine and Fisheries Service of South Sulawesi Province	Jl. Banjimanasa No. 12 Ujung Pandang Banatoloe Takalar 92252 Telephone: 62 411 854726 Fax.: 62 411 858779
7.	Marine and Fisheries Service of East Java Province	**Ir. R. Kardani, MM** Head for Marine and Fisheries Service of East Java Province	Jl. Jend A. Yani 152 B Surabaya Telephone: 62 31 828 1672 Fax.: 62 31 828 8148 E-mail: ikanjtm@indosat.net.id
8.	Marine and Fisheries Service of Bali Province	**Ir. I.B.P Riswana Manuapa** Head for Marine and Fisheries Service of Bali Province	Jl. Patimura No. 77 Denpasar 80233 Telephone: 62 361 227926 Fax.: 62 361 227926 E-mail: diskanbali@wasantara.net.id
9.	Marine and Fisheries Service of North Sumatera Province	**Ir. Yoseph Siswanto** Head for Marine and Fisheries Service of North	Jl. Sei Batugingging No. 6 20154 Medan Telephone: 62 61 415 1508

		Sumatera Province	Fax.: 62 61 415 3338
10. Authority managing inspection and quarantine	Centre of Fish Quarantine	**Ir. Agus Priyono, MSi.** Head for Indonesian Fish Quarantine	Jl. Setu No. 1 Cilangkap Jakarta Timur Telephone: 62 21 8448506 E-mail: puskari@dkp.go.id
11. Quarantine Certificate	Centre of Fish Quarantine	**Ir. Agus Priyono, MSi.** Head of Indonesian Fish Quarantine	Jl. Setu No. 1 Cilangkap Jakarta Timur Telephone: 62 21 8448506 E-mail: puskari@dkp.go.id
12. Import Risk Analysis	Directorate of Fish Health and Environment	**Ir. Syamsuddin H. Amin, MM** Director for Fish Health and Environment	Komplek Departemen Pertanian Harsono RM No. 3, Gd B Lt. VI Telephone: 62 21 782 7844 Fax.: 62 21 782 7844 E-mail: dit_kesehatanikan@dkp.go.id
13. Implementing surveillance/monitoring system	1. Main Center for Freshwater Aquaculture Development, Sukabumi, West Java	**Ir. Maskur** Head for Main Center for Freshwater Aquaculture Development, Sukabumi	Jl. Salabintana No. 17 Sukabumi Telephone: 62 266 225 240 Fax.: 62 266 221762 E-mail: bbats@telkom.net
	2. Center for Freshwater Aquaculture Development, Jambi	**Ir. Supriyadi, M.Si** Head for Center Freshwater Aquaculture Development, Jambi	Ds. Sungai Gelam, Kecamatan Kumpeh Ulu Kab. Muaro Jambi Telephone: 62 741 54472 Fax.: 62 741 33508, 33503 E-mail: lokabat@jambi.wasantara.net.id
	3. Center for Freshwater Aquaculture Development, Mandiangin, South Kalimantan	**Ir. Sarifin, M.Si** Head for Center Freshwater Aquaculture Development, Mandiangin, South Kalimantan	Jl. Tahura St. Adam KM. 14 Mandiangin, Kab. Banjar Baru – South Kalimantan Telephone: 62 511 478 0858 Fax.: 62 511 478 0800
	4. Center for Freshwater Aquaculture Development, Tatelu, North Sulawesi	**Ir. Doortje L. Tooy** Head for Center Freshwater Aquaculture Development, Tatelu, North Sulawesi	Jl. Panilih Desa Tatelu (Komp. Perikanan), Kec. Dimembe Kab. Minahasa – North Sulawesi Telephone: 62 431 891 980 Fax.: 62 431 891 689
	5. Main Center for Brackishwater Aquaculture Development, Jepara	**Dr. Ir. M. Murdjani, M.Sc** Head for Main Center for Brackishwater Aquaculture Development, Jepara	Jl. Pemandian Kartini PO. Box 1 Jepara Telephone: 62 291 591 125 Fax.: 62 291 591 724 E-mail: bbbapjpr@rad.net.id
	6. Center for Brackishwater Aquaculture Development, Situbondo	**Ir. Slamet Subiyakto, M.Si** Head for Main Center for Brackishwater Aquaculture Development, Situbondo	Jl. Raya Pecaron PO. Box 5 Panarukan, Situbondo Telephone: 62 338 673 328 Fax.: 62 338 671 298, 390299 E-mail: bbapstbd@rad.net.id
	7. Center for Brackishwater Aquaculture Development Ujung Batee. Nangroe Aceh Darussalam	**Sugeng Rahardjo, A.Pi** Head for Center for Brackishwater Aquaculture Development Ujung Batee. Nangroe Aceh Darussalam	Jl. Krueng Raya KM. 16 PO. Box 46 – Nangro Aceh Darussalam Telephone: 62 651 24686, 53211 Fax.: 62 651 92138

	8. Center for Brackishwater Aquaculture Development Takalar, South Sulawesi	**Ir. Haruna Hamal** Head for Center for Brackishwater Aquaculture Development Takalar, South Sulawesi	Desa Bontole, Kec. Gelasong Selatan, Kab. Takalar – Ujung Pandang Telephone: 62 418 232 6777 Fax.: 62 418 232 6777
	9. Main Center for Mariculture Development, Lampung	**Ir. Sudjiharno** Head for Center for Mariculture Development, Lampung	Desa Hanura, Kec. Padang Cermin Lampung Selatan BBL K. Lampung, Kotak Pos 74 Tk. Tlk. Betung Bandar Lampung 534401 Telephone: 62 721 471379, 471380 Fax.: 62 721 471 379 E-mail: asts@indo.net.id
	10. Center for Mariculture Development, Lombok, NTB	**Ir. IBM Swastika Jaya, M.Si** Head for Center for Mariculture Development, Lombok, NTB	Jl. Jend. Sudirman No. 21 PO. Box 128, Praya Lombok Tengah, NTB Telephone: 62 370 625963 Fax.: 62 370 639189 E-mail: nsc_lokalombok@yahoo.com
	11. Center for Mariculture Development, Batam, Riau	**Syamsul Akbar, Pg. Dipl.** Head for Center for Mariculture Development, Batam, Riau.	Jl. Raya Barelang Jembatan III Pulau Setoko, Batam PO. Box 60 Sekupang Batam 29422 Telephone: 62 778 702 7624 Fax.: 62 778 381258 E-mail: rcmd_btm@yahoo.com
	12. Center for Mariculture Development, Ambon, Maluku	**Ir. Arik Ariwibowo, M.Si** Head for Center for Mariculture Depelovment, Ambon, Maluku	Jl. Laksdya Leo Wattimena Waiteru, Ambon 97232 Telephone: 62 911 351616 Fax.: 62 911 362047 E-mail: loka_ambon@yahoo.com
14. Mounting emergency response to a major aquatic animal disease outbreak	Directorate of Fish Health and Environment	**Ir. Syamsuddin H. Amin, MM** Director for Fish Health and Environment	Komplek Departemen Pertanian Harsono RM No. 3, Gd B Lt. VI Telephone: 62 21 782 7844 Fax.: 62 21 782 7844 E-mail: dit_kesehatanikan@dkp.go.id

B.1.4. MALAYSIA

Responsibility	Responsible Authority	Person in Charge	Detail of Contact Address
1. Regional and International reporting	Department of Fisheries	Section Head, Fish Health Management and Quarantine Section	Department of Fisheries Malaysia, Wisma Tani, Level 1-7, Block Podium 4G2, Prescint 4, Federal Government Administration Centre, 62628 PUTRAJAYA
2. Import-Export Permits for live aquatic animals	Department of Fisheries	Centre Head Fish Health Management and Quarantine	Fish Health Management and Quarantine Centre, 1) KLIA Sepang, Selangor. 2) Batu Maung, Penang 3) Bukit Kayu Hitam, Kedah 4) Second Link, Johor Bahru. 5) State Fisheries Office, Kelantan.
3. Import-Export CITES Permits for live aquatic animals	Department of Fisheries	Aquaculture Development Division	Department of Fisheries Malaysia, Wisma Tani, Level 1-7, Block Podium 4G2, Prescint 4, Federal Government Administration Centre, 62628 PUTRAJAYA.
4. Import-Export Health Certificate for live aquatic animals	Department of Fisheries	Centre Head Fish Health Management and Quarantine/ NaFisH	Fish Health Management and Quarantine Centre, 1) KLIA Sepang, Selangor. 2) Batu Maung, Penang 3) Bukit Kayu Hitam, Kedah 4) Second Link, Johor Bahru. 5) State Fisheries Office, Kelantan. NaFisH, Fisheries Research Institute, 11960, Jln Batu Maung, Penang
5. Certification Programmes (SPS, SPLAM, SAAB)*	Department of Fisheries	Aquaculture Development Division	Department of Fisheries Malaysia, Wisma Tani, Level 1-7, Block Podium 4G2, Prescint 4, Federal Government Administration Centre, 62628 PUTRAJAYA.
6. Authority managing inspection and quarantine	Department of Fisheries	Centre Head Fish Health Management and Quarantine	Fish Health Management and Quarantine Centre, 1) KLIA Sepang, Selangor. 2) Batu Maung, Penang 3) Bukit Kayu Hitam, Kedah 4) Second Link, Johor Bahru. 5) State Fisheries Office, Kelantan.
7. Quarantine Certificate	- NIL -	- NIL -	- NIL -
8. Import Risk Analysis	Department of Fisheries	Technical Committee of Malaysia's National Policy on Biological Diversity for Fisheries (Department of Fisheries)	Fisheries Research Institute, 11960, Jln Batu Maung, Penang

9. Implementing surveillance/monitoring system	Department of Fisheries Local Higher Institution (s) eg. University Putra Malaysia, College University of Science and Technology Malaysia (KUSTEM), other related govt. agencies	Fish Health Management and Quarantine Section, DOF National Fish Health Research Centre (NaFisH) Director of State Fisheries	Department of Fisheries Malaysia, Wisma Tani, Level 1-7, Block Podium 4G2, Prescint 4, Federal Government Administration Centre, 62628 PUTRAJAYA. Fisheries Research Institute, 11960, Jln Batu Maung, Penang All state, except Sabah. Sarawak only covers marine fisheries
10. Mounting emergency response to a major aquatic animal disease outbreak	Department of Fisheries Department of Environment, Chemistry Department, Veterinary Services Department, National Advisory Committee on Fish Health	Director-General of Fisheries	Each agencies Full address

Notes:

SPS	-	Sanitary and Phytosanitary
SPLAM	-	Malaysian Aquaculture Farm Certification Scheme
SAAB	-	Good Aquaculture Practices Certificate
CITES	-	Convention on International Trade in Endangered Species of Wild Fauna and Flora

B.1.5. MYANMAR

Responsibility	Responsible Authority	Person in Charge	Detail of Contact Address
1. Regional and International reporting	Department of Fisheries	U Tun Win Director	Aquaculture Division Department of Fisheries Sin-minn Road, Ahlone T/S, Yangon Myanmar DOF@mptmail.net.mm tunwinkyi@myanmar.com.mm 95-1-222962, 228624
2. Import, Export permits for Live Aquatic Animal	DOF	U Tun Win Director	
3. Import-Export Health Certificate for Live Aquatic Animals	DOF	U Saw Lah Paw Wah Assistant Director	Aquatic Animal Health and Disease Controlling Section, DOF. Shukhin Thar Road, Thakata T/S, Yangon Myanmar DOF@mptmail.net.mm 95-1-541294,09 518 7124
4. Authority managing inspection and quarantine	DOF	U Saw Lah Paw Wah Assistant Director	
5. Quarantine Certificate	DOF	U Saw Lah Paw Wah Assistant Director	
6. Import Risk Analysis	DOF	U Saw Lah Paw Wah Assistant Director	
7. Implementing , Surveillance/ Monitoring System	DOF	Daw May Thanda Wint Fisheries Officer	Aquatic Animal Health and Disease Controlling Section, DOF. Shukhin Thar Road, Thakata T/S, Yangon Myanmar DOF@mptmail.net.mm 95-1-541294, 705547
8. Monitoring , emergency response to a major aquatic animal disease outbreak	DOF	Daw May Thandar Wint Fisheries Officer	
8.1 Occurred in one Decision	DOF	U Saw Lah Paw Wah Assistant Director	
8.2 Occurred in two Decision	DOF	U Tun Win Director	
8.3 Occurred in three and more	DOF	U Khin Ko Lay Deputy Director General	Department of Fisheries Sin-minn Road, Ahlone T/S, Yangon Myanmar DOF@mptmail.net.mm 95-1-225562

B.1.6. PHILIPPINES

Responsibility	Responsible Authority	Person in Charge	Detail of Contact Address
1. Regional and International reporting	Bureau of Fisheries and Aquatic Resources (Aquatic Animals)	-Fish Health Officers	Bureau of Fisheries and Aquatic Resources 860 Quezon Avenue, Quezon City, Philippines
2. Import-Export Permits for live aquatic animals	Bureau of Fisheries and Aquatic Resources (Aquatic Animals)	-Fisheries Regulatory and Quarantine Officers	Bureau of Fisheries and Aquatic Resources 4th Floor PCA Bldg., Elliptical Road, Diliman, Quezon City, Philippines
3. Import-Export Health Certificate for live aquatic animals	Bureau of Fisheries and Aquatic Resources (Aquatic Animals)	-Fish Health Officers	Bureau of Fisheries and Aquatic Resources 860 Quezon Avenue, Quezon City, Philippines
4. Authority manages inspection and quarantine	Bureau of Fisheries and Aquatic Resources (Aquatic Animals)	-Fisheries Regulatory and Quarantine Officers (border) -Fish Health Officers (post border)	Bureau of Fisheries and Aquatic Resources 860 Quezon Avenue, Quezon City, Philippines
5. Quarantine Certificate	Bureau of Fisheries and Aquatic Resources (Aquatic Animals)	-Fisheries Regulatory and Quarantine Officers	Bureau of Fisheries and Aquatic Resources 4th Floor PCA Bldg., Elliptical Road, Diliman, Quezon City, Philippines
6. Import Risk Analysis	Bureau of Fisheries and Aquatic Resources (Aquatic Animals)	-Import Risk Analysis (IRA) Panel	Bureau of Fisheries and Aquatic Resources 3rd Floor PCA Bldg., Elliptical Road, Diliman, Quezon City, Philippines
7. Implementing surveillance/monitoring system	Bureau of Fisheries and Aquatic Resources	-Fish Health Officers	Bureau of Fisheries and Aquatic Resources 860 Quezon Avenue, Quezon City, Philippines
8. Mounting the response to a major aquatic animal disease outbreak	Bureau of Fisheries and Aquatic Resources	-Fish Health Officers	Bureau of Fisheries and Aquatic Resources 860 Quezon Avenue, Quezon City, Philippines

B.1.7. SINGAPORE

Responsibility	Responsible Authority	Dept/Div in Charge	Detail of Contact Address
1. Regional and International reporting	Agri-Food & Veterinary Authority (AVA)	Animal & Plant Health Laboratory Division	Animal & Plant Health Centre 6 Perahu Road, S 718827
2. Import-Export Permits for live aquatic animals	Agri-Food & Veterinary Authority (AVA)	Import & Export Division	5 Maxwell Road, #02-03 / #18-00 Tower Block, MND Complex, S 069110
3. Import-Export Health Certificate for live aquatic animals	Agri-Food & Veterinary Authority (AVA)	Import & Export Division	Sembawang Research Station, Lorong Chencharu, S 769194
4. Authority manages inspection and quarantine	Agri-Food & Veterinary Authority (AVA)	(1) Inspection Services and Epidemiology Division (2) Import & Export Division	(1) Veterinary Public Health Centre, 10 Perahu Road, S 718837 (2) 5 Maxwell Road, #02-03 / #18-00 Tower Block, MND Complex, S 069110
5. Quarantine Certificate	Agri-Food & Veterinary Authority (AVA)	-	-
6. Import Risk Analysis	Agri-Food & Veterinary Authority (AVA)	Technical committee to be set up when required	Cross Divisional representation
7. Implementing surveillance/monitoring system	Agri-Food & Veterinary Authority (AVA)	(1) Inspection Services and Epidemiology Division (2) Animal & Plant Health Laboratory Division	(1) Veterinary Public Health Centre, 10 Perahu Road, S 718837 (2) Animal & Plant Health Centre, 6 Perahu Road, S 718827
8. Mounting the response to a major aquatic animal disease outbreak	Agri-Food & Veterinary Authority (AVA)	(1) Animal & Plant Health Laboratory Division (2) Inspection Services and Epidemiology Division (3) Technology Division (4) Import & Export Division	(1) Animal & Plant Health Centre, 6 Perahu Road, S 718827 (2) Veterinary Public Health Centre, 10 Perahu Road, S 718837 (3) Sembawang Research Station, Lorong Chencharu, S 769194 (1) 5 Maxwell Road, #02-03 / #18-00 Tower Block, MND Complex, S 069110

B.1.8. THAILAND

Responsibility	Responsible Authority	Person in Charge	Detail of Contact Address
1. Regional and International reporting	Inland Aquatic Animal health Research Institute (AAHRI)	Director of AAHRI and Dr Somkiat Kanchanakhan National Coordinator	Inland Aquatic Animal health Research Institute (AAHRI) Inland Fisheries Research and Development Bureau, Department of Fisheries, Paholyothin Rd. Jatuchak, Bangkok 10900 Tel 66-2-5794122 Fax 66-2-5613993 aahri@dof.in.th , kanchanakhan@yahoo.com
2. Import-Export Permits for live aquatic animals	The License and Fisheries Management Section,	Director	The License and Fisheries Management Section, Fisheries Administration and Management Bureau, Department of Fisheries, Paholyothin Rd, Jatuchak, Bangkok 10900 Tel/Fax 66-2-5614689 citesdof@yahoo.com
3. Import-Export Health Certificate for live aquatic animals	1.AAHRI, 2.Coastal Aquatic Animal Health Research Institute(CAAHRI) 3.Phuket Coastal Fisheries Research and Development Centre(PK-CFRDC)	Director of AAHRI, Director of CAAHRI and Director of PK-CFRDC	1.AAHRI as above 2.Coastal Aquatic Animal Health Research Institute (CAAHRI) Department of Fisheries, 130/2 Tinnasulanon Rd. Moo 8, Pawong, Muang, Songhkla 90100, Thailand Tel + 66 074 334516-8 Fax. + 66 074 334515 Email: info@aquaanimalhealth.org, jibkasorn@yahoo.com 3. Phuket Coastal Fisheries Research and Development Centre(PK-CFRDC), Department of fisheries, 100 Moo 4, Pak-klok, Pa-klok-muengmai Rd. Thalank, Phuket, Thailand Tel; (076)219330,217814 Fax (076)217839 e-mail; pkprawn@samart.co.th
4. Authority managing inspection and quarantine	Fish Trade Inspection Section	Director	Fish Trade Inspection Section, Fisheries Administration and Management Bureau, Department of Fisheries, Paholyothin Rd, Jatuchak, Bangkok 10900 Tel 66-2-561-4690 Fax 66-2-579-9528 e-mail ; fishtrade@dof.in.th

5. Quarantine Certificate	Fish Trade Inspection Section (under consultation with AAHRI and CAAHRI)	Director	Fish Trade Inspection Section, Fisheries Administration and Management Bureau, Department of Fisheries, Paholyothin Rd, Jatuchak, Bangkok 10900 Tel 66-2-561-4690 Fax 66-2-579-9528 e-mail ; fishtrade@dof.in.th
6. Import Risk Analysis	Division of Agricultural Commodity and Food Standards Policy	Director	Division of Agricultural Commodity and Food Standards Policy, National Bureau of Agricultural Commodity and Food Standards (ACFS), Ministry of Agriculture and cooperatives, Bangkok 10200, Thailand Tel; 66-2-629-8977 E-mail; doojduan@acfs.go.th
7. Implementing surveillance/monitoring system	1.Inland Fisheries Research and Development Bureau, 2.Coastal Fisheries Research and Development Bureau 3.Provincial Fisheries Office	Directors	Inland Fisheries Research and Development Bureau, Department of Fisheries, Paholyothin Rd, Jatuchak, Bangkok 10900 Coastal Fisheries Research and Development Bureau, Department of Fisheries, Paholyothin Rd, Jatuchak, Bangkok 10900 Provincial Fisheries Office, Department of Fisheries, Paholyothin Rd, Jatuchak, Bangkok 10900
8. Mounting the response to a major aquatic animal disease outbreak	1.Fisheries Administration and Management Bureau, 2.Inland Fisheries Research and Development Bureau, 3.Coastal Fisheries Research and Development Bureau 4.Provincial Fisheries Office	Directors	Department of Fisheries, Paholyothin Rd, Jatuchak, Bangkok 10900

B.1.9.VIETNAM

Responsibility	Responsible Authority	Person in Charge	Detail Contact Address
1. Regional and International reporting	NAFIQAVED	Director of NAFIQAVED Nguyen Tu Cuong	10 Nguyen Cong Hoan Street, Ba Dinh District, Ha Noi City, Viet Nam Tel: 84.4.8354966 Mobile: 0903421228 Fax: 84.4.8317221 Email: nafiqaved@mofi.gov.vn
2. Import-Export Permits for live aquatic animals	NAFIQAVED	Nguyen Tu Cuong	
3. Import-Export Health Certificate for live aquatic animals	NAFIQAVED	Nguyen Tu Cuong	
4. Authority managing inspection and quarantine	NAFIQAVED	Nguyen Tu Cuong	
5. Quarantine Certificate	NAFIQAVED	Nguyen Tu Cuong	
6. Import Risk Analysis	NAFIQAVED	Nguyen Tu Cuong	
7. Implementing surveillance/monitoring system	RIA1, RIA2 RIA3 and RIMP	Ms Phan Thi Van	
8. Mounting emergency response to a major aquatic animal disease outbreak			
8.1. Occurred in one province	People's Committee of Province	Chairman of PCP	
8.2. Occurred in two provinces and more than	Ministry of Fishery	Minister of MOFI Mr Ta Quang Ngoc	10 Nguyen Cong Hoan Street, Ba Dinh District, Ha Noi City, Viet Nam Tel: 84.4.8354513 Mobile: 0903727777 Fax: 84.4.7716702 Email: taquangngoc@mofi.gov.vn
Additional information	**Notice** Before 5 August 2003, NAFIQACEN has been tasked with aquatic animal & amphibian health protection and renamed to National Fisheries Quality Assurance and Veterinary Directorate (NAFIQAVED) **Approved by Nguyen Tu Cuong**		

B.2. Legislation

The purpose of this section is to identify and compile the information regarding national regulation or legislative support existing in ASEAN countries for implementing aquatic animal health management strategies. Information about recent regulations which are applied for aquatic animal health management in ASEAN member countries are included in this section.

Legislative support in the form of legal written documents plays an important role as the basis of policy for aquatic animal health management. It provides guidance and regulatory powers to the competent authority to implement national aquatic animal health management strategies.

Regulations concerning aquatic animal health management in ASEAN vary from country to country. The laws concerning aquatic animal health should cover aquatic animal movement, import-export, quarantine procedure etc. In some ASEAN member countries, laws for trans-boundary movement of aquatic animal have been well developed, however, such development is still poor when it comes to movement of aquatic animals within country.

In addition, most laws in aquatic animal importation are more precise and stringent than export legislation. This reflects the fact that, in terms of health, export regulations are governed predominantly by importing country requirements as pointed out in TG. However, due to long borderline among ASEAN member countries such as Myanmar with Thailand and Lao or Indonesia and Malaysia, traditional movement of aquatic animal across borders is partly far beyond the laws.

Lack of clear regulatory framework with supporting legislation could hinder the implementation of aquatic animal health strategies in any country. Countries that have environmental or conservation policy 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. Such legislation 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)).

B.2.1 BRUNEI DARUSSALAM

Subject of Legislative Support	Legislative Support
Control of import of live aquatic animals	The Fisheries Act and Regulation Cpt 61
Control of export of live aquatic animals	The Fisheries Act and Regulation Cpt 61
Live aquatic animal movement within the country (domestic)	The Fisheries Act and Regulation Cpt 61
Introducing new/exotic species	The Fisheries Act and Regulation Cpt 61
Legislation to ensure that imported live aquatic animals are not diverted to other purposes	The Fisheries Act and Regulation Cpt 61
Export-Import Permit /license fee	The Fisheries Act and Regulation Cpt 61
Health certification/Statement of origin	The Fisheries Act and Regulation Cpt 61

B.2.2. CAMBODIA

Subject of Legislative Support	Legislative Support
Control of import of live aquatic animals	Fisheries Law 2006
Control of export of live aquatic animals	Fisheries Law 2006
Live aquatic animal movement within the country (domestic)	Fisheries Law 2006
Introducing new/exotic species	Prakas of Ministry of Agriculture Forestry and Fishery & Ministry of Commerce Law (Kancongtrol Department)
Legislation to ensure that imported live aquatic animals are not diverted to other purposes	Fisheries Law 2006
Export-Import Permit /license fee	Fisheries Law 2006
Health certification/Statement of origin	Fisheries Law 2006

B.2.3. INDONESIA

Subject of Legislative Support	Legislative Support
Control of import of live aquatic animal	Decree of Minister of Marine Affairs and Fisheries No: KEP.18/MEN/2003
	Circular Letter of Directore General of Aquaculture No. 1321/DPB.4/PB.420.D4/IV/2004
Control of export of live aquatic animals	Decree of Minister of Marine Affairs and Fisheries No: KEP.04/MEN/2003 Decree of Minister of Marine Affairs and Fisheries No: PER.05/MEN/2005
Live aquatic animal movement within the country (domestic)	Decree of Minister of Marine Affairs and Fisheries No: KEP.40/MEN/2002 Decree of Minister of Marine Affairs and Fisheries No: KEP.42/MEN/2003 Decree of Minister of Marine Affairs and Fisheries No: KEP.16/MEN/2003 Decree of Minister of Marine Affairs and Fisheries No: KEP.07/MEN/2004 Decree of Director General of Aquaculture No. 4999/DPB.0/IK.520.S4/11/2002 Circular Letter of Director General of Aquaculture No. 213/DPB.4/PB.420.D4/3/2004 Circular Letter of Director General of Aquaculture No. 752/DPB.1/PB.530.D1/2/2006 Circular Letter of Head for Indonesian Fish Quarantine No. SE.03/PKRI/KI.410/VI/2005
Introducing new/exotic species	Decree of Minister of Marine Affairs and Fisheries No: KEP.08/MEN/2004
Legislation to ensure that imported live aquatic animals are not diverted to other purposes	Decree of Minister of Marine Affairs and Fisheries No: KEP.42/MEN/2003
Export-Import Permit/License fee	Government Regulation No: 62/2002 Decree of Minister of Marine Affairs and Fisheries No: KEP.04/MEN/2003
Health certification/Statement of origin	Decree of Minister of Marine Affairs and Fisheries No: KEP.34/MEN/2003

B.2.4. MALAYSIA

Subject of Legislative Support	Legislative Support
Control of import of live aquatic animals	• Fisheries Act 1985 under section • Sec 40 (1)(2) - Control of live fish • Fisheries Regulations (Import, Export, Transport and Quarantine of Fish and Species in the CITES List 2006 • Fisheries (Control of Endangered Species of Fish) Regulations 1999 • Fisheries (Prohibition of Import, etc., of Fish) Regulations 1990 • Fisheries (Marine Culture System) Regulations 1990 • Custom Act 1967 (Act 235) & Custom Regulations 1977 – schedule 2 & 4 • Fisheries Development Authority of Malaysia Act 1971 • National CITES Legislation Malaysia (Draft) 2006 • Directives of Director- General, Department of Fisheries Malaysia 1986 • Sec 25 (b) - Offences under Act
Control of export of live aquatic animals	• Fisheries Act 1985 under section • Sec 40 (1)(2) - Control of live fish • Fisheries Regulations (Import, Export, Transport and Quarantine of Fish and Species in the CITES List 2006 • Fisheries (Control of Endangered Species of Fish) Regulations 1999 • Fisheries (Prohibition of Import, etc., of Fish) Regulations 1990 • Fisheries (Marine Culture System) Regulations 1990 • Custom Act 1967 (Act 235) & Custom Regulations 1977 – schedule 2 & 4 • Fisheries Development Authority of Malaysia Act 1971 • National CITES Legislation Malaysia (Draft) 2006 • Directives of Director- General, Department of Fisheries Malaysia 1986 • Sec 25 (b) - Offences under Act
Live aquatic animal movement within the country (domestic)	• Section 40(1) (b) – (f), Fisheries Act 1985 • Sarawak Government Gazette Part II – The Fisheries (Adoption) Ordinance 1994
Introducing new/exotic species	• Technical Committee of Malaysia's National Policy on Biological Diversity for Fisheries (Department of Fisheries Malaysia) • Technical Working Group for Invasive Alien Species
Legislation to ensure that imported live aquatic animals are not diverted to other purposes	- NIL -
Export-Import Permit /license fee	• Fisheries Development Authority of Malaysia (license fee) • CITES permit fee (Department of Fisheries)
Health certification/Statement of origin	**Note:** live food (Ministry of Health) for food safety. DOF only on health status of the fish

B.2.5. MYANMAR

Myanmar government has promulgated legislation relating to Aquaculture since 1989. The Law authorizes the Director-General to assess and determine the import and export of live fish and also the movement of the exotic fish. However, there is need to have the specific law of aquatic animal health and biodiversity in order to harmonize with other countries.

B.2.6. PHILIPPINES

Subject of Legislative Support	**Legislative Support**
Control of export and import of live aquatic animals	**Republic Act No. 8550** (**The Philippine Fisheries Code Of 1998) "**An Act Providing For The Development, Management And Conservation Of The Fisheries And Aquatic Resources, Integrating All Laws Pertinent Thereto, And For Other Purposes" A. SEC. 10. Introduction of Foreign Aquatic Species. B. SEC. 61. Importation and Exportation of Fishery Products. C. SEC. 65. Functions of the Bureau of Fisheries and Aquatic Resources. - As a line bureau, the BFAR shall have the following functions D. SEC. 67. Fisheries Inspection and Quarantine Service E. SEC. 100. Importation or Exportation of Fish or Fishery Species. F. SEC. 107. Promulgation of Administrative Orders. **Fisheries Administrative Order No. 221 Series of 2003:** Further regulating the importation of live fish and fishery/aquatic products under FAO No. 135 s. 1981 to include microorganisms and biomolecules" was promulgated
Live aquatic animal movement within the country (domestic)	-Fisheries Memorandum Order 240 Series of 2003. Regulations on transboundary Movement of shrimp post larvae -Fisheries General Memorandum Order No. 014 Series of 2004. Guidelines for the implementation of Fisheries Memorandum Order 240. Regulations o the transboundary movement of shrimp post larvae
Introducing new/exotic species	Fisheries Administrative Order No. 221 Series of 2003
Legislation to ensure that imported live aquatic animals are not diverted to other purposes	Fisheries Administrative Order No. 221 Series of 2003
Export-Import Permit /license fee	Fisheries Administrative Order No. 221 Series of 2003 (Importation)
Health certification/Statement of origin	Fisheries Administrative Order No. 221 Series of 2003

B.2.7. SINGAPORE

Subject of Legislative Support	Legislative Support
Control of export and import of live aquatic animals	Wholesome Meat & Fish Act (Chapter 349A) Animals and Birds Act (Chapter 7)
Live aquatic animal movement within the country (domestic)	Animals and Birds Act (Chapter 7) Fisheries Act (Chapter 111)
Introducing new/exotic species	Wild Animals and Birds Act (Chapter 351)
Legislation to ensure that imported live aquatic animals are not diverted to other purposes	Wholesome Meat & Fish Act (Chapter 349A) Animals and Birds Act (Chapter 7)
Export-Import Permit /license fee	Wholesome Meat & Fish Act(Chapter 349A) Animals and Birds Act (Chapter 7) Animals And Birds (Ornamental Fish) Rules
Health certification/Statement of origin	Wholesome Meat & Fish Act(Chapter 349A) Animals and Birds Act (Chapter 7)

Singapore Statutes Online: < http://statutes.agc.gov.sg/>

B.2.8. THAILAND

Subject of Legislative Support	Legislative Support
Control of import of live aquatic animals	Fisheries Act B.E. 2490 (A.D. 1947) Animal Epidemic Act B.E. 2499 (A.D. 1956) Wild Animal Reservation and Protection Act B.E. 2535 (A.D.1992)
Control of export of live aquatic animals	Animal Epidemic Act Wild Animal Reservation and Protection Act B.E. 2535 (A.D.1992)
Live aquatic animal movement within the country (domestic)	Animal Epidemic Act B.E. 2499 (A.D. 1956)
Introducing new/exotic species	Wild Animal Reservation and Protection Act B.E. 2535 (A.D.1992)
Legislation to ensure that imported live aquatic animals are not diverted to other purposes	Animal Epidemic Act B.E. 2499 (A.D. 1956)
Export-Import Permit /license fee	Animal Epidemic Act B.E. 2499 (A.D. 1956) Wild Animal Reservation and Protection Act B.E. 2535 (A.D.1992)
Health certification/Statement of origin	Animal Epidemic Act B.E. 2499 (A.D. 1956)

B.2.9. VIETNAM

Subject of Legislative Support	Legislative Support
Control of import of live aquatic animals	- Fisheries Law of the National Assembly, promulgated on10th December 2003 - Animal Broodstock Ordinance of the Standing Committee of NA, promulgated on 5th April 2004 - Veterinary Ordinance of the Standing Committee of NA, promulgated on 29th April 2004. - Degree No 33 of the Government, promulgated on 15th March 2005 - Degree No 59 of the Government, promulgated on 4th May 2005
Control of export of live aquatic animals	
Live aquatic animal movement within the country (domestic)	
Introducing new/exotic species	
Legislation to ensure that imported live aquatic animals are not diverted to other purposes	
Health certification/Statement of origin	
Export-Import Permit /license fee	Decision No 22 of the Ministry of Finance promulgated on 4th April 2006

B.3. National Advisory Committee

The purpose of this section is to identify and compile the information regarding the current status of national advisory committee for aquatic animal health in ASEAN member countries. The objective of establishing a national advisory committee is to provide a formal mechanism to drive the process of national strategy development and implementation.

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. Establishing such committee will support implementation of various key elements contained in *the Asia Regional Technical Guidelines on Responsible movement of live aquatic animals*.

It is important that member of the 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. Therefore, a wide range of expertise and/or institution background should be involved.

B.3.1 BRUNEI DARUSSALAM

National Committee for the Disease Action Plan

No.	Name	No. Tel
1	**Advisor** Director of Fisheries	+673-2383067
2	**Secretariat** Disease and Quarantine Section	+673-2383067
3	**Head of Technical Committee** 3.1 Head, Aquaculture Development and Industry Division 3.2 Head, Aquaculture Research and Management Division	+673-2383067
4	**Committee** 4.1 Head, Aquaculture industry Section 4.2 Head, Aquaculture Research Section 4.3 Head, Fisheries Beliat/Tutong & Temburong Branch 4.4 Head, Suivelance and Control Section 4.5 Head, Licencing Section 4.6 Head, Aquaculture Development Section 4.7 Head, Ecosystem and Environmental Marine Section 4.8 Head, Fisheries Quality control Section 4.9 All the Managers of Shrimp farmers and producers	+673-2383067

B.3.2. CAMBODIA

National AAH Committee Members

No.	Name	Position/Institution	Position in the Committee
1.	Mr. Srun Lim Song	Director, IFReDI	Chairman
2.	Dr. So Nam	Deputy Director, IFReDI	Member/NC
3.	Mr. Holl Davun	Division Vice-Chief, Dept. of Animal Production and Health	Member
4.	Mr. Hav Viseth	Division Chief, Aquaculture, FiA	Member
5.	Mr. Sim Viryak	Division Vice-Chief, Quality and Post Harvest, FiA	Member
6.	Chhouk Borin	Dean, Faculty of Fisheries Science, Royal University of Agriculture	Member
7.	Mr. Ngan Heng	Head, Bati Fish Seed Production and Research Center, FiA	Member
8.	Mr. Khat Sokhom	Head, Chrang Cham Res Fisheries Research Station, FiA	Member
9.	Mr. Klang Vanthol	Chief, Kandal Provincial Fisheries	Member
10.	Mr. Leang Heng	Director, Processing and Export Company	Member
11.	Mr. Taing Phorn Eng	Fish Farmer, Chak ANgre Fish Farm	Member

TOR:

1. Drive the development (including review and revision) and implementation of national strategy for AAH;
2. Highlight the importance and promote public and country awareness on aquatic animal health to different stakeholders;
3. Drive the development and implementation of projects and programs;
4. Monitoring and evaluation of the implementation of aquatic animal health projects and programs;
5. Provide initiatives and seek for possible funding sources;
6. Provide for wider participation and ownership to different institutions;
7. Report the country progress on AAH to international institutions, ASEAN, NACA and OIE;
8. Provide for a strong coordination/networking role with all relevant institutions;
9. Organize all kinds of meeting regarding aquatic animal health in Cambodia.

B.3.3. INDONESIA

a. Legal Support

DECREE OF THE MINISTER OF MARINE AFFAIRS AND FISHERIES
No: Kep.14/ MEN / 2006
Concerning
NATIONAL FISH HEALTH AND ENVIRONMENT COMMISSION
THE MINISTER OF MARINE AFFAIRS AND FISHERIES,

Considering :

a. that national system of fish health and environment management has to develop and to be optimum and implemented systematically;

b. that institution and operational implementation unit for fish health and environment management system has to be implemented by management integration, due to the implementation of controlling fish disease control and environment to be successfully;

c. that based on point a and b considered, it is deemed necessary to decided The Ministry Decree concerning to The National Fish Health and Environment Commission;

Referring to :

1. Law No. 16 of 1992 concerning animal , fish and plant Quarantine (Indonesian Government gazette of 1992 No. 56, additional Government attached No. 3482);
2. Law No. 31 of 2004 concerning Fisheries (Indonesian Government gazette of 2004 No. 118, additional Government attached No. 4433);
3. Government Regulation No. 15 of 2002 concerning fish Quarantine (Indonesian Government gazette of 2002 No. 36, additional Government attached No. 4197);
4. The President RI Decree No. 42 of 2002 concerning Implementation Guidance of National Country Budgeting by the last President has decided No. 72 of 2004;
5. The President RI Decree No. 187/M of 2005, which has been changed to be and the last to be President Regulation No. 20/P of 2005;
6. President Regulation No. 9 of 2005 concerning position, task, function, organization structure and job description of Ministerial RI, which has been changed by The President Regulation No. 62 of 2005;
7. President Regulation No. 9 of 2005 concerning Organization unit and first level position of The ministerial of GOI, which has been changed by The President Regulation No. 80 of 2005;
8. The Minister Marine Affairs and Fisheries Decree No. 24/MEN/2002 concerning procedure and technical Law Regulation preparation in Marine Affairs and Fisheries Department;
9. The Minister Marine Affairs and Fisheries Regulation No. Per.07/MEN/ 2005 concerning Organization and job description of Marine Affairs and Fisheries Department.

HAS DECIDED

To lay down : **Decree of the Minister of Marine Affairs and Fisheries Concerning the National Fish Health and Environment Commission.**

First : To established The National Fish Health and Environment Commission with the members as attached

Second : Task of the National Fish Health and Environment Commission

A. Advisory (2 persons) :
   Give advice and guidance to member of the Commission to do all the activities of the National Fish Health and Environment Commission;

B. Member of the Commission (19 persons) :
Give advice and guidance to The Minister Marine Affairs and Fisheries to provide a law regulation concept (legislation aspect), formal framework contingency plans, technical policy and operational focused on fish health and environment management.

Third : In the implementation of the task of the Commission has to get coordination with the provincial office level or other institution in the region to do early response based on contingency plans has been done, due to the possibly elimination of an emergency disease outbreak.

Fourth : The National Fish Health and Environment Commission would be held a meeting minimum once a year.

Fifth : This decree will be available since the date has been decided.

Has decided in Jakarta,

Jakarta, 9th May 2006

The Minister for Marine Affairs and Fisheries

Freddy Numberi

b. The National Committee

Structure of the National Fish Health and Environment Commission
A. Advisory:

No.	Name	Institution
1.	Dr. Made L. Nurdjana	Directorate General of Aquaculture
2.	Dr. I. Ketut Sugama	Directorate General of Aquaculture

B. Member of the Commission (MMAF Decree no. 14/MEN/2006; 09 May 2006) National Fish Health Committee

No.	Nama	Institution
1.	Dr. Ir. Darnas Dana, MSc	
2.	Drs. Djumbuh Rukmono, MP	Directorate Fish Health & Environment, MMAF, Jakarta
3.	Ir. Dwika Herdikiawan, MM	
4.	Ir. Helmi Yudiarsafran, MM	Directorate Fish Health & Environment, MMAF, Jakarta
5.	Prof. Dr. Fachriyan Pasaribu, MSc.	Senior expert for Fish Disease from Bogor Agricultural University, Bogor
6.	Dr. Sukenda	Expert for Fish Disease from Bogor Agricultural University, Bogor
7.	Prof. Dr. Enang Haris	Senior expert for Environment, Bogor Agricultural University, Bogor
8.	Prof. Dr. Komar Sumantadinata, MSc	Senior expert for Fish Genetic and Breeding, Bogor Agricultural University, Bogor
9.	Prof. Dr. Kamiso HN., MSc	Senior expert for Fish Disease, Gajah Mada University, Yogyakarta,
10.	Prof. Dr. S. Budi Prayitno, MSc	Senior expert for Fish Disease, Diponegoro University, Semarang Central Java
11.		Head of Fish Quarantine Central Office, MMAF, Jakarta
12.	Ir. Taukhid, MSc	Senior expert for Fish Disease, Marine and Fisheries Research Agency, Jakarta
13.	Drs. Hambali Supriyadi, MSc.	Senior expert for Fish Disease, Marine and Fisheries Research Agency, Jakarta
14.	Dr. Endi Setiadi	Senior expert for Environment, Marine and Fisheries Research Agency, Jakarta
15.	Ir. Dede Irving, MSc	Senior expert for Environment, Indonesian Science and Technology, Cibinong, West Java
16.	Dr. Ir. Muhamad Murdjani, MSc	Head for Brackishwater Development Center in Jepara, Central Java
17.	Ir. Maskur	Head for Freshwater Aquaculture Development Center in Sukabumi, West Java
18.	Dr. Agus Irianto	Senior expert for Fish Disease, Jenderal Soedirman University, Purwokerto, Central Java
19.	Ir. Rubiyanto WH., MBA	Private Sector in Shrimp Culture in Lampung, Sumatera

C. Task of the National Fish Health and Environment Commission:

1. Advisory:
   Give advice and guidance to member of the Commission to do all the activities of the National Fish Health and Environment Commission;
2. Member of the Commission :
   Give advice and guidance to the Minister Marine Affairs and Fisheries to provide a law regulation concept (legislation aspect), formal framework contingency plans, technical policy and operational focused on fish health and environment management.

Immediate Actions Required:

- Up to now, the committee had not prepared detailed TOR for action plan (NACA can assist comprehensive TOR developemnt, which can support the implementation of fish health and environment management);
- The committee still provides the draft of some fish disease policy and regulation from the meeting result evaluation, which it had been done on 29 - 31 of August 2006.

B.3.4. MALAYSIA

National Advisory Committee

No.	Agencies	Functions	Personnel
1.	DOF (NaFisH/OTHER FRI/QUARANTINE CENTRES)	Main disease diagnostic centre (level 1,2,3 – NaFisH) Disease compilation and reporting – NaFisH Surveillance of selected diseases (exotic/endemic/pathogenic) – NaFisH/fri labs/quarantine Laboratories service – quarantine Information sharing - all	DG NaFish head State director Quarantine head Aquaculture and extension division - head
2.	VRI/ Veterinary Diagnostic labs	Technical reference/sharing lab facilities	Director
3.	Higher institutions (UPM/UMT)	Collaboration and Reference centres	UMT : Prof. Faizah Shaharom (Ins. of tropical aquaculture) UPM : Prof. Dr. Hasan Mohd. Daud
4.	Registered Stakeholders	Reporting of diseases occurrence Involve in Surveillance and emergency task force	Farmers associations (ornamental, LPP, MADA etc)

B.3.5. MYANMAR

National Aquatic Animal Health Committee

No.	Name	Institution	Position in the Committee
1.	U Khin Maung Aye	Director-General	Patron
2.	U Khin Ko Lay	Deputy Director General	Chairman
3.	U Tun Win	Director Aquaculture Division,DOF	Member
4.	U Win Myint Maung	Director FIQC, DOF	Member
5.	U Win Thein Oo	Director,Research and Development Division, DOF	Member
6.	U Khin Maung Soe	Deputy Director Aquaculture Division, DOF	Member
7.	Daw May Thandar Wint	Fishery Officer Aquatic Animal Health and Disease Controlling Section, DOF (NACA National Coordinator, Aquatic Animal Health)	Member
8.	Daw Ohnmar Moe	Deputy Fishery Officer Aquatic Animal Health and Disease Controlling Section, DOF.	Member
9.	Daw Maw Maw Than	Fishery Officer Aquatic Animal Health and Disease Controlling Section, DOF.	Member
10.	Daw Shon Le Ko Ko	Assistant Fishery Officer Aquatic Animal Health and Disease Controlling Section, DOF.	Member
11.	Daw Mar Lar Win	Assistant Fishery Officer FIQC, DOF.	Member
12.	Dr. Kyaw Sann	Director Vet. Department (OIE Co-ordinator)	Member
13.	Daw Thi Thi Thaw	Lecture, Yangon University	Member
14.	Daw Moe Kyi Han	Lecture, Mandalay University	Member
15.	Dr. Myint Swe	Representative Fish Farmer Association	Member
16.	U Soe Tun	Representative Shrimp Farmer Association	Member
17.	U Saw Lah Paw Wah	Assistant Director Aquatic Animal Health and Disease Controlling Section, DOF, (OIE Focal Point – Aquatic Animal Health)	Secretary

B.3.6. PHILIPPINES

Philippines National Advisory Committee on Aquatic Animal Health

Agency	Function
Department of Agriculture	
1. BFAR Central Office Fish Health Section and Regional Fish Health Unit	Fish health management and residue monitoring, farm inspection, monitoring and surveillance, diagnostic services
2. BFAR Fisheries Regulatory and Quarantine Division	Fisheries regulatory and quarantine
3. BFAR Inland Fisheries and Aquaculture Division	Aquaculture management (HACCP)
4. Local Government Unit- PAO or PFO and MAO or MFO	Training and extension services
5. Bureau of Animal Industry	Registration of aquatic feeds, veterinary drugs and products, monitoring and surveillance on use and distribution
6. Bureau of Agriculture and Fishery Product Standards (BAFPS)	Standard Setting Body for agriculture and fishery products
7. Fertilizer and Pesticide Authority	Registration of fertilizers and pesticides, enforcement and monitoring
8. National Fisheries Research and Development Institute (NFRDI) and National Fisheries Centers	Research and Extension
9. National Agriculture and Fisheries Council (NAFC)	Agriculture and Fisheries coordinating council
Other Departments/Agencies	
10. Department of Environment and Natural Resources-Environmental Management Bureau (DENR-EMB)	Environmental management and monitoring
11. Department of Science and Technology-Philippine Council for Aquatic and Marine Resources Development (DOST-PCAMRD)	Research and development
12. Department of Trade and Industry-Board of Investments & Bureau of Export and Trade Promotion (DTI-BOI & BETP)	Marketing and trade policies
13. Department of Health-Bureau of Foods and Drugs (DOH-BFAD)	Registry of drugs, issuance of permit for processed products
14. SEAFDEC-AQD	Research and development
15. Academe-CLSU,UPV, UP-MSI, UPLB-BIOTECH, UP Diliman-IBS & NIMBB, NSRI	Education, research, training, extension and production
Private Sectors and Cooperatives	
Feeds: Association of Philippine Aquaculture Feed Millers Inc. Prof. Org: PVMA, PVDA, VPH Farmer Groups: Philshrimp, PTInc., BC Philfry, FAB Processors: Shrimppex, Philexport Lab services: NPPMCI, BARFI , SGS, PIPAC, Adamson NGOs: Tambuyog, Marine Aquarium Council (MAC), Freshwater Ornamental Fish Association Ancillary: Aquaculture Suppliers Association of the Philippines	Aquaculture feed mills

Scope: Aquatic Animal Health and Food Safety related to Aquaculture Practices

Issues and Concerns:

1. Decrease in production and income due to mortality from diseases of infectious and non-infectious nature
2. Unregulated use of aquaculture inputs and lack of guidelines for the implementation and enforcement of regulations
3. Multi-use of common aquatic resources leading to poor environmental condition affecting aquatic animal health
4. Non compliance of Good Aquaculture Practices due to lack of guidelines
5. Presence of residues in aquaculture products
6. Inadequate laboratory infrastructure and services for aquatic animal health
7. Limited numbers and lack of specialization of fish health officers and laboratory analysts
8. Insufficient formal trainings on aquatic animal health of veterinarians and aquaculturists
9. Limited awareness and failure to comply with the requirements of trading partners
10. Inadequate funding for researches to improve aquatic animal health
11. Lack of expertise and funds to implement new programs for risk analysis, zoning, contingency planning and emergency response.

Process in the Development and Finalization of the National Advisory Committee on Aquatic Animal Health

- Workshop Meeting (BFAR Central Office Fish Health Staff and invited key personnel from SEAFDEC and Academe) November 14, 2006.
- Formulate Terms of Reference (TOR) of the National Advisory Committee (to get information from NACA on the structure, membership and operation for the ASEAN member countries that have already developed an Advisory Committee.
- Final selection from the long list of the members of the National Advisory Committee.
- Consultation Meeting with the Members of the National Advisory Committee
- Presentation to the BFAR Management of the National Advisory Committee
- Formalization of the Creation of the National Advisory Committee thru Special Order
- Signing of Memorandum of Agreement of the members of the National Advisory Committee.

B.3.7. SINGAPORE

Two cross-functional committees have been established:

(i)Aquaculture Surveillance & Monitoring Committee

Objective: Cross functional collaboration to facilitate monitoring of foodfish pathogens and maximizing use of data generated to promote aquaculture both locally and in the region.

Membership: AVA cross-divisional representation involving Animal & Plant Health Laboratory Division, Import & Export Division, Inspection Services and Epidemiology Division and Technology Division

(ii) Fish Import Review Committee

Objective: Review of Import, Export and Health Certification requirements for ornamental fish trade

Membership: AVA cross-divisional representation involving Animal & Plant Health Laboratory Division, Import & Export Division, Inspection Services and Epidemiology Division and Technology Division

B.3.8. THAILAND

- Thailand Fish Disease Commission (FDC) has been first established in November 2001.
- The FDC organized a meeting to develop the first National Strategy for Aquatic Animal Health (2004-2008).
- Recently the committee members were revised in February 2007.
  - 17 committees of the FDC consist of 6 from DOF, 1 from DLD, 3 from private sector and 7 from University lecturers.
  - FDC is now reviewing the results and outcomes of the First National Strategic Plan. The new or second National Strategic Plan (2009 – 2013) will be developed to strengthening aquatic disease surveillance, reporting system and control.

B.3.9. VIETNAM

a. Legal Support

THE MINISTRY OF FISHERIES	THE SOCIALIST REPUBLIC OF VIETNAM Independence-Freedom-Happiness
Ref. No. 263/QĐ-BTS	Hanoi, 17th March, 2005

DECISION BY THE MINISTER OF MINISTRY OF FISHERIES

On the establishment of the National Advisory Committee of Aquatic animal, amphibian and aquatic plant health protection

THE MINISTER OF FISHERIES

- Pursuant to the Law on Fisheries dated 2003;
- Pursuant to the Vest Law dated 2004;
- Pursuant to the Government Decree no 43/2003/NĐ - CP dated 2nd May, 2003 regulating the functions, tasks, responsibilities and organization structure of the Ministry of Fisheries;
- At the request of the General Directors of the Department of Organization and Personnel and the National Fisheries Quality Assurance and Veterinary Directorate.

HEREBY DECIDE

Article 1: To establish the ***National Advisory Committee of Aquatic animal, amphibian and aquatic plant health protection,*** hereinafter called ***National Aquatic Animal Health Committee***. The English title is "**National Advisory Committee of Aquatic Animal Health (NACAAH).**

Article 2: Functions and responsibilities:

1. ***Functions***: The National Advisory Committee's function is to advise the Minister of Fisheries and the Administrative bodies within the Ministry on policy issuance, strategies and on the scientific and practical basis of aquatic animal amphibian and aquatic plant health protection activities.
2. ***Responsibilities***: The NACAAH shall advise the Minister of Fisheries and the Administrative bodies within the Ministry on:
    1. Policies, strategies on and long-term plans for fishery veterinary; fishery disease prevention, control and management.
    2. Scientific and practical bases for the prohibition/permission for importation, exportation or production of aquatic animal and

amphibian seed, veterinary drugs, chemicals, probiotics and veterinary microorganism, etc. used in aquaculture.

3. Connection of activities relating to environmental surveillance and warning, aquatic animal, plant and amphibian diseases; implementation of specific pathogen free seed programs, Good Aquaculture Practices (GAP), Better Management Practices (BMP) for the purpose of disease prevention, food safety and environmental protection.
4. Promulgation of the lists of dangerous and very dangerous aquatic animal diseases; lists of veterinary drugs, chemicals, probiotics and veterinary microorganism prohibited or limited in aquaculture.
5. Resolution of commercial conflicts relating to veterinary, aquatic animals, plants and amphibians.

Article 3: The NACAAH consists of 18 members who are representatives of relevant bodies. The list of the members is attached in Annex 1.

The head office of the Committee is located in the National Fisheries Quality Assurance and Veterinary Directorate (NAFIQAVED). The committee is assisted by the secretariat unit who are staff from NAFIQAVED with appropriate experience.

Depending on the matter to be discussed, beside the members, the Chairman of the Committee can invite non-member relevant people to participate into the Committee's meeting, or establish Technical Units (for issues concerning seed, veterinary drug, disease prevention, etc.) to advice on the scientific and practical basis associated with specific issues.

The Chairman of the Committee is responsible for setting up regulations on the organization and activities of the Committee and for submitting them to the Minister of Fisheries for approval.

Article 4: The fund for the Committee's operations is granted regularly from the Government Budget through NAFIQAVED, from the funds assigned for studies, projects and scientific research and from any other source of financial support (if available).

NAFIQAVED is responsible for setting up the financial plans for the activities of the committee and the technical units regularly following the Committee's workplan, submitting them to the Ministry and Government for approval, and managing the expenses and vouchers payment in line with the current financial and accounting system of the government.

Article 5: This decision comes into effect on signing date.

The Chiefs of the Secretariat, General Directors of the Department of Organization and Personnel, NAFIQAVED, other relevant departments and directorates and the members listed in Annex 1 shall be responsible for implementing this decision.

Receivers:

- As mentioned in Article 5
- Government office
- Relevant ministries: Agriculture and Rural development, Health, Science and Technology, Planning and Investment, Finance
- Research institutes 1, 2, 3
- Marine research Institute
- University of Fisheries of Nha Trang, Can Tho University
- DOFIs, Departments of Agriculture and Rural Development
- Archives in Clerical unit, NAFIQAVED

Minister of Fisheries

Signed

Ta Quang Ngoc

b. The National Committee

ANNEX 1. LIST OF MEMBERS OF THE NATIONAL ADVISORY COMMITTEE OF AQUATIC ANIMAL HEALTH

(Attached with the Decision nº 263/QĐ-BTS dated 17th March 2005 by the Minister of Fisheries)

Nº	Name	Qualification	Position	Work place
1	Nguyen Xuan Ly	Ph.D.	General Director	Department of Science and Technology - Chairman
2	Nguyen Tu Cuong	B.Sc. Fisheries	General Director	NAFIQAVED - Permanent Vice Chairman
3	Nguyen Van Thanh	Ph.D.	Vice General Director	Department of Aquaculture - Permanent member
4	Nguyen Nhu Tiep	Ph.D.	Head of Department of NAFIQAVED	NAFIQAVED - Permanent Member
5	Nguyen Van Hao	Ph.D.	Acting Director	Research Institute of Aquaculture N.2 - Member
6	Nguyen Duong Thao	Ph.D.	Director	National marine warning and surveillance Center - Marine research institute – Member

7	To Long Thanh	Ph.D.	Vice Director	National Veterinary Diagnostic Center - Department of Animal Health, MARD - Member
8	Nguyen Huy Dien	M.Sc.	Vice Director	National Fisheries Extension Center - Member
9	Phan Thi Van	M.Sc.	Vice Director	Environment and Disease warning and monitoring Center at RIA N0. 1- Member
10	Nguyen Thi Xuan Thu	Ph.D.	Vice Director	Research Institute of Aquaculture N.3 – Member
11	Nguyen Duy Thuan	Ph.D.	Vice Director	Institute of Pharmacy – Member
12	Tran Thi Luyen	Ph.D.	Vice Director Assistant professor	University of Fisheries - Nha Trang – Member
13	Truong Quang	Ph.D.	Head of Faculty	Faculty of Breeding and Veterinary-University of Agriculture I-Hanoi – Member
14	Nguyen Duy Hong	B.Sc. Biology	Head of the Department	National Directorate of Aquatic Resources Exploitation and Protection NADAREP-Member
15	Phan Van Chi	Ph.D.	Vice Director	Institute of Bio-technology – Member
16	Bui Van Thuong	B.Sc. Biology	Permanent Vice Secretary General	VINAFISH - Member
17	Hoang Hai Hoa	M.Sc. Veterinary	Head of the Disease Unit	NAFIQAVED
18	Le Thi Hue	B.Sc. Veterinary	Head of the Veterinary Drug Unit	NAFIQAVED

c. Term Of Reference

National Advisory Committee in Aquatic Animal Health in Vietnam

Name: *National Advisory Committee of Aquatic Animal Health* (short name is NACAAH)

Address: 10 Nguyen Cong Hoan – Ba Dinh – Ha Noi – Vietnam**.**

Institutional: NAFIQAVED

TOR:

- Decision number 1012/QD-BTS date 13/7/03/2005 of Minister of Ministry of Fishery of Vietnam on setting up National Advisory Committee of Aquatic Animal Health.
- Regulation on the organizational structures and activities of NACAAH

The content in briefly of the Decision and Regulational as below:

I. Organizational structure of the NACAAH:

1. Permanent board of NACAAH
   - Chairman
   - Vice chairmen (Permanent chairman and vice chairman)
   - Head of Secretariat unit
2. Units under the NACAAH:
   a. Secretariat unit
   b. Disease and environment control unit
   c. Veterinary drug unit

II. Responsibilities and rights of the Chairman:

- He is the legal representative of the Committee who is responsible for the Committee's activities.
- Organize to implement the resolution, programme and annual & long term plan of the committee.
- Monitor and manage the consulting work of the committee during the time between the two regular meetings;
- Represent the committee in the relations between the committee and other organizations.
- Chair the committee's regular meeting.
- Approve the finance plans of the committee

III. Responsibilities and rights of the Vice Chairmen:

- On behalf of the Chairman, manage the daily work that has been approved according to plan and sign under the name of the chairman in the delegated work,
- Chair the regular meeting of the committee when the chairman is not available
- Manage the activities of the technical units under the assignment of the chairman

V. Responsibilities and rights of the Head of technical units under NACAAH:

- Conduct the consultancy work within the unit according to the plan assigned by the Committee chairman.
- Report the comments, advises, appraisal results of the related issues to the Committee chairman
- Chair the regular and ad hoc meeting of the unit
- Be provided information relating to the unit's work.

VI. Responsibilities and rights of the NACAAH members:

- Implement the work assigned by the chairman, vice chairmen and Head of units
- Participate in meetings, discussion, giving comments on documents and exchange work with committee members in the meetings
- Give advises to the committee and technical units
- Vote for approval in the meetings.

- Be provided and able to use technical document (include fieldtrips) relating to the committee's work
- Be able to reserve his opinion and ask for review at competent higher level.

VII. Responsibilities and rights of the Permanent board of NACAAH:

- One be half of the Committee, the board will manage and implement the work plans and programme of the committee in the time between the two meetings.
- Inspect and supervise of unit's activities.
- The Permanent board of the NACAAH has a regular meeting every three month.

VIII. Organizational structure, responsibilities and rights of the Secretariat

- The Secretariat consist of 1 head who is also the permanent member of the committee, the secretaries of technical units, financial - accounting staff from NAFIQAVED.
- Prepare the work plan and financial budget for the committee, permanent board and technical units.
- Make records, minutes, documents, technical materials and resolutions of the Committee, Permanent board and technical units.
- Write the draft and submit the draft of documents for the Committee, Permanent board and technical units
- Deal with administrative work of the committee.
- Keep the information and materials of the committee confidentially and safely.

The NACAAH have 02 meeting per year at the ending week of the first month of the first quarter and the second quarter to review and assess work. In case of necessary and under requirement of the Chairman, there may be ad hoc a meeting. The technical units have 02 meeting per year, in case os necessary, there may be ad hoc meeting

The budget of the NACAAH's activities is from the government through NAFIQAVED and from other sources if any.

The document for transaction of the NACAAH can be stamped with the NAFIQAVED's stamp with the signature of the Permanent vice chairman (Director of NAFIQAVED)

B.4. National List of Important Disease

The purpose of this section is to identify important national aquatic animal diseases in ASEAN member countries.

ASEAN countries are at different stages of development of national list of aquatic animal diseases. In some countries, due to inadequate human and financial resource, little attention has been given to national strategies. Lack of sharing of information concerning the important aquatic animal diseases among ASEAN countries could contribute to difficulties to control the spread of serious diseases.

B.4.1. BRUNEI DARUSSALAM

No.	Name of the Disease	Justification	Exotic/Endemic
1	Viral encephalopathy and retinopathy (VNNV)	Import of seeds (seabass)	Exotic
2	*Vibrio*	Sea bass	Endemic/Exotic
3	*Aeromonas* and *Pseudomonas*	Freshwater culture	Endemic
4	*Lernaea*	Chinese carp	Endemic/Exotic
5	*Trichodina*	Tilapia hatchery/import of seed (Normal tilapia)	Endemic
6	*Argulus*	Chinese carp, tilapia culture	Endemic
7	White spot(WSSV)		
8	MBV		
9	IHHNV		
10	TSV	Negative	
11	YHV		
12	IMNV		
13	GAV		

B.4.2.CAMBODIA

No.	Name of the Disease	Justification	Exotic/Endemic
1	EUS	Impact on wild fisheries, snakehead cage culture, sand goby fattening systems, giant and snake skin gourami	Endemic
2	KHV	Common carp culture, Import of Koi carp,	Exotic?[1]
3	Viral encephalopathy and retinopathy (VNNV)	Grouper and sea bass cage culture (wild seed), some import of seed	Exotic?
4	Grouper iridoviral diseases	Grouper and sea bass cage culture (wild seed), some import of seed	Exotic?
5	BNP (Bacilliary Necrosis in Pangasius) = Bacilliary Necrosis Disease (BND)	Pangasiid culture in pond and cage, seed from wild, local hatchery and import	Exotic?
6	*Vibrio*	Shrimp, grouper and sea bass	Endemic
7	Red spot (grass carp reo virus)	Grass carp culture	Exotic?
8	Streptococcus	Tilapia, sea bass	Exotic?
9	Enteric septicaemia of catfish	Pungasiid culture	Exotic?
10	*Flexibacter*	Freshwater hatchery	Endemic
11	*Aeromonas* and *Pseudomonas*	Freshwater culture	Endemic
12	*Lernaea*	Sand goby-pond culture	Endemic
13	*Trichodina*	Tilapia hatchery/import of seed (Normal tilapia)	Endemic
14	*Argulus*	Chinese carp, tilapia culture	Endemic
15	White spot disease	Tiger shrimp	Endemic
16	Taura syndrome	white shrimp already present	Exotic?
17	MrNV and XSV (Freshwater prawn white tail disease-WTD)	Import live freshwater prawn for food	Exotic?
18	Disease of seaweed	Ongoing culture (big industry), imported cuttings,	No Information

[1] Where marked with this symbol - ? – the disease is presumed to be exotic to the country, however there is currently no surveillance/reporting information to confirm this.

B.4.3. INDONESIA

No.	Name of the Disease	Justification	Exotic/ Endemic
1.	WSSV (White Spot Syndrome Virus)	Shrimp	Endemic
2.	TSV (Taura Syndrome Virus)	Shrimp	Endemic
3.	IHHNV	Shrimp	Endemic
4.	IMNV (Infectious Myonecrosis Virus)	Shrimp (*L vanamae*)	Small case or Sporadic
5.	VNNV (Viral encephalopathy and retinopathy)	Grouper	Endemic
6.	KHV (Koi Herpesvirus)	Koi & Common carp culture	Endemic
7.	*Vibrio harveyi*	Shrimp, grouper and sea bass	Endemic
8.	*V. parahaemolyticus*	Shrimp, grouper	Endemic
9.	*Streptococcus iniae*	Freshwater fish , Tilapia	Endemic
10.	*Aeromonas hydrophila*	Freshwater culture	Endemic
11.	*A salmonicida*	Marine culture	Endemic
12.	*Edwardsiella tarda*	Pangasius	Endemic
13.	*E ichtaluri*	Pangasius	Endemic
14.	*Mycobacterium*	Freshwater fish	Endemic
15.	*Ichthyophthirius multifillis*	Freshwater fish	Endemic
16.	*Gyrodactylus* sp	Freshwater fish	Endemic
17.	*Dactylogyrus* sp	Freshwater fish	Endemic
18.	*Myxobolus* spp	Freshwater fish	Endemic
19.	*Argulus* sp	Freshwater culture	Endemic
20.	Benedinia /Neo	Freshwater culture	Endemic
21.	*Lernaea* sp	Freshwater culture	Endemic
22.	*Zoothamnium*	Freshwater culture	Endemic

B.4.4. MALAYSIA

No.	Name of the Diseases	Ma?	Host sp.	Pathogen
	Finfish			
1.	Epizootic ulcerative syndrome (EUS)	+	*Channa striatus, clarias sp.*	*Aphanomyces invadans, rhabdovirus, birnavirus, vibrio, aeromonas,*
2.	Infection with Koi herpesvirus	+	Ornamental koi	Cyprinid herpesvirus-3
3.	Viral encephalopathy and retinopathy (VNNV)	+	*L.calcarifer, Epinephelus sp., Lutjanus sp., Rachycentron canadum, Trichonotus blochii, Sciaenops ocellatus.*	Nodavirus
4.	Edwardsiellosis (*E.tarda*) of catfish	+	*Clarias* sp.	*E.tarda*
5.	Grouper iridoviral disease	+?	*Epinephelus sp., Cromileptis altivelis*	Iridovirus
6.	Vibriosis	+	*L.calcarifer, Epinephelus spp., Lutjanus spp., Rachycentron canadum, Trichonotus blochii, Sciaenops ocellatus.*	*Vibrio alginolyticus, V.vulnificus, V. parahemolyticus*
7.	Infection with *Flexibacter*	+	*L.calcarifer, Epinephelus spp., Lutjanus spp., Rachycentron canadum, Trichonotus blochii, Sciaenops ocellatus.*	*Flexibacter marinum*,
8.	Streptococcosis	+	*L.calcarifer, Lutjanus spp.*, Red Tilapia	*Streptococcus agalactiae, Strep. spp.*
9.	Capsalid (skin monogenean) infestation	+	*L.calcarifer, Epinephelus spp., Lutjanus spp.*	*Benedenia spp., Neobenedenia spp.*
10.	*Gyrodactylus* infestation	+	*Cultured species of freshwater fish*	*Gyrodactylus spp.*
11.	Mycobacteriosis	-	Gourami spp.	*Mycobacterium sp.*
12.	Nocardiosis	+	*Trichonotus blochii*	*Nocardia spp.*
13.	Isopod infestation	+	Tilapia, *Puntius spp*	*Corallana nodosa,*
	Crustacean			
1.	Taura syndrome	+?	*P.vannamei, P. merguiensis, P.monodon*	Taura syndrome virus
2.	White spot disease	+	*P.vannamei, P. merguiensis, P.monodon*	WSSV
3.	Yellowhead disease (YH Virus,gill-associated virus)	?	*P.vannamei, P. merguiensis, P.monodon*	YHV
4.	Spherical baculovirosis (*Penaeus monodon*-type baculovirus)	+	*P.monodon*	MBV
5.	Infectious hypodermal and haematopoietic necrosis(IHHNV)	+	*P.vannamei, P. merguiensis, P.monodon*	IHHNV
6.	Hepatopancreatic parvovirus (HPV)	+?	*P.vannamei, P. merguiensis, P.monodon*	HPV
7.	White tail disease (MrNV and XSV)	***	*Macrobrachium rosenbergii*	MrNV
	Mollusc			
1.	Infection with *Marteilia sp.*	***	Oysters	*Marteilia sp*

B.4.5. MYANMAR

No	Name of the Disease	Justification	Exotic/Endemic
	Finfish		
1.	EUS	Affects wild and cultured fisheries, (snakeheads, puntius, carps, catfishes)	Endemic
2.	KHV	Common carp and koi carp culture present	Exotic?
3.	VNN	Grouper and seabass farming initiated	Exotic?
4.	Grouper iridoviral disease	Marine fin fish culture initiated in Myanmar	Exotic?
5.	*Steptococcus* infection	Suspected problems in Tilapia and carps,	Endemic?
6.	*Flexibacter*	Suspected in Tilapia and carp culture	
7.	*Enteric septaecemia of catfish*	Future expansion of pangasid culture	
8.	BNP (Bacilliary Necrosis in Pangasius)	Future expansion of pangasid culture, disease present in Vietnam	
9.	*Aeromonas* and *pseudomonas*	Economic loss in carps	
	Nocardia and *Mycobacterium*	Human health significance, problem in ornamental fish and tilapia	
10	*Lernaea*	Poly-culture of carps, pangasid and tilapia,	Endemic
11	*Argulus*	Carps, ornamental fish	Endemic
12	*Myxosporideans*	Carps, tilapia	Endemic
13	*Dactylogyrus*	Carp in ponds, hatcheries	
14	*Trichodina*	Catfish culture, carps, hatcheries	
15	*Epitehliocystis*	Tilapia culture	Exotic?
16	Tilapia red spot (etiology?)	Tilapia (pond/cage), no market, large scale mortality, grow out problem,	Endemic
17	??	Eel (live trade with China)	
	Crustaceans		
1	Luminiscent *Vibriosis*	Prawn and shrimp	Endemic
2	White spot (WSSV)	*P.monodon* culture	Endemic
3	MBV	*P.monodon*	endemic
4	IHHNV	*P.monodon* and *P.vannamei* culture	endemic
5	TSV	*P.vannamei* and *P.monodon* culture,	Endemic
6	YHV	*P.monodon* culture	exotic
7	IMNV	Present in the region, problem in *P.vannamei*	exotic
8	GAV	Present in the region, problem in *P.monodon*	exotic
9	MSGS (Monodon slow growth syndrome)	Monodon culture, present in the region, suspected in Myanmar	No information
10	Red gill in Monodon spawners (etiology?)	Experienced in hatcheries,	No information
11	White tail disease (MrNV and XSV)	Problem in *Macrobrachium* hatcheries, present in Thailand, Vietnam, India, China	Exotic?
12	Isopods	Mortality in broodstock of *Macrobrachium*	
13	*????*	Soft shell crab culture	
	Mollusc		
1	Akoya oyster disease	Possibility of mollusk culture? (pearl oysters)	Exotic?
2	Abalone viral mortality	One big company, Problem in China, Taiwan	Exotic?
3	*???*	Babylonia culture (death in the wild)	
	Others		
1	*???*	Seaweed culture	

[1] Where marked with this symbol - ? – the disease is presumed to be exotic to the country, however there is currently no surveillance/reporting information to confirm this.
* approved by report 24 April 2007

B.4.6. PHILIPPINES

Tentative National List of Important Diseases

No.	Disease	Justification
1	Taura syndrome	OIE, QAAD listed, species susceptible cultured/present in the country
2	White Spot virus	OIE, QAAD listed, species susceptible cultured/present in the country
3	Yellowhead disease	OIE, QAAD listed, species susceptible cultured/present in the country
4	Spherical baculovirosis	OIE, QAAD listed, species susceptible cultured/present
5	Infectious hypodermal and haematopoeitic necrosis	OIE, QAAD listed, susceptible species cultured/present
6	Tetrahedral baculovirosis	OIE, QAAD listed, susceptible species cultured/present
7	Necrotizing hepatopancreatitis	Non-OIE listed relevant to the region, susceptible species cultured/present in the county
8	Baculoviral midgut gland necrosis	Non-OIE listed relevant to the region, susceptible species cultured/present in the country
9	White tail disease (MrNV and XSV)	Non-OIE listed relevant to the region, susceptible species cultured/present
10	Vibriosis (Luminous)	Economic impact
11	Koi herpesvirus disease	OIE listed, susceptible species cultured/present, traded
11	Spring Viremia of Carp	OIE listed, susceptible species cultured/present, traded
12	Epizootic Ulcerative Syndrome	OIE listed, impact to wild fisheries, species cultured (catfish)
13	Epitheliocytis	Susceptible species cultured/present, traded
14	Grouper iridoviral disease	Susceptible species cultured/present, traded
15	Viral encephalopathy and retinopathy	Susceptible species culture/present, traded
16	Enteric septicemia of catfish	Susceptible species cultured
17	Bacterial disease (*Vibrio, Flexibater, Aeromonas, Streptococcus*,)	Economic impact affected species (milkfish, grouper, tilapia)
18	Fish louse	Economic impact Carp, milkfish, tilapia
19	Isopod	Economic impact Tilapia, milkfish
20	Gill fluke (*Dactylogyrus*)	Economic impact Tilapia (hatchery stage)
21	Trichodina	Economic impact Tilapia, milkfish (hatchery, nursery stage)

B.4.7. SINGAPORE

Singapore adopts NACA/OIE list of important diseases

B.4.8. THAILAND

List of aquatic animal diseases that are subjected to national official measures

Aquatic animals	Diseases listed under Animal Epidemic Act
Fishes	1. BKD or bacterial kidney disease 2. EHNV disease or epizootic haematopoietic necrosis virus disease 3. EUS or epizootic ulcerative syndrome 4. IHNV disease or infectious haematopoietic necrosis virus disease 5. Iridoviral disease 6. KHV disease or koi herpesvirus disease 7. Nodavirus disease 8. OMV disease or *Oncorhynchus masou* virus disease 9. RSIV disease or Red Sea bream 10. Streptococcosis in aquatic animal 11. SVCV disease or spring viraemia of carp virus disease 12. VHS or viral haemorrhagic septicaemia
Crustaceans	13. Crayfish plague 14. HPV disease or hepatopancreatic parvovirus disease 15. IHHNV disease or infectious hypodermal and haematopoietic necrosis virus disease 16. MBV disease or *Penaeus monodon*-type baculovirus disease 17. Taura syndrome 18. Tetrahedral baculovirosis 19. White spot disease 20. Yellowhead disease
Mollusks	21. Bonamiosis 22. Perkinsosis 23. Marteiliosis 24. Mikrocytosis 25. MSX disease or multinucleate sphere x disease
Reptiles	26. Septicaemia cutaneous ulcerative disease 27. Poxvirus in crocodile

B.5. Surveillance, Reporting, Information Management System and Communication

The purpose of this section is to identify and compile the information regarding surveillance, reporting, information management system and communication for aquatic animal health in ASEAN member countries and stakeholders involved in the system.

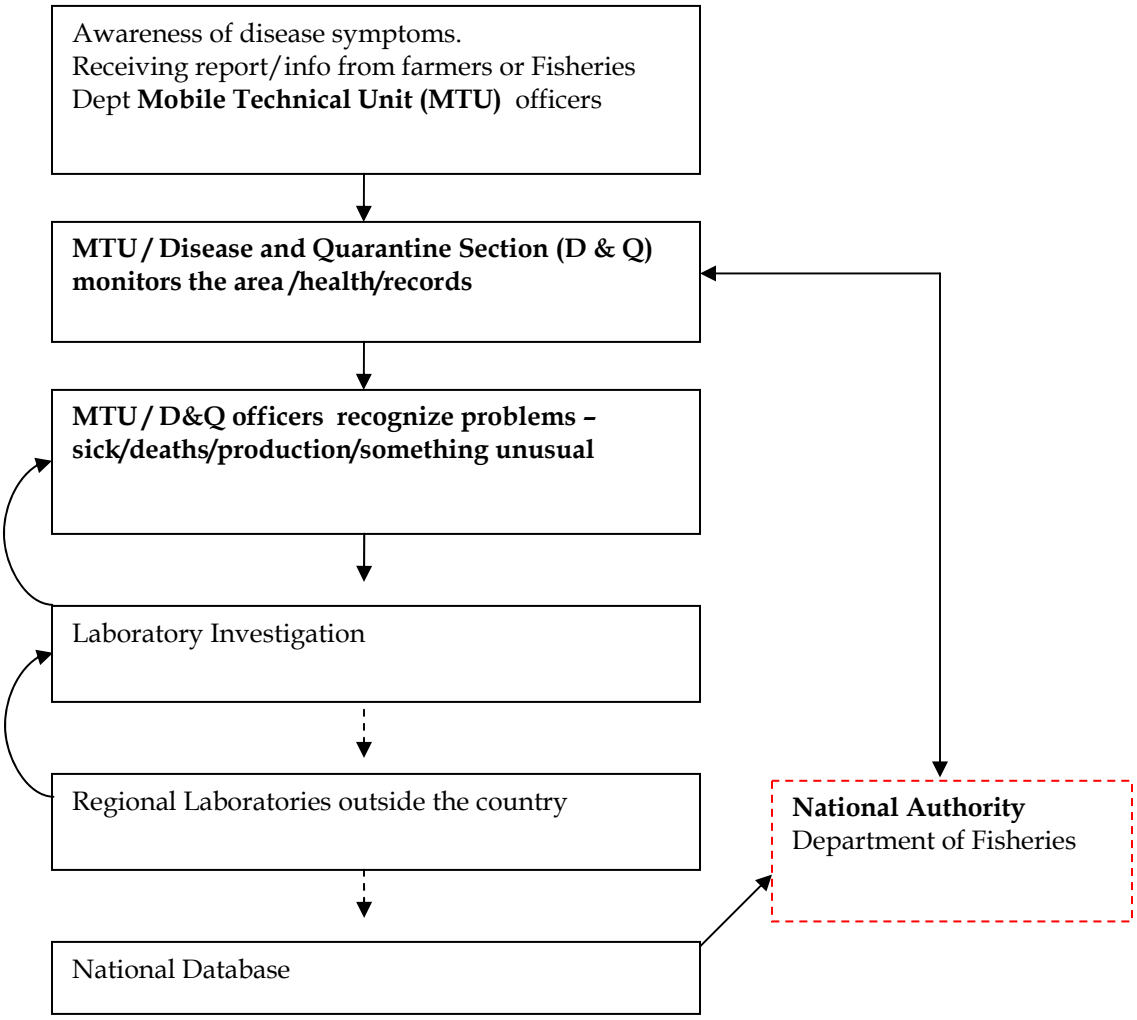
The primary purpose of aquatic animal disease surveillance is to provide cost-effective information and meaningful reports on the disease status of a farm, zone, country or region, some systematic process of gathering information about the occurrence of important diseases and pathogens. Surveillance will support risk analysis through assessing and managing risks associated with trade (domestic and international) in aquatic animals and products, animal production efficiency and public health as well as justify import health certification requirements, and enable export health certification, by providing evidence to substantiate claims of absence of a particular disease.

Surveillance is followed by reporting to authorized bodies and or to public if necessary (e.g. provision of sound aquatic animal health advice to farmers, certification of exports). It is a critical point in order to alarm stakeholder in case of disease emergencies and response. Therefore, passive and active surveillances are necessary. Passive surveillance is the ongoing work, which maintains a continuous watch over the disease profile of a population so that unexpected and/or unpredicted changes can be recognized. However, active surveillance collects specific information about a defined disease or condition.

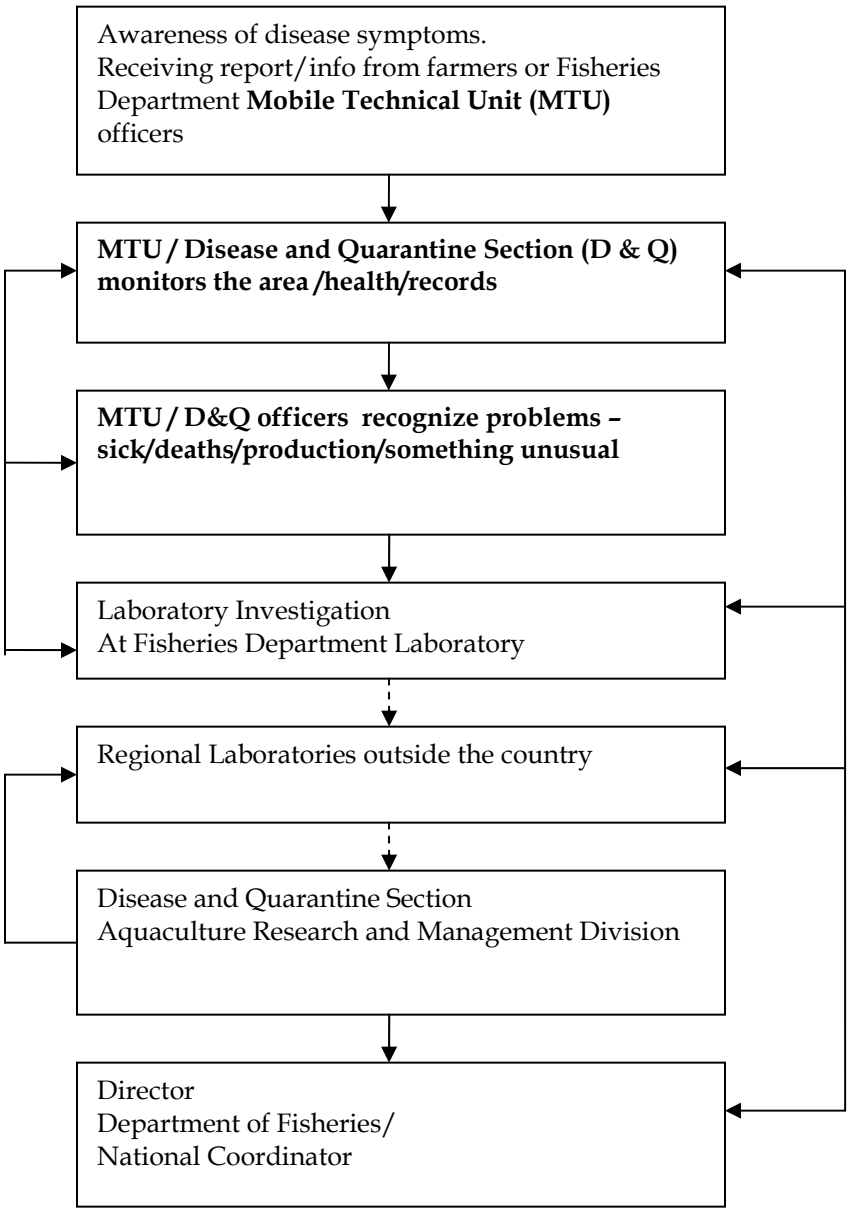
The commitment, integral networking and involvement of aquaculture stakeholders (government, research institutions, universities, private companies, farmers) are necessary to gain a successful surveillance and reporting implementations. Good information management system and communication are therefore, needed to support effective surveillance and reporting systems.

B.5.1. BRUNEI DARUSSALAM

Flowchart of Reporting Based on Surveillance (Passive) for Brunei Darussalam using Level I Diagnosis

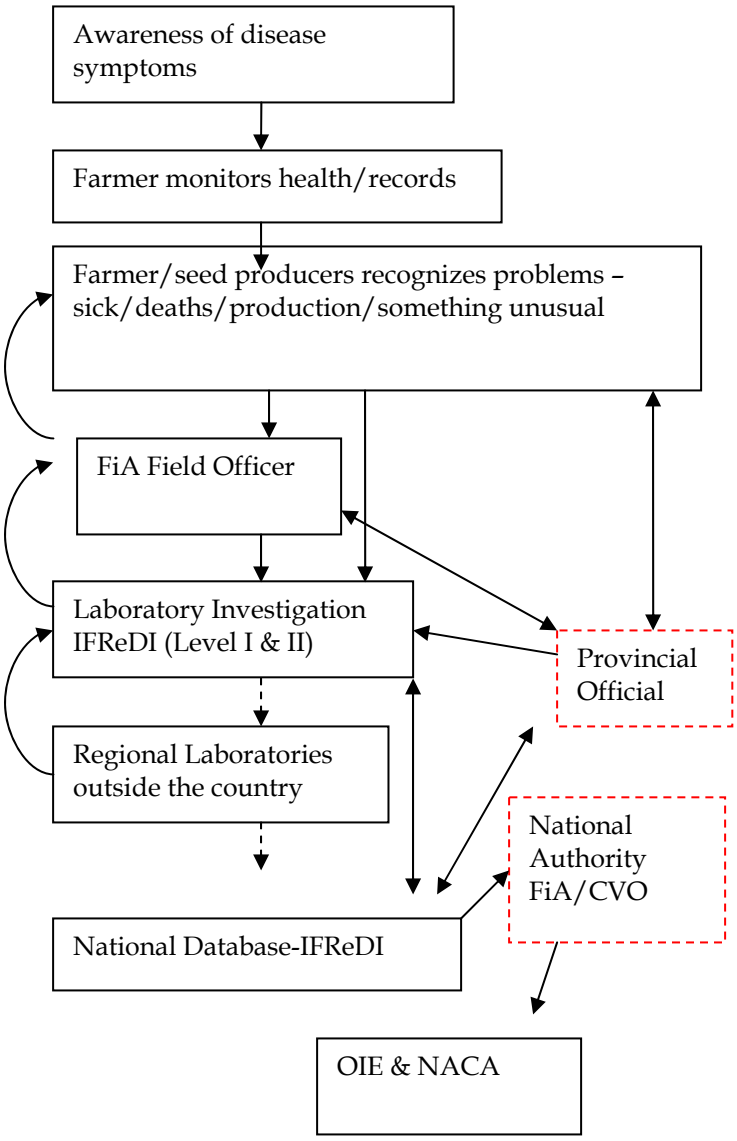


Flowchart of Reporting Based on Surveillance (Active) for Brunei Darussalam using Level I Diagnosis



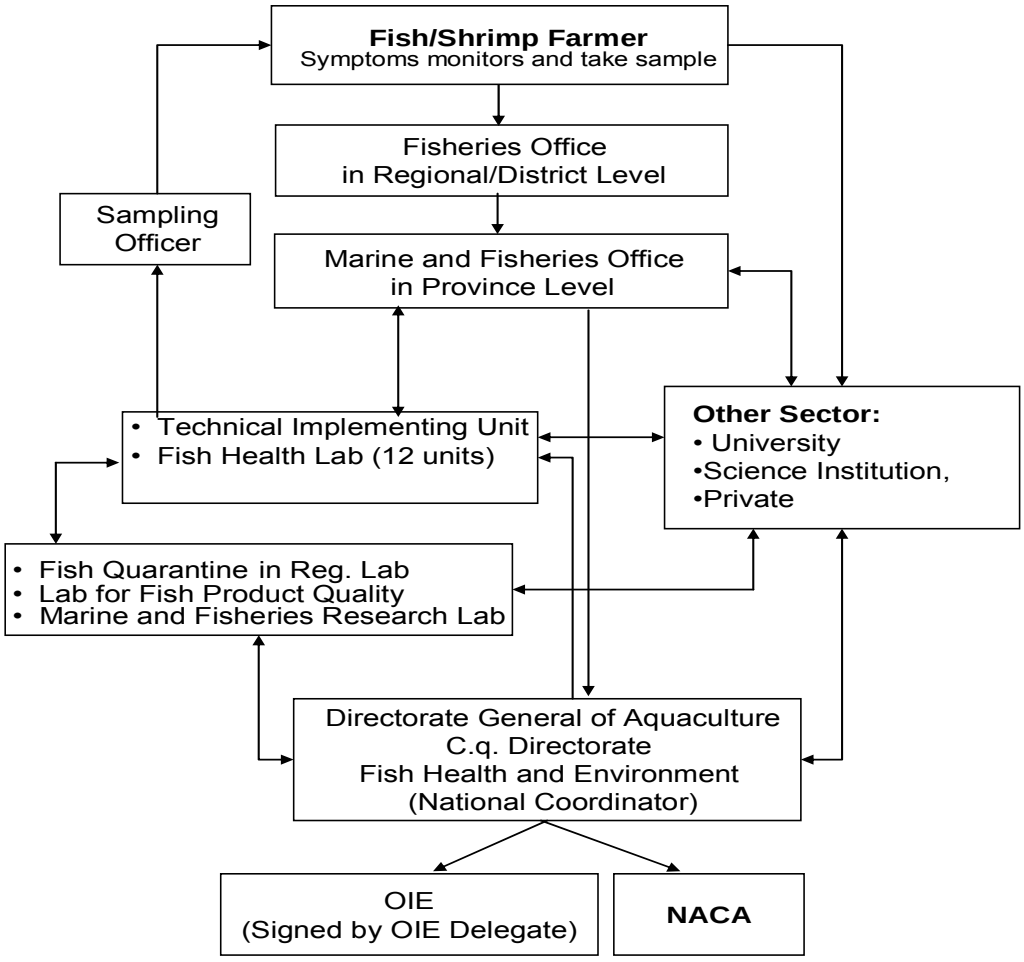
B.5.2. CAMBODIA

Flowchart of reporting based on surveillance (Passive) for Cambodia using level I diagnosis

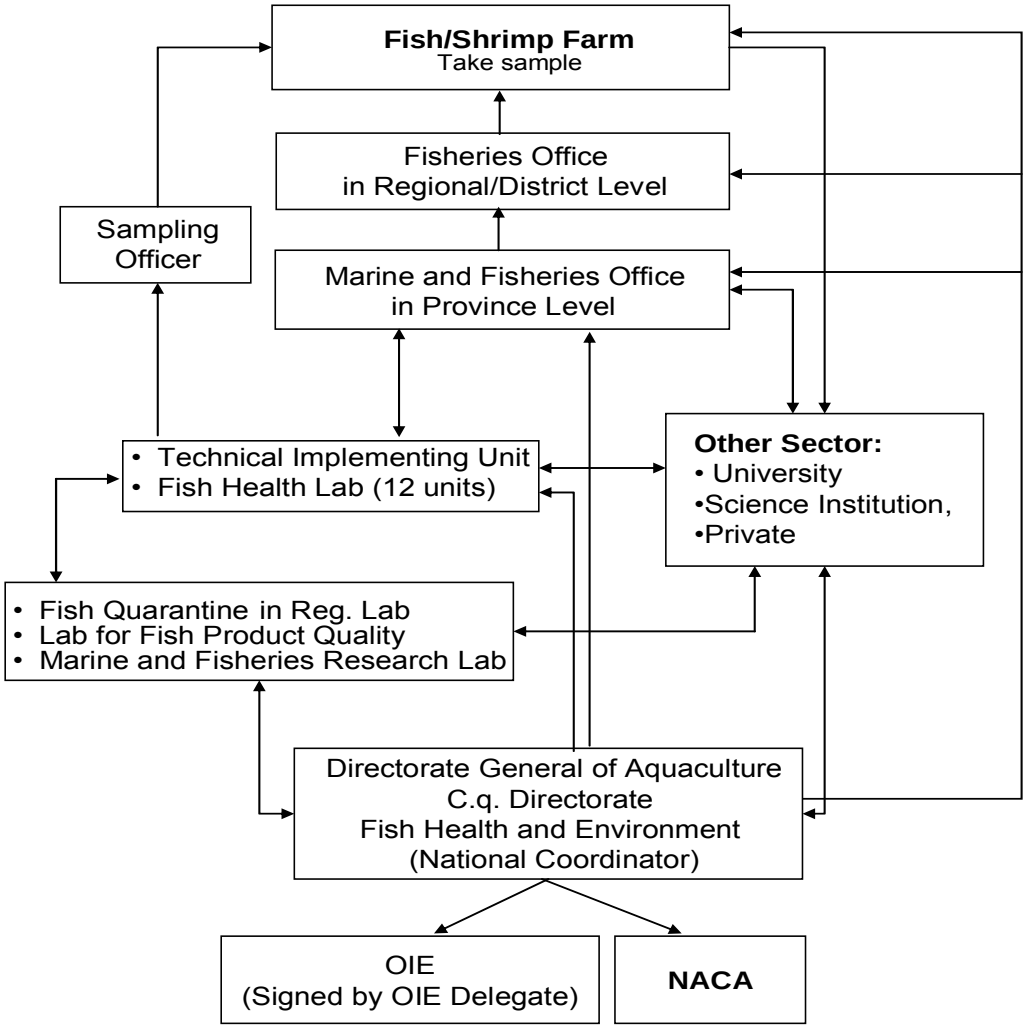


B.5.3. INDONESIA

Flowchart of Existing Reporting System Based On Surveillance (Passive) for Indonesia Using Level 1Diagnosis

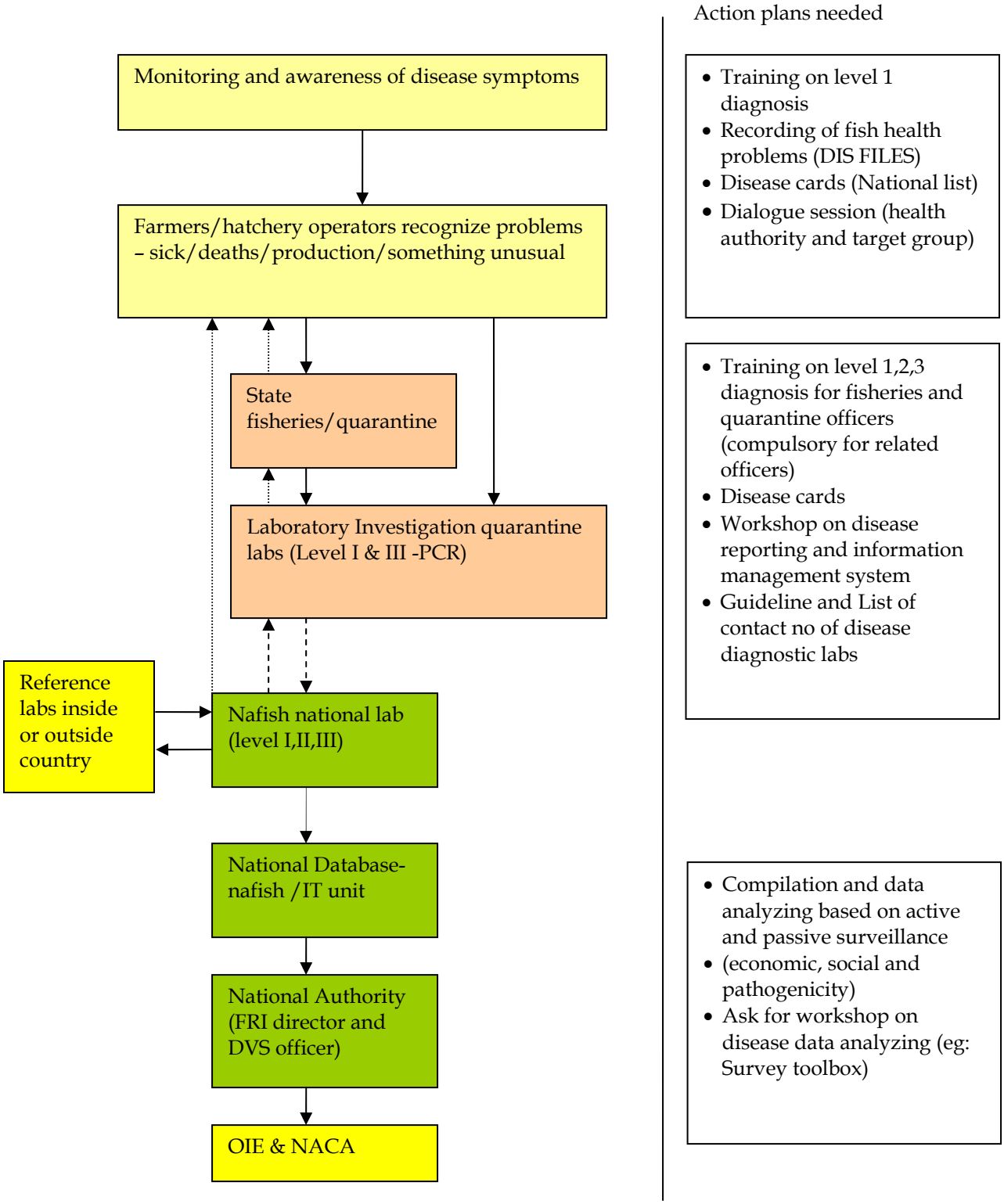


Flowchart of Existing Reporting System Based On Surveillance (Active) for Indonesia Using Level 1 Diagnosis



B.5.4. MALAYSIA

Flowchart of reporting based on passive surveillance for Malaysia



Based on the existing flow of reporting cases of fish disease problem handled particularly by NaFisH, and most other Research and Quarantine Centres in DOF.

DOF Malaysia has a set of reporting data set that is available in Bahasa Malaysia for the field officers to fill, when attending to fish disease problem at site. This will be sent to the lab officers to refer and record before proceeding to test the samples and examined. Below is the sample form and data set that is taken from the reporting farmers.

Data set for collecting information used for reporting

Some of the key information that could be considered includes:

1. Case code/Identification code-year, species, case number
2. Name of the farmer(s) and contact number
3. Address / GPS location
4. Date (Time/season)
5. Name of the affected species or host
6. Size (cm or g) of the affected species
7. case history
   - Nature of mortality (low/medium/high)
   - Duration of mortality (one time/daily)
   - Nature of spread (one pond/several ponds)
8. Wild or Cultured?
9. Type of culture systems: Pond (close, semi close, open), cage, pen, Mono or poly-culture?
10. Type of feed (fresh trash fish/pellet)
11. Water sampling and analysis (use of test kits)
12. External Clinical signs (Gross pictures, if possible)
13. **Presumptive diagnosis (Level I Diagnosis)-Can stop here**
14. Whether sample collected for laboratory investigation? Yes/No
15. If Yes, Sample code (06CC0001-1,2,3,4,5)
16. Fresh smears
17. Microscopy
18. Microbiology
19. histopathology
20. Molecular biology
21. **Confirmed diagnosis**

Form for diseases case reporting by public:

ADUAN PENYAKIT/KEMATIAN IKAN/UDANG

DIISI OLEH PENGUSAHA/PENGADU (Tandakan √ di dalam kotak)

A. MAKLUMAT PENGUSAHA/PENGADU

1. Nama Pengadu :_____

2. Nombor KP Pengadu:_____

3. Tarikh Aduan :_____ 4. Rujukan Fail:_____

5. Nama & alamat Ladang: _____

_____

B. MAKLUMAT ADUAN

1. Tarikh Kejadian :_____ 2. Masa Kejadian:_____

3. Punca Kejadian : ☐ Penyakit ☐ Pencemaran ☐ BencanaAlam

☐ Racun ☐ lain-lain; nyatakan_____

4. Ikan/Spesis Terlibat :

	Ikan/Spesis	Jumlah kematian	Saiz	Anggaran Nilai (RM)
1				
2				
3				

5. Sistem ternakan

	Kolam Tanah/Lapisan Plastik		Pancang		Tangki Gentian Kaca
	Sangkar		Para		Tangki Kaca
	Dasar		Pen		Tangki Konkrit
	Bekas Lombong		Rakit		
	Lain-lain;Nyatakan				

C. MAKLUMAT PEGAWAI PERIKANAN YANG MENERIMA ADUAN

Nama :_____ Jawatan :_____

Alamat Tempat Bertugas :_____

_____ _____

Tandatangan Tarikh

D. STATUS KES

Status	Tandakan(/)	Tarikh Mula	Tarikh Tamat
Dalam Siasatan			
Dalam Diagnosa/Kajian			
Tamat			

Form for field examination for the case of disease/mortality:

SIASATAN PENYAKIT/KEMATIAN IKAN/UDANG

DIISI OLEH PEGAWAI PERIKANAN YANG MEMBUAT SIASATAN (tandakan √ di dalam kotak)

A. MAKLUMAT PENGUSAHA

1. Tarikh Siasatan :_____ 2. Masa Siasatan:_____

3. Maklumat Pengusaha adalah berdasarkan pada borang aduan

B. CIRI-CIRI TERNAKAN

Jenis/Spesis	Jumlah Ternak	Jumlah Mati	Saiz (cm)	Tempoh Ternakan	Punca Benih

C. KENALPASTI MASALAH

1. Tarikh Kejadian:_____ 2.Tarikh Kematian Mula Berlaku :_____

3. Bilangan Mati Sehari : _____

4. Pernah Masalah Berlaku? : ☐ Tidak ☐ Ya; Tarikh berlaku :_____

Sila isikan maklumat 5-8 dibawah sekiranya melibatkan pengusaha

5. Rawatan yang dibuat :_____

6. Jenis makanan :_____7. Kuantiti Sehari :_____

8. Keadaan Makanan : ☐ Segar ☐ Busuk; Simpan _____ hari

9. Cara Kematian :

	Secara Serentak		Berterusan		Berselang Hari
	Lain-Lain (Nyatakan) :				

10. Bila Kematian Berlaku :

	Waktu Siang		Waktu Malam		Cuaca Mendung		Cuaca Panas
	Selepas Hujan		Lain-Lain (Nyatakan)				

11. Perlakuan Ikan :

	Biasa		Berenang Tegak		Berpusing-pusing		Tanpa Hala
	Kurang Aktif		Berenang Terbalik		Meloncat-loncat		Menggesel Badan

	Mengasing Diri		Lain-lain (Nyatakan) :

12. Tanda-tanda Penyakit :

	Insang	Sirip	Badan	Mata

13. Keadaan Jaring : (**Sila isikan sekiranya melibatkan pengusaha**)

	Kekotoran jaring		Sedikit		Teruk		
	Pertukaran Jaring		Seminggu		Dua Minggu		Sebulan

14. Persekitaran ternakan/lokasi :

	Aktiviti berhampiran premis		Kedalaman air _____ m	
	Air belum ditukar ___ hari		Dasar Kolam Kotor/Hitam	
	Berlebihan Makanan		keadaan system Pengudaraan	

15 Mutu Air

Mutu Air	Dalam Sistem Ternakan/Lokasi	Luar Sistem Ternakan/Lokasi	Punca Air
Fizikal (bau/warna)			
Kemasinan (Saliniti)(ppt)			
*Suhu (°C)			
*pH			
*Oksigen Terlarut (DO)			
*Ammonia			
Nitrit			
Nitrat			
Besi			
Jum. Pepejal Terapung (T.S.S)			

Nota : Maklumat bertanda *, mesti diisi.

D. MAKLUMAT PEGAWAI PERIKANAN YANG MEMBUAT SIASATAN

Nama :_____

_____ _____

Tandatangan Tarikh

Form for Reporting of diagnostic results:

LAPORAN DIAGNOSA IKAN/UDANG

DIISI OLEH PEGAWAI PERIKANAN YANG MEMBUAT DIAGNOSA [tandakan √ di dalam kotak]

A. MAKLUMAT AM

1. Tarikh Laporan :_____ 2. No. Rujukan :_____

3. **Maklumat Pengusaha adalah berdasarkan pada aduan**

4. Salinan Kepada :_____

B. MAKLUMAT SAMPEL

1. Lokasi Siasatan :_____

2. Tarikh Siasatan :_____

4. Jumlah sample diperiksa: 5. Saiz Ternakan:_____cm

6. Keadaan sample (hidup/mati) :_____

7. Organ yang diperiksa :

8. Analisa yang dijalankan:

Bakteriologi		Parasitologi		Virologi		Histopatologi	

C. KEPUTUSAN MAKMAL

Bakteriologi	
Parasitologi	
Virologi	
Histopatologi	

D. ANALISA MUTU AIR

Parameter	**Sampel Air**	**Julat Optima**
Kemasinan (Saliniti) (ppt)		
Suhu (°C)		
pH		
Oksigen Terlarut (DO)		
Ammonia		
Nitrit		
Besi		
Jum. Pepejal Terapung (T.S.S)		

E. ULASAN

F. CADANGAN

G. PEGAWAI PELAPOR

Nama :_____

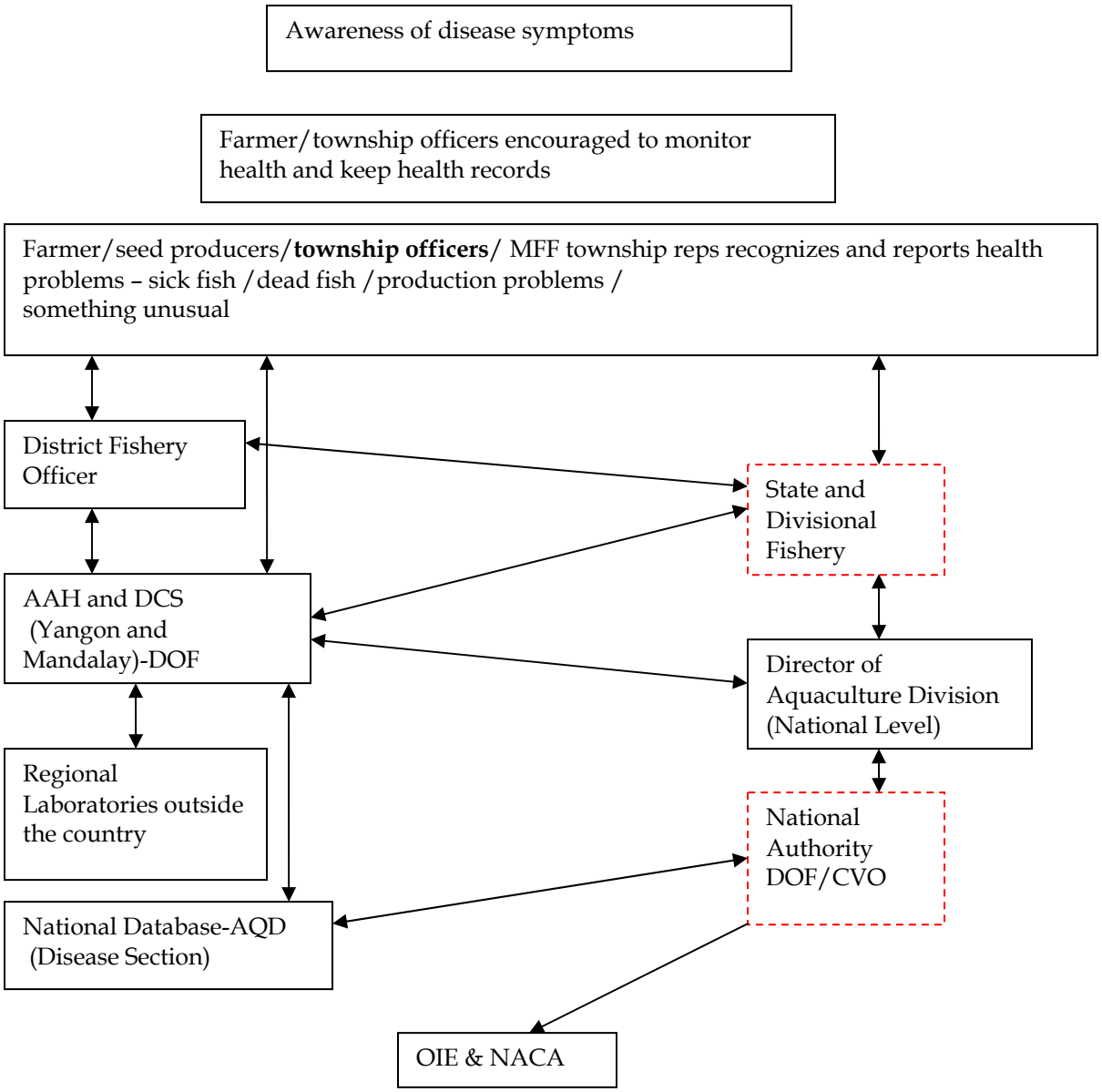
_____ _____

Tandatangan Tarikh

In NaFisH, the report form is compiled for reference when examination and result is obtained. If further details are needed, the farmers will be contacted. If enough data available, results will be sent to the farmers as well as one copy to the field officer. Prior to sending, farmers are usually contacted. All of the report and result forms are compiled and kept before analyzed at the end of the year.

B.5.5. MYANMAR

Flowchart of surveillance level I diagnosis



Information received is disseminated to all National Committee members and provisional fishery officers.

B.5.6. PHILIPPINES

Disease Surveillance and Reporting System

Regional Offices

At the regional offices, the food safety management is under the responsibility of BFAR regional directors located in 15 regional offices. Each has a Fish Health Unit, linked to the central FHS.

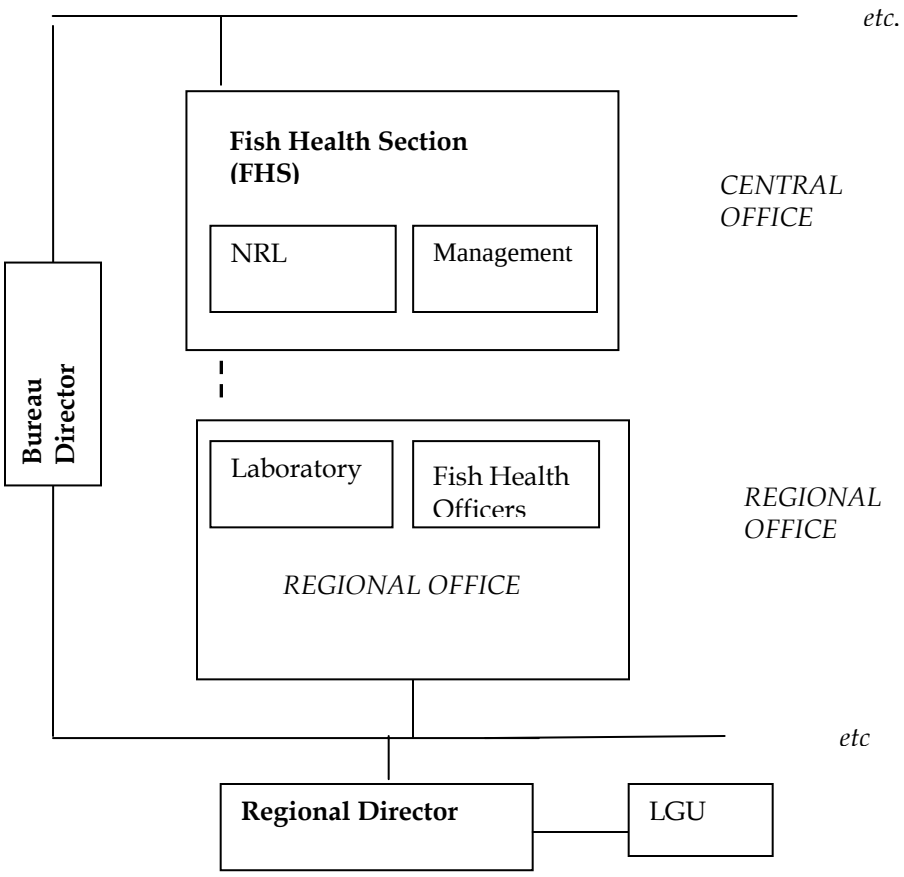
Disease Monitoring and Surveillance management and infrastructures

The disease surveillance is implemented by the FHS in coordination with the 15 BFAR Regional Offices. The regional directors have full responsibility over their area of jurisdiction. However, matters of policy-determining nature still lie under the jurisdiction of the Bureau Director. The organizational structure and coordination between regional and central offices and reporting is presented separately.

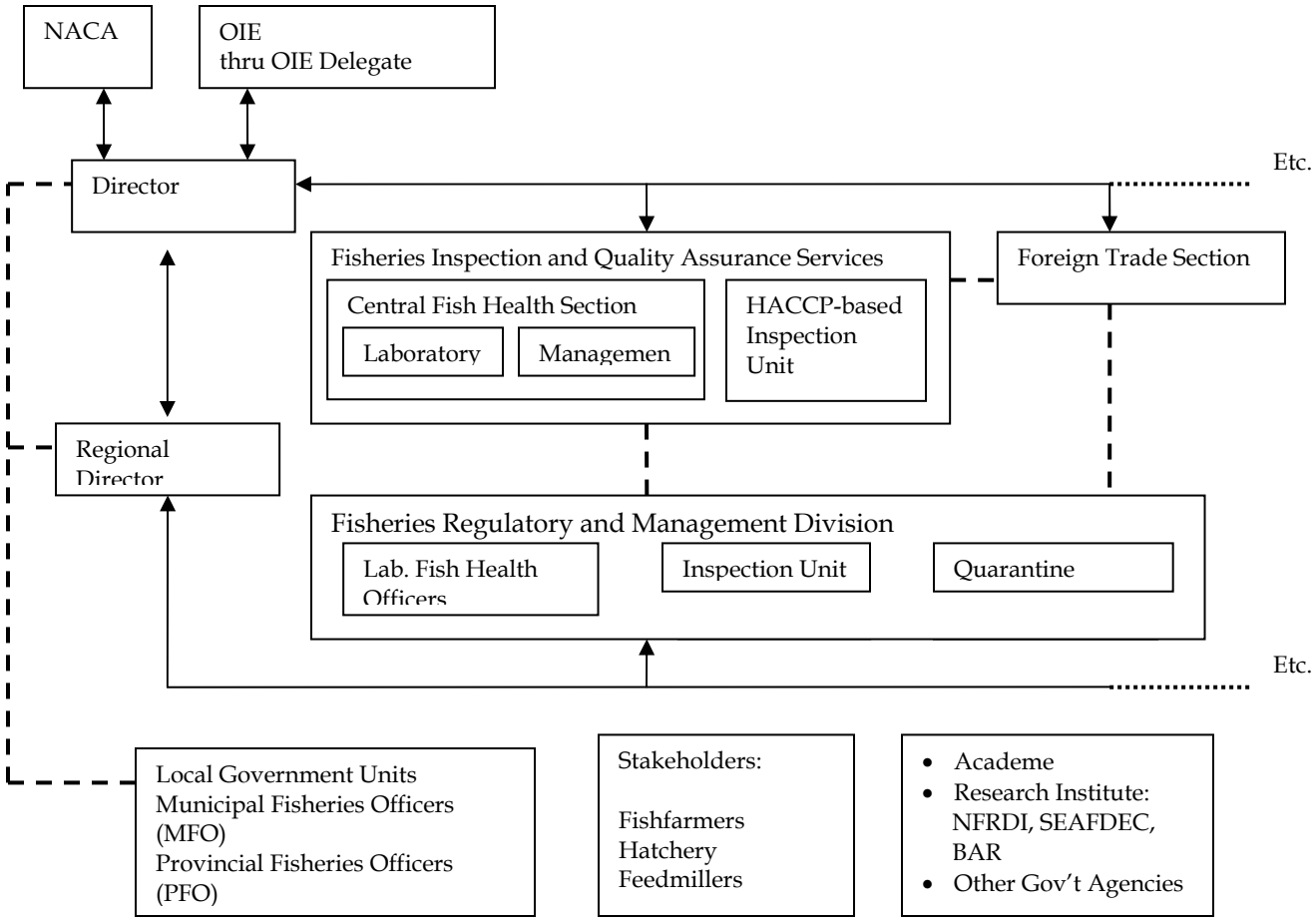
National and Regional Fish Health Officers:

- Register exporter and gatherer/trader farms;
- Monitor the hygiene of production;
- Disseminate information and educate the aquaculture chain operators on the importance of disease control i.e. quarantine new stock;
- Public and country awareness on the importance of diseases;
- Conduct surveillance and monitoring of diseases in their areas of responsibility;
- Assist in planning, directing and supervising national programs on disease control and surveillance;
- Assist in the registration, evaluation and inspection of aquafarms and exporters engaged in the distribution and sale of aquatic animals, whenever necessary.

Organizational structure for disease surveillance and monitoring and coordination between regional and central departments



Philippines Disease Surveillance and Reporting System



Disease Reporting/Surveillance Form :

Republic of the Philippines
Department of Agriculture
Bureau of Fisheries and Aquatic Resources

Disease Reporting/Surveillance Form

Sample Code: _____ Date : _____

Name of Operator : _____ Farm Registration No:_____
Address: _____
Tel. No: _____ Fax No: _____
Name of Farm/ location (Complete
Address):_____

A. Species and Culture Information (Please check appropriate box)
[ ] Shrimp [ ] Tilapia [ ] Milkfish [ ] others, specify
_____
[ ] wild [ ] hatchery
Culture type:
[ ] pond [ ] tanks [ ] Cage [ ] pen [ ] others (specify)_____
Productive area (m^2): _____ No. of compartments: _____
Stocking density : _____ Days of culture : _____
Culture period: _____
Type of feed: [ ] trash fish
[ ] Commercial feed, Brand: _____
Production Date: _____
Batch/Lot No. _____
[ ] others (specify) _____

B. Disease Information
Size affected:
[ ] fry [ ] fingerling [ ] Juvenile [ ] Marketable size [ ] Others (specify)
_____
Mortality (estimated number): _____
Finfish: [ ] ulcer [ ] tail rot [ ] fin rot [ ] scale loss [ ] bulging eyes
[ ] enlarged abdomen [ ] abnormal swimming behavior [ ] others, specify
_____

Shrimp: [ ] reddish discoloration [ ] brown gills [ ] black gills [ ] soft shelling [ ] fouling
[ ] white spots [ ] surfacing [ ] lack of appetite [ ] abnormal swimming behaviour
Others, specify _____

Mollusc: [ ] shell deformities, fraglity or repair, fouling [ ] inner shell fouling, abnormal coloration/smell

[ ] pearls attached to inner surface [ ] soft tissue lesions [ ] presence of parasites or commensals
[ ] others (specify) _____

Seaweeed: [ ]Loss of gloss [ ] whitish/paling of thali [ ] pitting [ ] thali breakage [ ] tip discoloration [ ] tip darkening [ ] slow growth [ ] epiphytism & fouling [ ] others (specify)_____

C. Water Quality

Color of water _____ Transparency (cm) _____ pH _____ DO (mg/L) _____
Temp (^{0}C) _____ Salinity (ppt) _____ Other parameters _____
Time water quality parameters taken _____ AM _____ PM

D. Remedial Measures Taken:

Treatment/medication applied : [ ] No [ ] If yes, specify
_____
Water change: [ ] No [ ] If yes, specify
_____

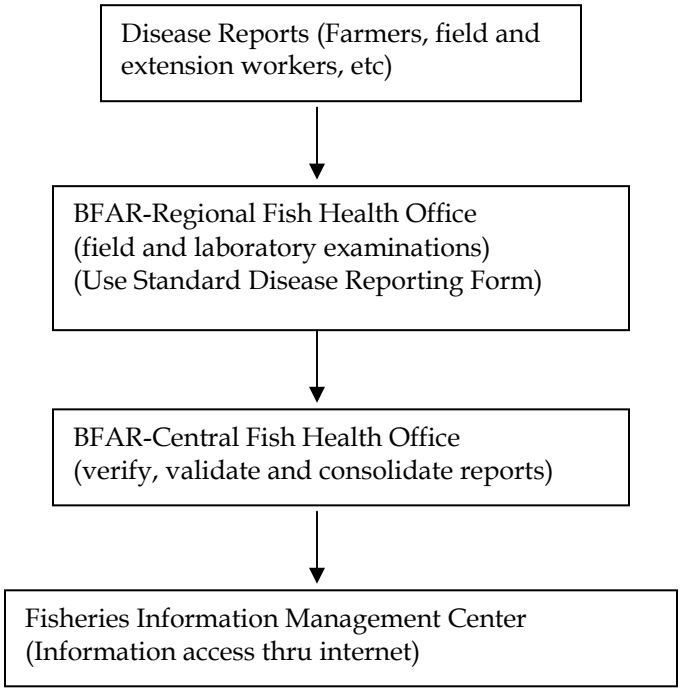
E. Action Taken:

_____

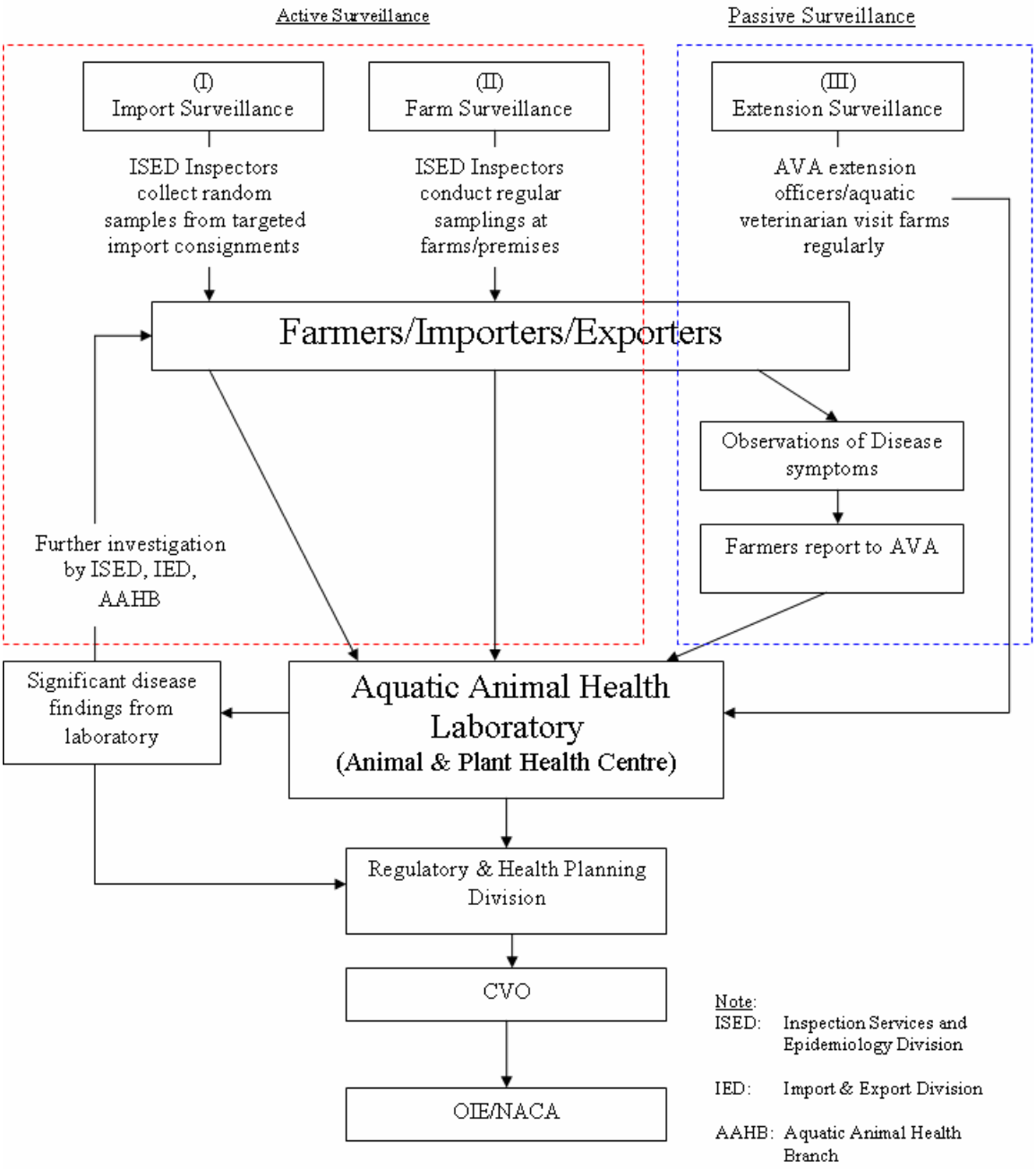
_____ _____
Regional Fish Health Officer **Farm Representative**

Information Management System is still being developed and the existing Fisheries Information System at BFAR will be utilized for this purpose. The following figure is a preliminary draft of the proposed plan for implementation

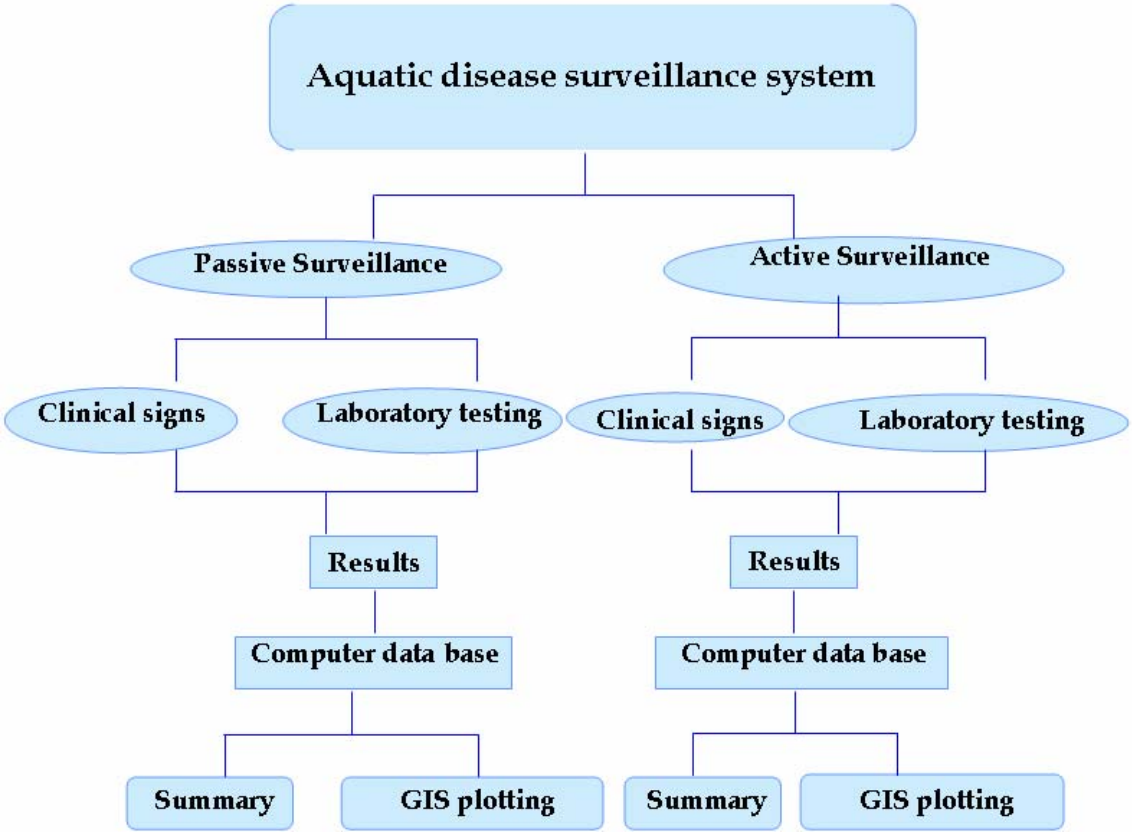
Flowchart of Information Management System

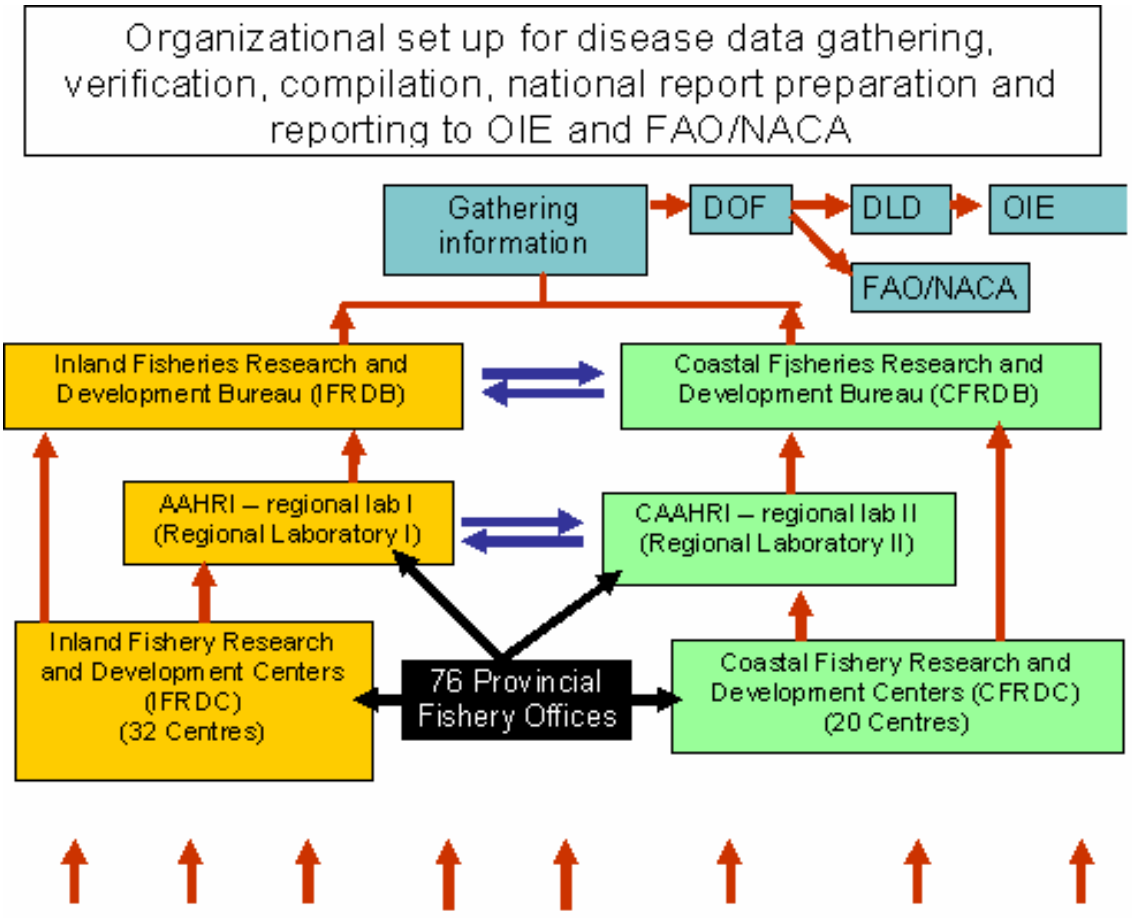


B.5.7.SINGAPORE



B.5.8. THAILAND




Organizational set up for disease data gathering, verification, compilation, national report preparation and reporting to OIE and FAO/NACA
Gathering information
DOF
DLD
OIE
FAO/NACA
Inland Fisheries Research and Development Bureau (IFRDB)
Coastal Fjsheries Research and Development Bureau (CFRDB)
AAHRI – regional lab I (Regional Laboratory I)
CAAHRI – regional lab II (Regional Laboratory II)
Inland Fishery Research and Development Centers (IFRDC) (32 Centres)
76 Provincial Fishery Offices
Coastal Fishery Research and Development Centers (CFRDC) (20 Centres)

B.5.9. VIETNAM

The key fisheries provinces have established surveillance system (farmers-field officer-station-provincial sub-directorate) to report diseases status to NAFIQAVED monthly and in case of emergencies

NAFIQAVED has set up a reporting system to collect information for NACA quarterly report from provincial level.

During October 2006, NAFIQAVED developed a pilot program on surveillance of SVC, KHV on aquarium carp.

Centre for Environment and Disease monitoring in Aquaculture from RIA1,2,3 also apply passive and active surveillance system for disease on main culture species. The information is uploaded in to a website hosted at Ministry of Fisheries.

Ministry of Fisheries also funded 3 year project on applying IT for Environment and disease surveillance.

B.6. Contingency Planning and Emergency Preparedness

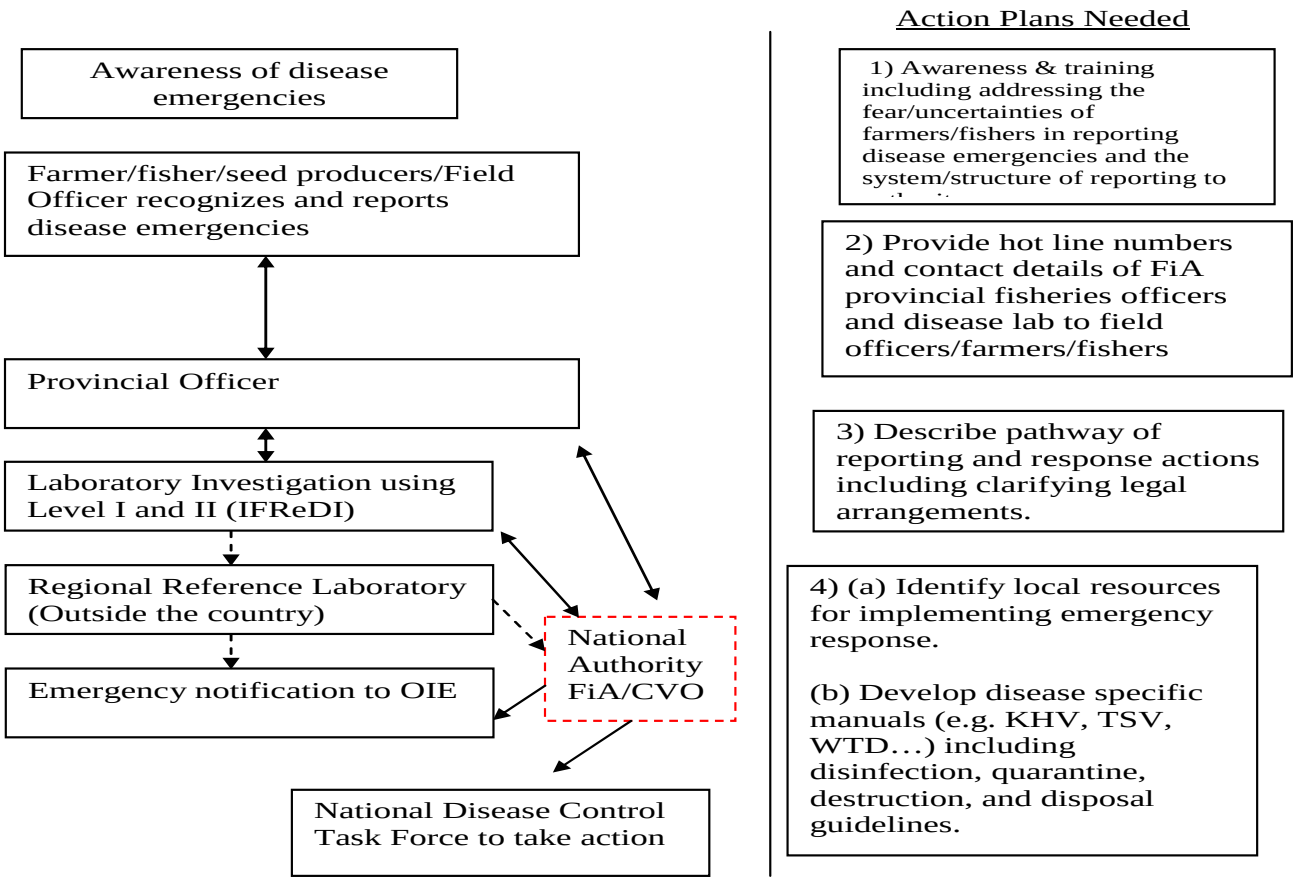
The purpose of this section is to identify and compile the information regarding contingency planning and emergency preparedness for exotic/emerging aquatic animal disease in ASEAN member countries.

Effective contingency planning ensures that all requirements are defined and available to ensure control of a potential disease emergency, and that these resources can be activated and deployed promptly. Therefore, establishment a clear structure of authority for effective decision-making and action is essential.

Advance planning and rapid action can significantly reduce the social and economic impacts of aquatic animal disease, as well as control or reduce spread. Under rare, but opportune, circumstances, contingency planning may even be effective in eradicating the disease agent.

By having contingency planning, country can provide a rapid and planned response for containment of a disease outbreak which can greatly reduce the impact, scale and costs of the outbreak.

B.6.1. CAMBODIA



B.6.2 INDONESIA

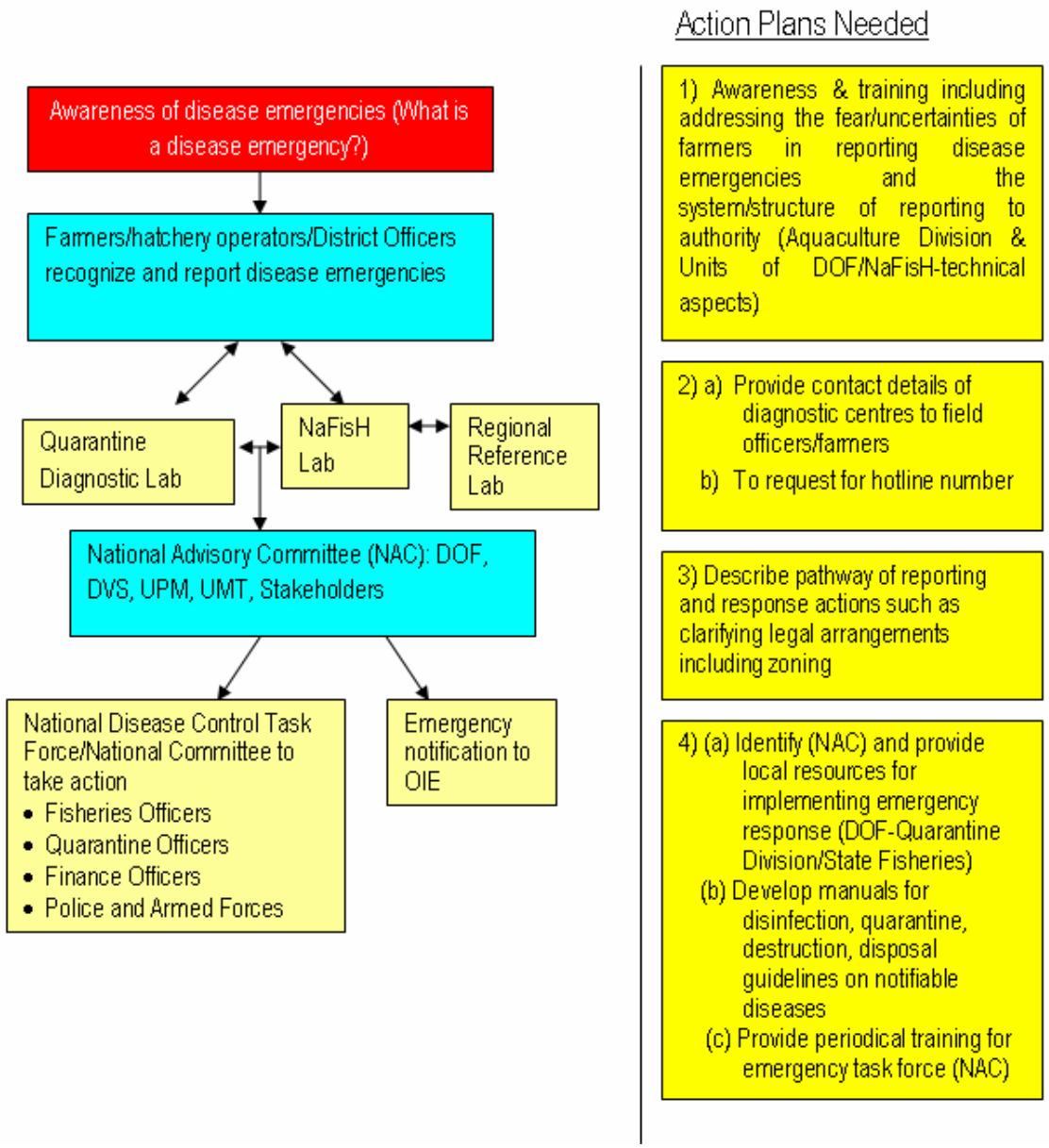
In general, contingency planning has no been developed yet. But, in case of KHV, contingency planning has been administered.

Emergency notification system:
Notification produced by MMFA or DGA based on report and deeply studied by DFHE and TIU

B.6.3. MALAYSIA

Currently does not have contingency planning for exotic or emerging diseases. Have a task force on Invasive Alien Species (IAS), that also covers in one way or another, exotic diseases.

Flowchart for Contingency planning/Emergency preparedness for Malaysia



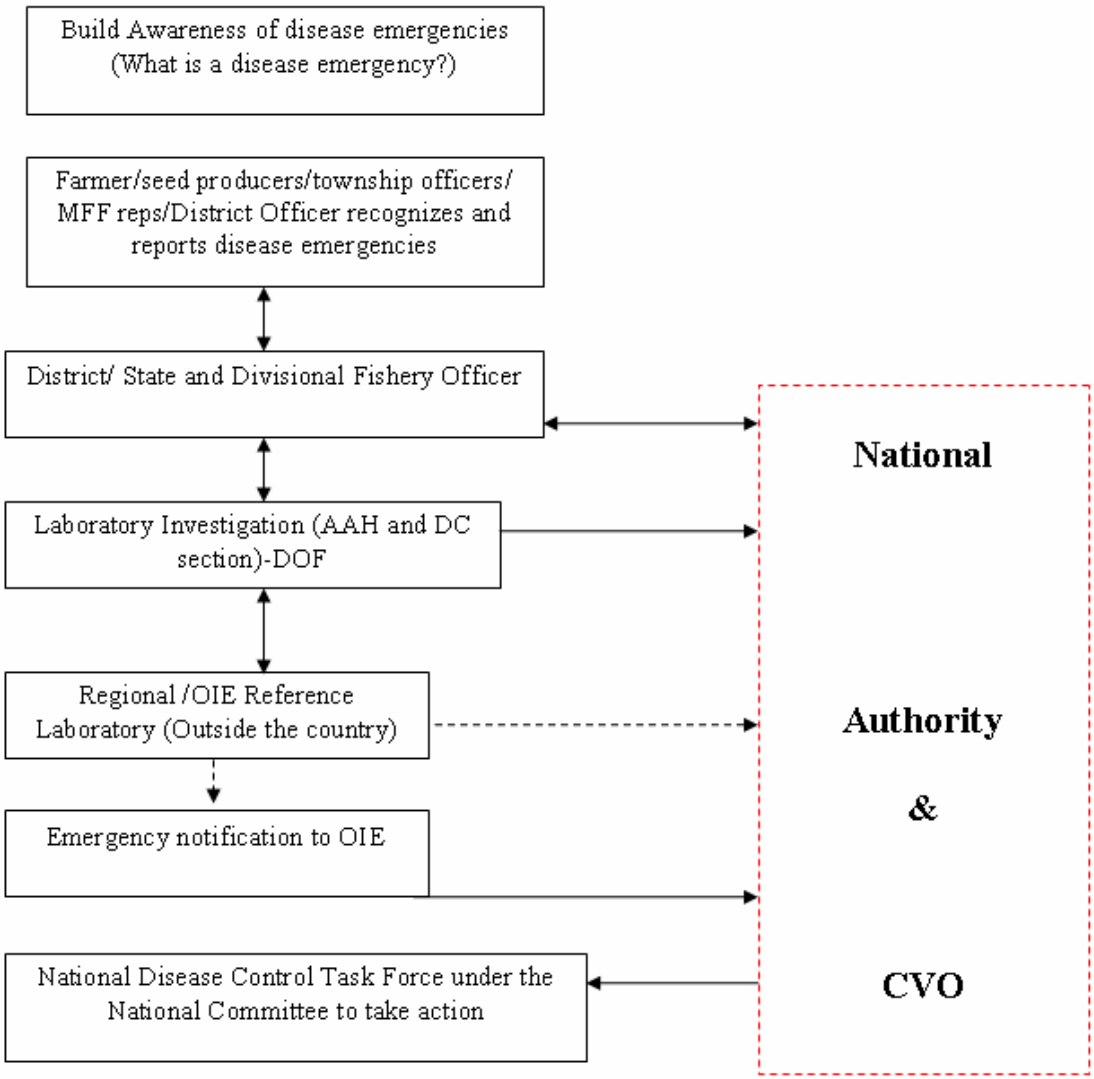
Malaysia currently does not have proper emergency notification system for fish disease problems as compared to the avian and livestock disease problems. For example, in the case of recent suspected case of KHV in koi, the Quarantine

personnel only informed those farmers that exported the koi, but not relaying the information to NaFisH. However, they were quick in banning the imports of koi from Indonesia and Japan (unregistered farms). The immediate action taken managed to prevent any entry of diseased or carrier koi.

B.6.4. MYANMAR

Draft of Myanmar National Contingency Planning has been prepared and submitted to the Director General of the Department of Fisheries. There shall be some amendment by the Head Office Level. It is expected to be approved and that shall be sent to the project of in NACA for preliminary information, the Draft National Contingency Planning for Exotic / Emergency Disease is:

Contingency planning/Emergency preparedness



Emergency notification system has been set up between DC, Head office and provisional fishery officers.

B.6.5. PHILIPPINES

So far, no written contingency plan. However, Action has been taken for disease emergency (KHV)

- June 2002-temporary suspension of carp importation-Indonesia outbreak (mass mortalities of koi and common carp-report from NACA)
- July 2002-temporary suspension lifted (after consultation meeting with the stakeholders). KOI importation (consider countries with no KHVD reports)
- January 2004-BFAR issued temporary suspension of koi carp importation -JAPAN Outbreak of KOI HERPES VIRUS
- August 2004 -2nd consultation meeting attended by government agencies, scientists, koi breeders, importers, hobbyist (unanimously agreed to developed diagnostic/detection test for KHV as one requirement before lifting the suspension)
- October 18-22, 2004 – BFAR Fish Health Staff training on PCR for KHV at SEAFDEC Fish Health Laboratory
- October 25, 2004 – starts the proficiency and optimization of PCR protocol for KHV at BFAR-Central Office, Fish Health Lab. (with technical assistance from SEAFDEC)
- Sampling of koi from pet shops, hatcheries/breeders
- November 03, 2004- Approval of Fisheries Memorandum Order for Lifting the suspension of koi and common carps importation
    - Import Permit shall only be issued after complying all the requirements (among others, health certification and quarantine)
    - Continue awareness for KHVD (field officers, koi farmers)
- November 2004-Present - continue surveillance for KHV in collaboration with SEAFDEC

At present, to prevent the entry of unwanted foreign species, the Department of Agriculture (DA) is currently revising the existing policy and procedures on importation.

Disease surveillance and monitoring are done on ten percent of the registered farms. Preliminary conditions during monitoring is that registered farms are informed that they must give access to all buildings, premises, installations or other infrastructures, and that they must make available any documentation required by the law. You must also make sure that they know that some official controls must be conducted without warning.

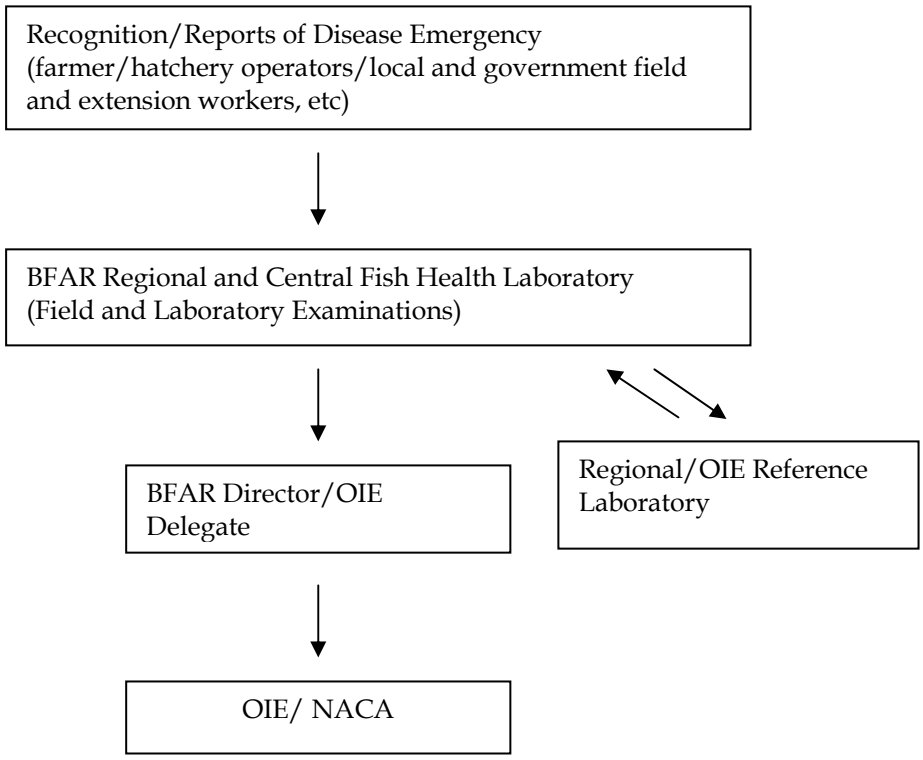
Whenever official visit are done samples are taken when necessary, sampling is unforeseen, unexpected and effected at no fixed time and on no particular day of the week. Sampling is carried out in variable intervals spread over the whole year at the aquaculture farms.

The farm visit is defined for each region by the FHS with the objective of making this visit homogeneous during the whole calendar year. The Regional Fish Health Officers choose the farms, using as much as possible targeting criteria set either by statistics or by risk analysis.

If during the course of the activities held by the Fish Health Section comes out any suspicion or evidence that a significant disease like KOI Herpes Virus or mass mortality occurred in their area of responsibility, the Central Fish Health Officers were notified immediately, so that they can take the appropriate measures.

When disease is detected, alert is immediately given to the director of BFAR, in order to avoid spread of the disease. The monitoring and surveillance were part and parcel of the National Residue Monitoring Program in compliance with the requirements of trading partners

Flowchart of Emergency Notification System

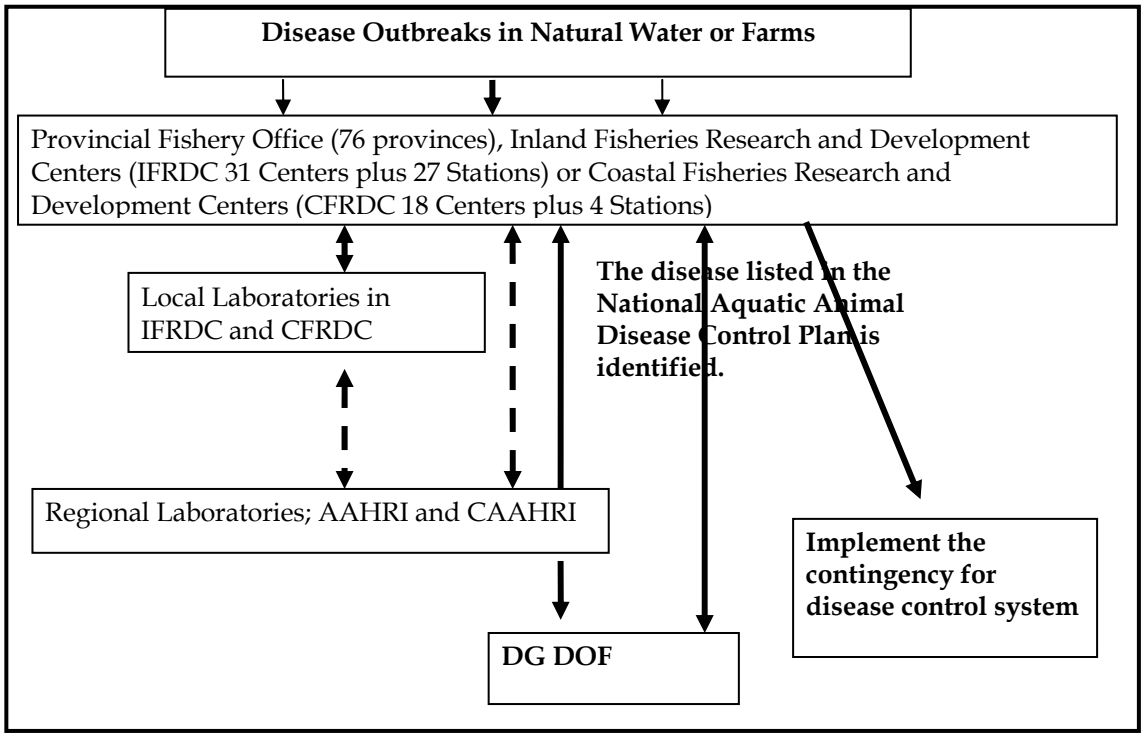


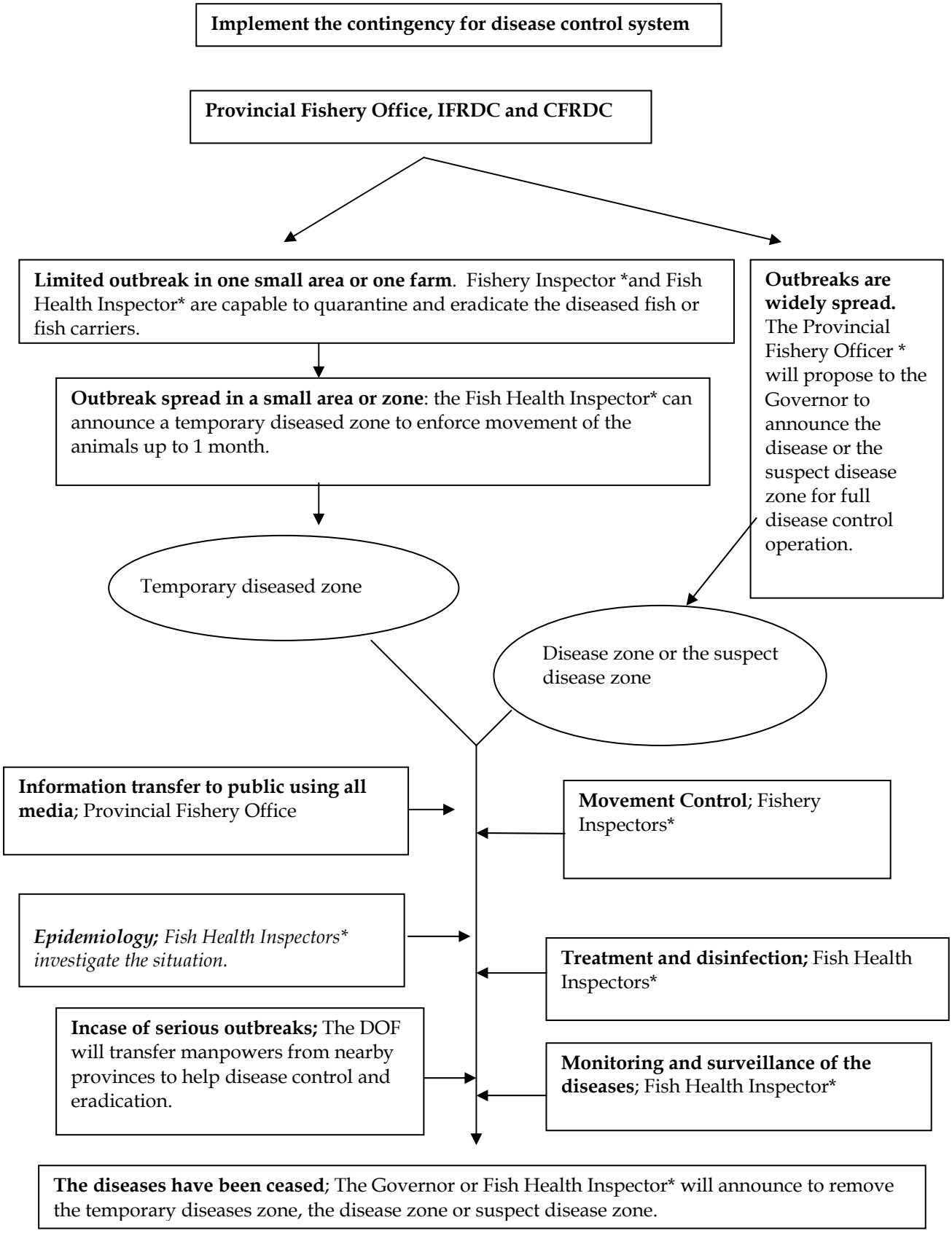
B.6.6. SINGAPORE

Generic contingency plan currently under development

B.6.7. THAILAND

Contingency Planning for Exotic/Emerging Disease





* have been authorized as Authorized Veterinarian under the Ministerial Notification dating on July 19, 2006 and as Authorized Veterinarian Inspector under the Departmental Notification dating on November 10, 2004 of the Animal Epidemic Act.

Thailand DOF has been developing the Emergency Notification System. The system is aiming for importance aquatic diseases and exotic diseases such as SVCV and KHV.

B.6.8. VIETNAM

This issue has been raised at different meetings, however it is still at discussion of NACAAH.

B.7. Aquatic Animal Health Certificate

The purpose of this section is to compile information about different health certificates used in ASEAN member countries.

Health certification is one strategy aimed to protect the natural environment and native faunas from the deleterious impacts of exotic species and/or diseases. Health Certificate (HC) is a legal document from health certification process which is used especially for the purpose of trans-boundary trade in living aquatic animals and applying quarantine measures.

Current requirements for, and levels of, aquatic animal health certification vary greatly within ASEAN countries. Some countries have highly protective policies, supported by legislation, to ensure importations of aquatic animals are free from specific pathogens. Disparity in health certification requirements among ASEAN member countries means that the vulnerability of aquatic resources differs between countries. In order to enhance trade and reduce risk of disease spread, therefore a harmonization in health certification across the region is needed.

Each country has the right to develop health certification protocols to meet their own the requirements. Internationally (OIE) and regionally (QAAD) listed diseases should be considered as a basic component for all aquatic animal health certification programs.

B.7.1. BRUNEI DARUSSALAM

a. Licence of export-import and transit

Salinan Asal
Original

B No. 034584

جباتن ڤرايكانن

JABATAN PERIKANAN
KEMENTERIAN PERINDUSTRIAN
DAN SUMBER-SUMBER UTAMA
NEGARA BRUNEI DARUSSALAM

AKTA PERIKANAN (PENGGAL 61)
FISHERIES ACT (CHAPTER 61)

LESEN MENGIMPORT/MENGEKSPORT/MEMBAWA SINGGAH IKAN
LICENCE FOR IMPORT/EXPORT/TRANSIT OF FISH

Nama/*Name* : .....

Alamat/*Address* : .....

Adalah dengan ini dibenarkan menurut syarat-syarat Akta Perikanan (Penggal 61) dan Peraturan-Peraturan Kastam yang bersangkutan untuk mengimport/mengeksport/membawa singgah kuantiti seperti berikut :

Is hereby authorised to import/export/have in transit under the terms and conditions of the Fisheries Act (Chapter 61) and under the relevent Custom Regulations the following quantities of

Ikan/*Fish* : .....

Kerustasia/*Crustacea* : .....

Haiwan Molusk/*Molluscs* : .....

Lain-lain hasil di air : .....
Other aquatic products

Bagi tempoh mulai : ..... hingga : .....
During the period from *to*

Untuk kegunaan/*For the purpose of* : .....

Tempat Masuk/*Point of Entry* : .....

Tempat Keluar/*Point of Exit* : .....

Dijelaskan melalui No. Resit : ..... ($)
Paid as Receipt No.

Lesen ini adalah tertakluk kepada syarat-syarat tambahan berikut :
This licence is subject to the following additional conditions

1. Syarat-syarat lesen tambahan ke atas mengimport, mengeksport dan membawa singgah ikan disertakan bersama.

.....

.....

.....

.....

Tarikh : .....
Date

.....
Pegawai Melesen Perikanan
Fisheries Licensing Officer

JPK/2000

b. Certificate of origin

1. Exporter (Name & Address)	**BRUNEI DARUSSALAM** **CERTIFICATE OF ORIGIN/PROCESSING** **No.**
2. Consignee (Name, Full Address & Country)	NO UNAUTHORISED ADDITION/ALTERATION MAY BE MADE TO THIS CERTIFICATE ONCE IT IS ISSUED
3. Departure Date	8. DECLARATION BY THE EXPORTER
4. Vessel's Name/Flight No.	We hereby declare that the details and statements provided in this Certificate are true and correct.
5. Port of Discharge	
6. Country of Final Destination	Signature : Name : Designation : Stamp Date :
7. Country of Origin of Goods	

9. Marks & Numbers	10. No. & Kind of Packages Description of Goods (include brand names if necessary)	11. Quantity & Unit

12. CERTIFICATION BY THE COMPETENT AUTHORITY

We hereby certify that evidence has been produced to satisfy us that the goods specified above originate in/were processed in the country shown in box 7. This Certificate is therefore issued and certified to the best of our knowledge and belief to be correct and without any liability on our part.

JPK

c. Application form of export-import of endangered species

PERMOHONAN KEBENARAN EKSPOT & IMPOT CITES

CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA (CITES)

Kepada,
Pengarah Pertanian
Management Authority
CITES-Brunei Darussalam
Jalan Lapangan Terbang Lama, Berakas BB 3510
Negara Brunei Darussalam

☐ EKSPOT ☐ IMPOT ☐ EKSPOT SEMULA

NAMA PEMOHON	
ALAMAT / TEL	
ALAMAT NEGERI PENGEKSPOT/ PENGIMPORT	
TUJUAN MENGEKSPOT/ MENGIMPORT	
	(peliharaan, perniagaan, ternakan, kajian saintifik, pertunjukan)

TANDATANGAN : _____

TARIKH : _____

KETERANGAN JENIS BINATANG / TUMBUHAN-TUMBUHAN

JENIS / JUMLAH	NEGERI ASAL	NO.PERMIT

* Sila lihat sebelah mukasurat bagi rujukan syarat-syarat memohon
please refer next page for rules of application reference

B.7.2. INDONESIA

REPUBLIC OF INDONESIA
DEPARTEMENT OF MARINE AFFAIRS AND FISHERIES
CENTRE FOR FISH QUARANTINE

KI-D1

HEALTH CERTIFICATE FOR FISH AND FISH PRODUCT
Number .....

I. DESCRIPTION ON THE CONSIGMENT

Name and Address of the Exporter : .....
.....
.....
Name and Address of the Consignee : .....
.....
Country of Destination : .....
Identification of means of transport : .....
Date of Exportation : .....

☐ Wild Stocks ☐ Cultured Stocks

II. SANITARY DECLARATION

I, the undersigned, certify that the ☐ fish larvae ☐ fish products ☐ ova ☐ fertilized eggs in the present consignment have been inspected according to the appropriate procedures and subsequently found, at the time of inspection :

- to be free from the following disease : ....
- to show no clinical sign of disease : .....

The consignment is therefore considered to conform with the fish health requirement of the importing country.

III. ADDITIONAL INFORMATION

.....
.....

Stamp,

Issued at ..... on .....
Name and Address of Fish Quarantine Office :
.....
.....

Signature : .....

Important note :
*) Appendix, when required.

Appendix
Health Certificate for Fish and Fish Product
Number : .....

DESCRIPTION ON THE CONSIGNMENT

Name and Quantity of the Product :

NO	TYPES OF COMMODITY		QUANTITY (Hds/pcs/kg/gr/ltr/ml)
	Latin Name	Commonl Name	
Total :	..... hds	.... pcs	.... kg ..... gr ..... ltr ..... ml

Stamp,

Issued at ..... on .....
Name and Address of Fish Quarantine Office :
.....
.....

Signature : .....

Name and Address of the Consignee : .....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

ADDITIONAL INFORMATION

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Stamp,

Issued at ..... on .....

Name and Address of Fish Quarantine Office :

.....

.....

Signature : .....

KI-D2

REPUBLIC OF INDONESIA
DEPARTEMENT OF MARINE AFFAIRS AND FISHERIES
CENTRE FOR FISH QUARANTINE

HEALTH CERTIFICATE FOR DOMESTIC FISH

(Inter-area within the territory of the Republic of Indonesia)
Number .....

Based on Indonesian Law number 16 of 1992 concerning animal, Fish and Plant Quarantine, and Government Regulation number 15 of 2002 concerning Fish Quarantine and in order to prevent the entry and dissemination of quarantine pests and diseases of fish within the territory of the Republic of Indonesia, from the result of quarantine action towards carrier media :

1. Types and amount of carrier media*) :

NO	TYPES OF COMMODITY		AMOUNT
	Latin Name	General Name	(Hds/pcs/kg/gr/ltr/ml)
Total :	..... hds	.... pcs	.... kg	..... gr	..... ltr	..... ml

2. Name and address of sender : .....
.....
3. Name and address of receiver/destination : .....
4. Destination area : .....
5. Port of destination : .....
6. Date of shipping : .....
7. Date of quarantine action : .....
8. Transportation device : .....
9. Other requirements : .....
10. Purpose of shipping : .....
11. Result of inspection ☐ Clinic ☐ Laboratory

Indicates that carrier media in the time of inspection is free from quarantine pests and diseases of fish, and can be moved to destination area.

Stamp,

.....
Head/Responsible body/
Functional Official**)

.....
NIP. .....

Notes :
*) Appendix, when necessary
**) Stripe for unnecessary item

B.7.3. MYANMAR

UNION OF MYANMAR
MINISTRY OF LIVESTOCK AND FISHERIES
DEPARATMENT OF FISHERIES

Registration No…
Dated …

LIVE AQUATIC ANIMAL HEALTH CERTIFICATE

I. Shipper ……..

Address ……..

II. Type. ² Fish ² Molluscs ² Crustacean ² Other
Source. ² Wild ² Culture

III. Shipment

Commodity	Description	Quantity		Remarks
		No.	Kg	
Total				

IV. Country of Origin ……..
V. Destination ……..
VI. Carrier ² By Air Flight No……
² By Sea Voyage ……..
² By Land Road …….

VII. Declaration

This is to certify that the Above Consignment has been Examined and found to be Healthy and Free from Any Clinical Sign of disease at the time of examination.

VIII. This certificate is valid for seven days from the date of issue.

Name, title and qualification of officer;

Signature : ----------

(DOF Authorization)

B.7.4. SINGAPORE

Agri-Food & Veterinary Authority of Singapore

Wildlife Regulatory Branch (Ornamental Fish)
Sembawang Research Station, Lorong Chencharu,
Singapore 769194 Tel: (65) 6751 9804 Fax: (65) 6759 5043

Health Certificate For Export Of Fish

SPECIES
SEE ATTACHED PACKING LIST ENDORSED BY AGRI-FOOD AND VETERINARY AUTHORITY

SHIPMENT DATE :
FLIGHT NO. :

ORIGIN	**TOTAL NO.**
SINGAPORE	

NAME AND ADDRESS OF CONSIGNEE	**NAME AND ADDRESS OF CONSIGNOR**

THIS IS TO CERTIFY THAT A BATCH OF THE ABOVE CONSIGNMENT HAS BEEN EXAMINED AND FOUND TO BE HEAL FREE FROM ANY CLINICAL SIGN OF DISEASE AT THE TIME OF EXAMINATION.

NAME OF CERTIFYING OFFICER
FOR DIRECTOR-GENERAL
AGRI-FOOD AND VETERINARY SERVIC
DATE : 10/10/2006
HC FEE RECEIVED : $16.80

THIS CERTIFICATE IS VALID FOR 10 DAYS FROM THE OFFICIAL DATE

B.8. Aquatic Animal Quarantine

This section is aimed to compile information related to quarantine in ASEAN member countries.

The purpose of applying quarantine measures is to facilitate trans-boundary trade in living aquatic animals, while minimizing the risk of spread of 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

It has been recognized that post border activities are very important and become the responsibility of the recipient countries. Some ASEAN countries have well established quarantine procedures, facility, human resource and strong legislation support and law enforcement. However, it is less well developed in other countries.

Each import request must be considered on an individual basis, with quarantine conditions imposed commensurate with risks. These risk factors will vary according to the source and destination of the aquatic animal transfer. The ultimate risk to be avoided is exposure to circumstances which favour the introduction and establishment of an exotic pathogen in a new environment/population.

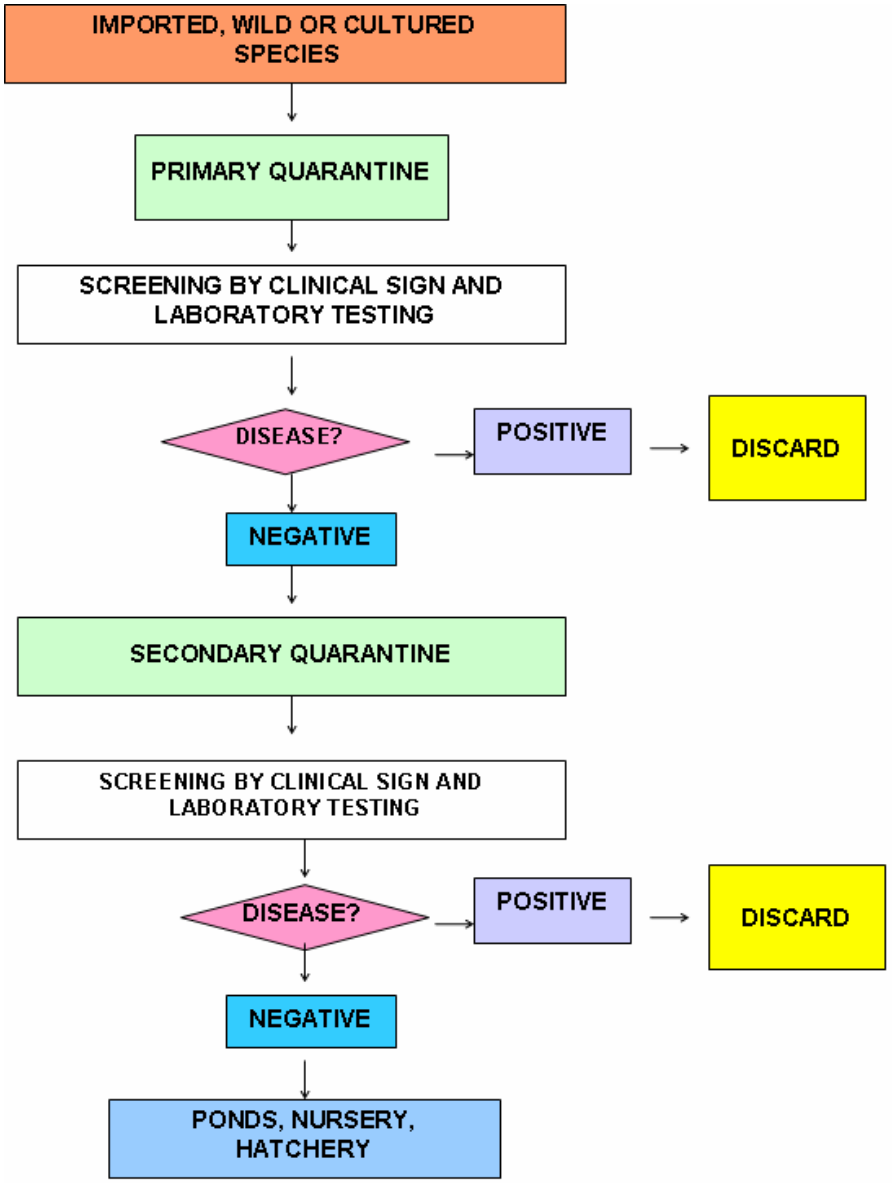
The variability in capabilities to diagnose the disease of aquatic animals is a common problem in this region which results in different degree of quarantine and health certification requirement for importation. Such condition has risk for spreading diseases especially among countries having shared watershed border. Thus harmonization is becoming important where quarantine procedures and certification issued by one country should meet the requirement of other countries.

B.8.1. BRUNEI DARUSSALAM

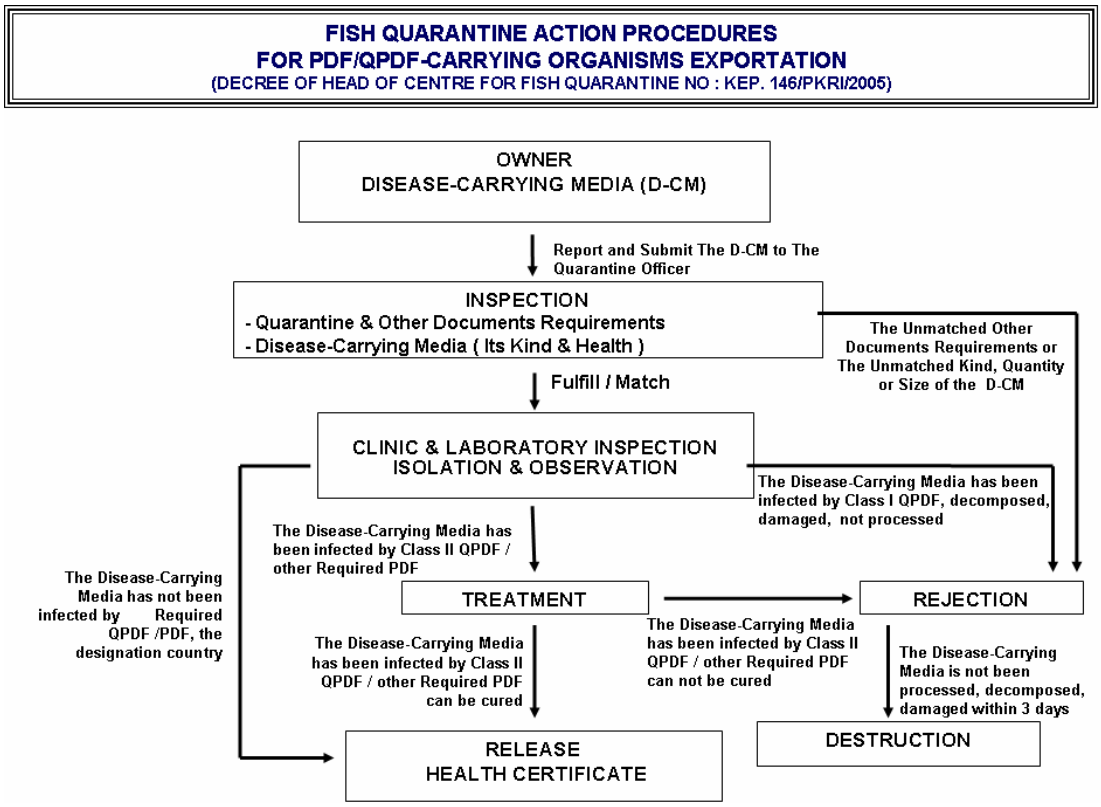
Quarantine Procedures in Brunei Darussalam

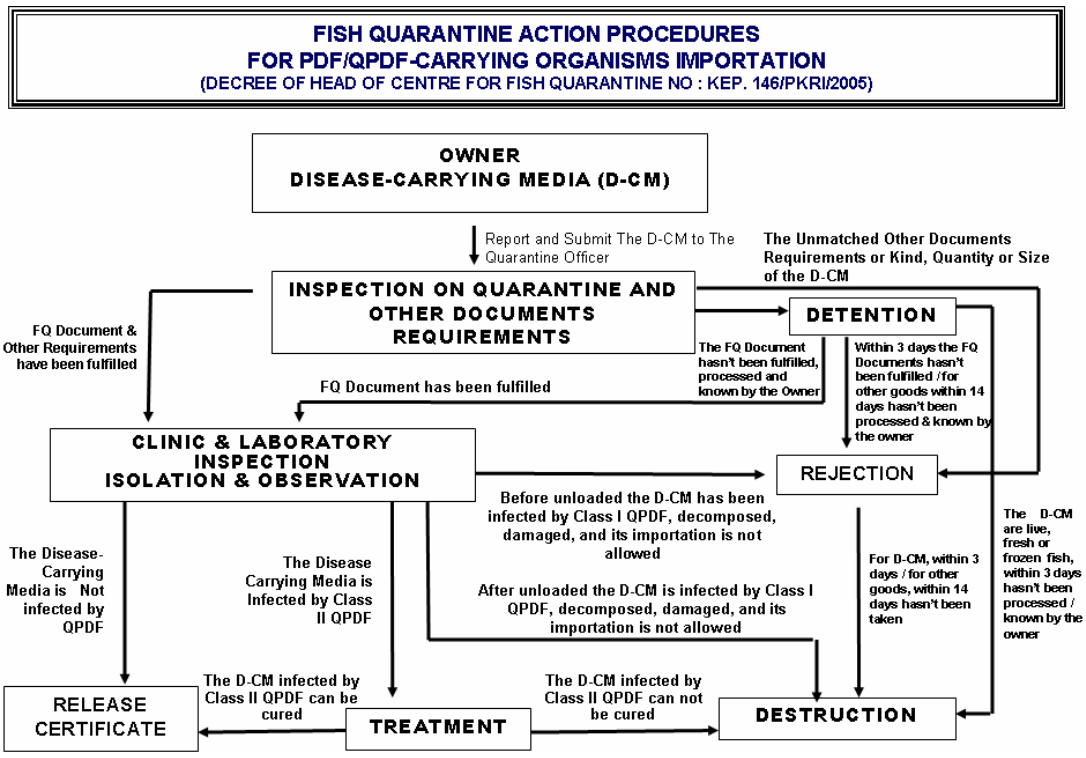
1. Brunei Darussalam has recently implemented the Quarantine procedure whereby two quarantine facilities i.e. Primary and Secondary Quarantine were being constructed.
2. All the imported, cultured and wild species to be use for aquaculture activities will undergo two series of the above quarantine facilities.
3. Screening for the diseases will be done on every stage before they are being transfer to the grow-out ponds or used as broodstock.

Flow Chart for Quarantine Procedure in Brunei Darussalam



B.8.2. INDONESIA





KI-D3

REPUBLIC OF INDONESIA
DEPARTEMENT OF MARINE AFFAIRS AND FISHERIES
CENTRE FOR FISH QUARANTINE

RELEASE CERTIFICATEOF FISH QUARANTINE

Number .....

Based on Indonesian Law number 16 of 1992 concerning animal, Fish and Plant Quarantine, and Government Regulation number 15 of 2002 concerning Fish Quarantine and in order to prevent the entry and dissemination of quarantine pests and diseases of fish and/or within the territory of the Republic of Indonesia, from the result of quarantine inspection and/or action towards carrier media :

1. Types and amount of carrier media*) :

NO	TYPES OF COMMODITY		AMOUNT
	Latin Name	General Name	(Hds/pcs/kg/gr/ltr/ml)
Total :	..... hds	.... pcs	.... kg	..... gr	..... ltr	..... ml

2. Name and address of sender : .....
.....
3. Name and address of receiver/destination : .....
4. Country/area of origin : .....
5. Date of shipping : .....
6. Date of importation : .....
7. Transportation device : .....
8. Other requirements : .....
9. Purpose of shipping : .....
10. Result of inspection ☐ Clinic ☐ Laboratory

Indicates that carrier media in the time of inspection is free from quarantine pests and diseases of fish, and can be entered to destination area.

Stamp,

.....
Head/Responsible body/
Functional Official**)

.....
NIP. .....

Notes :
*) Appendix, when necessary
**) Stripe for unnecessary item

KI-D4

REPUBLIC OF INDONESIA
DEPARTEMENT OF MARINE AFFAIRS AND FISHERIES
CENTRE FOR FISH QUARANTINE

LETTER OF TEMPORARY DETENTION

Number .....

Based on Indonesian Law number 16 of 1992 concerning animal, Fish and Plant Quarantine, Indonesian Law number 31 of 2004 concerning Fisheries, and Government Regulation number 15 of 2002 concerning Fish Quarantine, from the result of inspection on the completion and validity of document towards carrier media :

1. Types and amount of carrier media*) :

NO	TYPES OF COMMODITY		AMOUNT (Hds/pcs/kg/gr/ltr/ml)
	Latin Name	General Name	
Total :	..... hds	.... pcs	..... kg	..... gr	..... ltr	..... ml

2. Date of arrival/departure : .....
3. Transportation device : .....
4. Name of sender/receiver : .....
   .....
5. Address of owner/receiver : .....
6. Country/area of origin/destination**) : .....

In fact the carrier media :

(Give a strike (√) in the appropriate statement)

☐ Unattached by Health certificate for Fish

☐ Do not accomplish additionally designated obligation

☐ Attached document is out of date

☐ The content is not appropriate to document

☐ Unattached by other designated requirement

☐ Included as forbidden/protected/controlled/restricted types of entry/exit**)

Therefore, the carrier media is subjected to detention in Fish Quarantine Installation that belongs to ..... in (address) .....

Stamp,

.....
Head/Responsible body/
Functional Official**)

.....
NIP. .....

Notes :
*) Appendix, when necessary
**) Stripe for unnecessary item

REPUBLIC OF INDONESIA
DEPARTEMENT OF MARINE AFFAIRS AND FISHERIES
CENTRE FOR FISH QUARANTINE

KI-D5

LETTER OF REFUSAL

Number .....

Based on Indonesian Law number 16 of 1992 concerning animal, Fish and Plant Quarantine, Indonesian Law number 31 of 2004 concerning Fisheries, and Government Regulation number 15 of 2002 concerning Fish Quarantine, from the result of quarantine inspection and/or action towards carrier media :

1. Types and amount of carrier media*) :

NO	TYPES OF COMMODITY		AMOUNT
	Latin Name	General Name	(Hds/pcs/kg/gr/ltr/ml)
Total :	..... hds	.... pcs	.... kg	..... gr	..... ltr	..... ml

2. Date of arrival/departure**) : .....
3. Transportation device : .....
4. Name and address of owner/receiver : .....
5. Country/area of origin/destination**) : .....

In fact the carrier media :
(*Give a strike (√) in the appropriate statement*)

- ☐ Unattached by Health certificate for Fish
- ☐ Included as forbidden/protected/controlled/restricted types of entry/exit**)
- ☐ Do not accomplish prerequisite required by country of destination
- ☐ Is not free from Quarantine Pests and Diseases of Fish type I/decayed/demage
- ☐ Cannot be free from Quarantine Pests and Diseases of Fish Type II after treatment
- ☐ Do not accomplish additionally designated obligation
- ☐ Unranged or its owner remains unknown
- ☐ Do not fulfill quarantine requirement

Therefore, the carrier media is refused.

Stamp,

.....
Head/Responsible body/
Functional Official**)

.....
NIP. .....

Notes :
If the carrier media is not returned within 3 (three) days after the issue of this document, it shall be subjected to destruction
*) Appendix, when necessary
**) Stripe for unnecessary item

REPUBLIC OF INDONESIA
DEPARTEMENT OF MARINE AFFAIRS AND FISHERIES
CENTRE FOR FISH QUARANTINE

KI-D6

RECOMMENDATION LETTER
OF FISH QUARANTINE INSTALLATION ENTRY
Number .....

Based on Indonesian Law number 16 of 1992 concerning animal, Fish and Plant Quarantine, and Government Regulation number 15 of 2002 concerning Fish Quarantine, in order to prevent the entry and dissemination of quarantine pests and diseases of fish within the territory of the Republic of Indonesia, as well as to fulfill prerequisite required by country of destination receiver, carrier media should be :

1. Types and amount of carrier media*) :

NO	TYPES OF COMMODITY		AMOUNT
	Latin Name	General Name	(Hds/pcs/kg/gr/ltr/ml)
Total :	..... hds	.... pcs	.... kg	..... gr	..... ltr	..... ml

2. Name and Address of owner representative : .....
3. Date of installation entry : .....

Instructed to enter fish quarantine installation belongs to ..... Address ..... for next fish quarantine action period, the carrier media is forbidden to be moved from quarantine installation, taken over, and/or changed with similar or different type.

.....
Stamp, Head/Responsible body/
Functional Official**)

.....
NIP. .....

Notes :
*) Appendix, when necessary
**) Stripe for unnecessary item

REPUBLIC OF INDONESIA
DEPARTEMENT OF MARINE AFFAIRS AND FISHERIES
CENTRE FOR FISH QUARANTINE

KI-D7

MINUTES OF DESTRUCTION

Number .....

Today, ..., on ..... (month) ..... (date) ..... (year), the following signer :

Name : .....
NIP : .....
Job Title : .....

Based on Instruction Letter of the Head of Regional Office/Office/Station/Responsible Body of Fish Quarantine regional operation*) number ..... on the date of ..... has perfomed destruction on carrier media :

1. Types and amount of carrier media*) :

NO	TYPES OF COMMODITY		AMOUNT
	Latin Name	General Name	(Hds/pcs/kg/gr/ltr/ml)
Total :	..... hds	.... pcs	.... kg	..... gr	..... ltr	..... ml

2. Name and Address of owne : .....
.....
3. Country/area of origin/destination : .....
4. Place and method of destruction : .....

Perceived by the owner and authorized official, as following :

a. Name of owner/representative : .....
Signature : .....
b. Name of 1st perceiver : .....
Job title : .....
Institution :
Signature : .....
c. Name of 2nd perceiver : .....
Institution :
Signature : .....

This Minutes is written factually to be used in order.

Witness 1st **Witness 2nd** **Officer**

Stemp,

( ) ( ) ( )
NIP. NIP. NIP.

Notes :
*) Appendix, when necessary
**) Stripe for unnecessary item

REPUBLIC OF INDONESIA
DEPARTEMENT OF MARINE AFFAIRS AND FISHERIES
CENTRE FOR FISH QUARANTINE

KI-D8

RECOMMENDATION LETTER
OF FISH/FISHERIES PRODUCT MOVEMENT
Number .....

Based on Indonesian Law number 16 of 1992 concerning animal, Fish and Plant Quarantine, Indonesian Law number 31 of 2004 concerning Fisheries, and Government Regulation number 15 of 2002 concerning Fish Quarantine, in order to prevent the exit of forbidden or controlled/restricted fish/fisheries product either among areas or among countries, from the result of inspection on fish/fisheries product :

1. Types and amount of carrier media*) :

NO	TYPES OF COMMODITY		Measure	Ammount		Notes
	Latin Name	General Name	cm	Hds/Pcs	Kg/ltr	
TOTAL						

2. Name and address of sender : .....
.....
3. Name and address of receiver/destination : .....
4. Country/area of Destination**) : .....
5. Port of destination : .....
6. Date of shipping : .....
7. Destination of shipping : .....
8. Date of Inspection : .....
9. Other requirements : .....
10. Transportation device : .....
11. Origin of carrier media : ☐ Aquaculture ☐ Natural

Indicates that the fish of fisheries product is in accordance with the existing provision in fish/fisheries product movement, and can be moved to : ☐ Country of origin ☐ Area of origin

Stamp,

.....
Head/Responsible body/
Functional Official**)

.....
NIP. .....

Notes :
*) Appendix, when necessary
**) Stripe for unnecessary item

B.8.3. MALAYSIA

Malaysia Quarantine Procedures

1. **Pre- Border**
   - **1.1. Documentation requirements**
     - **i. Licence**
       - Valid import license from LKIM (Fisheries Development Authority of Malaysia)
     - **ii. Permits**
       - Completed Application Form FQ1 from the Competent Authority.
       - Valid import permit from the Competent Authority (Fisheries Department).
       - Custom Form K1.
       - Two copies of certified invoices.
       - Related airway bills (if by air).
     - **iii. Health Certificate**
       - Health certificate from the exporting country.
     - **iv. CITES permit**
       - CITES certificate where applicable, issued by HQ only.
     - **v. Statement of Origin (country/ premises)**
       - Tracebility certificate
     - **vi. Trans- shipment documentation**
       - by land not allowed
   - **1.2. Premise Inspection**
     - Scheduled inspections (every 6 month)
   - **1.3. Standards for quarantine holding facilities (government/ private)**

     Quarantine area

     The quarantine area or premise to hold live food finfish should conform to certain requirements as stipulated by the Competent Authority. These requirements must be followed or complied by the owner or the importer or exporter in order that quarantine measures can be effectively undertaken.

     a) The location of the approved quarantine premise is easily accessible to facilitate inspection by the Competent Authority.
     b) The quarantine premise or premises must be located in an area free of flood, away from any other aquaculture establishments including recreational fish farms and food processing plants, and natural aquatic systems such as rivers, lakes, wetlands and reservoirs.
     c) The quarantine room or area must have a clear signage.
     d) The quarantine room or area is used exclusively for quarantine purposes.

e) The quarantine room must be fully enclosed and walls and floor must be impervious and sufficiently smooth to facilitate cleaning and disinfection. Windows, if installed must be sealed or screened against entry of insects. The door must be self closed and fitted with insect screen or insect proof screen door.
f) The floor must be able to contain spilt water, and must facilitate complete drainage into a treatment tank or reservoir approved by the Competent Authority.
g) The used water must be treated before discharge.
h) Adequate facilities must be provided to disinfect all equipment used.
i) Facilities must be provided for staffs and inspectors to wash their hands and foot wears prior to entering and leaving the quarantine room.
j) All tanks and associated equipment must be properly and clearly labelled for the purpose of inspection.
k) All tanks must provide good visibility to facilitate inspection.
l) The quarantine room must be sufficiently lighted to permit inspection.
m) All dead fish must be temporarily kept in a separate freezer and properly labelled.
n) The quarantine room must be prevented from entry by unauthorized person(s).

2. Border at checkpoint

2.1. Validation of documents (permits and invoices)

- identify and quantify check

2.2. Visual inspection

- Healthy fish will have normal body and swimming behaviour. Body colour will have natural shine with normal colouration.

3. Post- Border

3.1. Diversion to non- food purposes

- to inform CA of the purpose (eg. Broodstock, exhibition, research, recreational and ornamental)

3.2. Control of waste products (food scrap and other waste)

- proper sanitation (incineration, bury)

3.3. Control of transport water, waste water

- Used water, packing materials and containers must be disinfected or sterilized at their premises.

4. Time Frames

4.1. Pre- Border

- Completed Application Form FQ1 from the Competent Authority. (5 minutes)
- import permit from the Competent Authority (Fisheries Department).
  (import permit application, 1 day; validity 1 day export permit 1-3 days; valid 2 weeks CITES 1-3 days; valid 3 months)

- Custom Form K1. (≤ 1 minute)
- Two copies of certified invoices. (≤ 1 minute)
- Related airway bills (if by air). (≤ 1 minute)

4.2. Border : ≤ 30 minutes every consignment. If 100 % check, ≥ 30 minutes

4.3. Post- Border: Compliance monitoring (as required)

B.8.4. MYANMAR

Currently, quarantine procedures are under way.

B.9. Zoning Program

The purpose of this section is to compile the ASEAN member countries experience to deal with zoning program in certain important aquatic animal disease(s).

Disease zoning for aquatic animal is a tool that can be used to facilitate domestic, as well as international trade, whilst being highly effective tool to restrict the spread of important pathogens and aid in their eradication. Zones defined by appropriate surveillance mechanisms as being free of such diseases (uninfected) may be used to facilitate trade and to protect against the introduction of their causative pathogens. An uninfected zone can be established within a country using the health status of a susceptible host species for a specific disease within a particular geographic or hydrographic area. Zones defined as having the presence of a specific pathogen may also have unrestricted transfers to zones positive for the same pathogen. Thus, a zone which is positive for a disease is not necessarily subject to cessation of trade. The OIE Aquatic Animal Health Code provides an outline of the zoning concept in Chapter 1.4.4.

The tools used for delineation of zones must be relevant to the purpose of zoning, i.e., ability to detect infections early (sensitive), thereby

- reducing the risk of spread;
- increasing the chance of control; or
- accurately defining an area as being free from a given disease of concern.

Thus, the general principles of zoning should be considered by participating countries and sub-regions when preparing strategies for disease containment and eradication. Therefore, coordination and cooperation with neighboring countries within ASEAN is essential.

B.9.1. BRUNEI DARUSSALAM

No.	Question	Information
1.	Does your country conduct zoning ?	Yes
2.	Does your country plan to do zoning ?	Yes
3.	How is the mechanism of zoning implemented ?	1. All Aquaculture areas are developed only at the identified sites by the Fisheries Department. Application to operate the area should be approve by the Fisheries Department. 2. Incase of disease occurrence at one site then that site should be treated and controlled from any movements from and to that area e.g. transport, human, fry etc. 3. The site which is not affected will be taking proper procedure so that the disease will not transfer to them.
4.	Who is responsible to declare zones ?	Fisheries Department
5.	Which is kind of disease included for zoning ?	Any important fish and shrimp diseases
6.	What kind of aquatic animal (host) is applied for zoning ?	All cultured species
7.	Could you describe the zoning area and the boundary?	Each area consists of 4 – 5 operators. Then each operator will be responsible for the health of their stock. Incase any occurrence of any disease to any operator, then zoning will be done to the operator only, but precaution and controlled of any movement will also be taken care of to the nearby operators.
8.	When is the zoning lifted up?	As soon as the area is free from the diseases.

B.9.2. INDONESIA

No.	Question	Information
1.	Does your country conduct zoning ?	Yes, there are Java, Bali island as infected zone and Sumatera island as an quarantine zone for KHV.
2.	Does your country plan to do zoning ?	Yes, for certain zones as a free zone for some important fish diseases, but for major fish diseases which caused mortality as an infected zone such as KHV, WSSV, VNN, TSV and IMNV.
3.	How is the mechanism of zoning implemented ?	Prohibited imported fish from infected zone or island to a free zone/island, which has infected by major fish diseases caused fish mortality.
4.	Who is responsible to declare zones ?	Coordination between Directorate General of Aquaculture, Center of Fish Quarantine and Provincial & District office.
5.	Which is kind of disease included for zoning ?	KHV, WSSV, VNN, TSV and IMNV.
6.	What kind of aquatic animal (host) is applied for zoning ?	Koi and Common Carp, and vanamae.
7.	Could you describe the zoning area and the boundary ?	Difficulties to decided the boundary of each area caused by KHV infected, so that the boundary had been decided based on each island which is Java island separated with Sumatera island.
8.	When is the zoning lifted up ?	On July 2002

B.9.3. MALAYSIA

So far, Malaysia does not implement any zoning areas yet, for any particular disease or host. This is possibly because there is no serious disease outbreak as yet.

B.9.4. MYANMAR

Zoning is not yet developed in Myanmar. It is supposed to be developed in order to harmonize with other ASEAN countries. It needs to have a number of information based on implementation of surveillance. Zoning cannot be completed by only Disease Control Section and need to have collaboration and cooperation among Aquatic Animal Health Committee and other institutions concerned. However, DC section shall actively initiate proposal on zoning. Actually, implementation of disease zoning is beyond the capacity of DC section which has few and limited number of staff. However, in the near future the DC section will attempt to establish in line with the disease zoning guidelines presented in the chapter 1.4.4.of OIE International Aquatic Animal Health Code (2002). Zoning shall zonsist of (i) Free Zone (ii) Surveillance Zone and (iii) Infected Zone based on species and / or pathogens. This might be also part of the National Contingency Planning in Myanmar.

B.9.5. SINGAPORE

No zoning is conducted at present. AVA is currently studying plans for zoning for aquatic animal diseases

B.9.6. THAILAND

- Only farm establishment (disease free)
  - Shrimp 112 farms (farms and hatcheries) (WSSV, TSV, YHV)
  - Prawn, ornamental fish, seabass fry, tilapia fry 220 farms (OIE diseases, MrNV and XSV)
- Farm records/traceability
- Working toward zoning

B.9.7. VIETNAM

Will be applicable in the future when program of eradication of certain endemic diseases established or there is a need of zoning of infected new diseases.

B.10. Import Risk Analysis

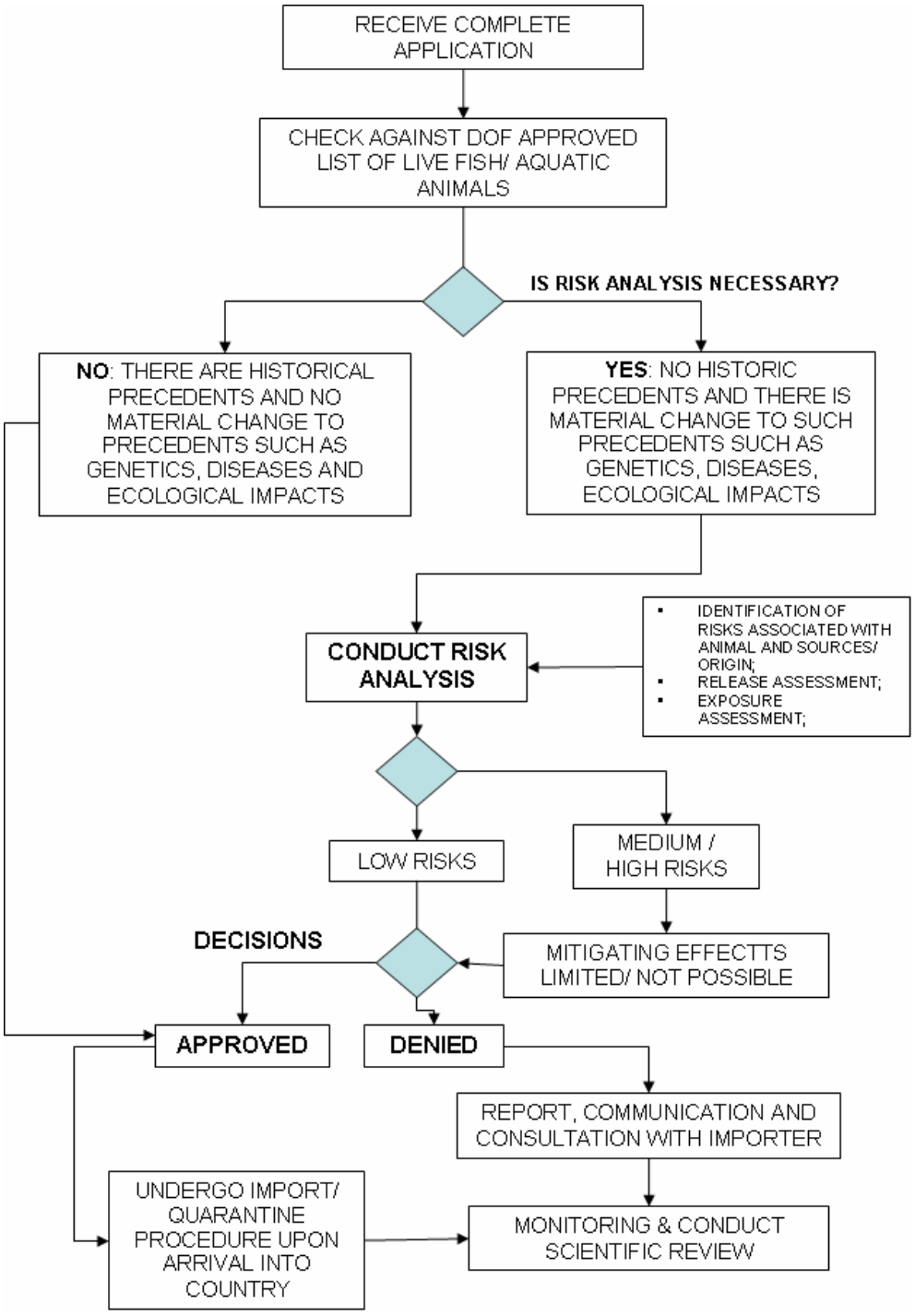
This purpose of this section is to compile the ASEAN member countries experience in import risk analysis of aquatic animal and share it with all ASEAN members so that member countries can learn from each other.

A framework for aquatic 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 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 which identified six major components need to be in place and operating effectively in trading countries if the risk of international disease spread within the region is to be reduced. One of them is import risk analysis.

The ideal risk analysis should contain four major components, i.e. hazard identification, risk assessment, risk management and risk communication. *International Animal Health Code* (OIE, 2006) and Manual on Risk Analysis for the Safe Movement of Aquatic Animals (FWG/01/2002) (NACA, APEC and DOF Thailand) have published standard and guidelines in developing and implementing import Risk Analysis.

B.10.1. BRUNEI DARUSSALAM

Flowchart of Risk Analysis Procedure



B.10.2. INDONESIA

Draft of IRA has been prepared and discussed since 2003. Final draft would be ready in the near future. Several Quarantine Officers and Experts have been trained for IRA. They have been shared their knowledge to other scientists, policy makers, industry leader, and exporters. Due to some limitation in the equipments and experts, draft for IRA still under revision.

B.10.3. MALAYSIA

The task force on Invasive Alien Species (IAS), does have this component in their working standard operating procedures (SOP).

Previously, in DOF, there was an unofficial IRA task force that sits and discussed whenever any new species are to be brought in by an individual into Malaysia. This is headed by the top management personnel especially those involved in aquaculture industry. As the IAS task force is formed, IRA is now covered by this group.

B.10.4. MYANMAR

- Currently there are only few reports on live fish for food such as tilapia, seabass, groupers and vannamei shrimp.
- Myanmar DOF has not yet formed IRA project team.
- It is expected that IRA shall be practiced in the near future.

B.10.5. SINGAPORE

- Technical committee to be set up as and when required
- Cross-functional representation

B.10.6.THAILAND

Import Risk Analysis Aquatic Animal in Thailand

Regarding the policy on importation of aquatic animal into Thailand for aquaculture purpose, Thai Department of Fisheries (DOF) strongly concern on the risk factors that may occur follow this activity. DOF had studied of Import Risk Analysis (IRA) on the importation of 2 aquatic animals; white shrimp, *Penaeus vannamei* and crayfish

Import risk analysis of white shrimp (*Penaeus vannamai*)

When Thailand faced with the difficulties in *Penaeus monodon*'s culture from 1999-2001, the Department of Fisheries has issued the one year permission for the private sectors to import Specified Pathogen Free (SPF) white shrimp (*Penaeus vannamai*) into the country to be raised in the hatcheries. This importing has started from March 2002 until the end of February 2003. However imported white shrimp as mentioned may affect the former shrimp industry as well as various kinds of biological diversifying that caused positive and negative outcome. Therefore, the study on Import Risk Analysis (IRA) on the importation of Pacific white shrimp, *Penaeus vannamei* was conducted in 2004 -2005. The results of the study are as follow:

List of pathogens affecting *P. vannamei*
1 List of bacterial pathogens
1.1 *Vibrio* species
1.2 Necrotizing hepatopancreatitis
1.3 Ricketsial infections
1.4 Mycoplasmas
1.5 Other bacteria
2 List of viral pathogens
2.1 White spot syndrome virus (WSSV)
2.2 Yellow head virus (YHV)
2.3 Taura syndrome virus (TSV)
2.4 Infectious hypodermal and hematopoietic necrosis virus (IHHNV)
2.5 Baculovirus penaei (BP)
2.6 Hepatopancreatic parvovirus (HPV)
2.7 Reo virus
2.8 Bacteriophage
3 Fungal and fungal-like pathogens
4 List of parasites
4.1 Microsporidians
4.2 Haplosporidians
4.3 Gregarines
4.4 Nematodes
4.5 Trematodes

White spot syndrome virus (WSSV), yellowhead virus (YHV), infectious hypodermal and haematopoietic necrosis virus (IHHNV), Taura syndrome virus (TSV) and necrotising hepatopancreatitis bacterium (NHPB) are significant problems for raising Pacific white shrimp in intensive culture systems. WSSV is the disease that has caused the most losses for Pacific white shrimp farmers. There is no report on the severity of YHV in white shrimp farm. The occurrence of IHHNV is likely to rise in the future as more farmers use postlarvae produced from broodstocks from local shrimp farms rather than imported ones. Outbreaks of IHHNV can occur at any time of the year. The main risk factor is the source of the shrimp larvae. It is very unlikely that larvae produced from specific pathogen-free parents will get IHHNV. When shrimp are infected with TSV the mortality rate usually 50-80%. NHPB is an abbreviation for a specific rickketsial-like bacterium that has been reported to cause losses in *P. vannamei* reared in the Americas. Outbreaks are believed to be initiated in shrimp ponds by transmission of the pathogen from via a currently unknown carrier(s) under specific environmental conditions of high temperature and high salinity. The mortality rate depends on the conditions in the pond and the measures taken by the farmers to control the disease. The frequency of disease outbreaks in *P. vannamei* ponds confirms that the main route of disease transfer in shrimp farming in Thailand is from the post larvae used to stock the ponds. Thus, the use of domesticated post larvae from certified SPF broodstocks has solved most of the disease problems from WSSV, TSV, YHV and IHHNV in Thailand.

Impact of *Penaeus vannamei* in Environmental aspects

1. Impacts on biodiversity with respect to native Thai species of aquatic animals

At present, there is very little known about the effects of cultured *P.vannamei* shrimp on wild populations and biodiversity, in Thailand, as well as other parts of Asia. However, there are non-published reports that *P.vannamei* is found in catches from wild fisheries in other parts of Asia (Taiwan), and in Thai waters. There is a concern therefore that escapes might therefore lead to white shrimp establishing breeding populations in the wild, and impacting on Thai shrimp fisheries. An established wild population of *P. vannamei* has potential to compete for feed and habitat with other native Thai crustaceans, compounding risks of mortality of native species caused by introduced diseases. As *P.vannamei* is an exotic species, there are no native populations of *P.vannamei* in Thai waters, so genetic impacts will not occur in Thailand. The spread of disease to native populations is a further hazard. Disease transfer is known to occur, and mortalities have occurred under laboratory conditions.

2 Study and analysis of environmental impacts of P. vannamei cultivation in both fresh water and coastal marine areas.

The culture of *P.vannamei* in Thailand has occurred in both inland and coastal areas. Impacts from discharge of effluents from *P.vannamei* farms, including

nutrients, organic matter, and use of chemicals will be extremely variable, and depend on a range of different factors. Thailand is practicing intensive white shrimp culture. However, most farms also use limited water exchange, and some are also recycling water. Although in general there are no major differences between *P.monodon* farming and white shrimp farming in practice there are some minor differences that will influence the environmental interactions of *P.vannamei* farming in the country. The major environmental advantage of *P.vannamei* is its feeding habits and requirements for lower protein diets compared to *P.monodon*. In Thailand, current grow out feeds for *P. vannamei* contain 35% protein and cost 10-15% less than the 40-42% protein feeds for *P. monodon*. Additionally, some farmers report lower FCRs than *P. monodon*. More efficient feeding practices, combined with less use of fish meal is an environmentally positive outcome from farming *P.vannamei*, not only reducing use of fish meal, but helping to reduce nitrogen loadings per unit of production.

Adventage and disadvantage of importing *P.vannamei* into Thailand

1. Advantage

1.1. After importing *P.vannamei* broodstocks into Thailand, aquaculturist have raised for distributing for grow out farm and part of them will be kept for further broodstocks which is easy to feed in the earthen pond for 10-12 months and, will acquire broodstock size 40 grams, with the approximately 100,000 eggs.

1.2. This *P.vannamei* can adapt themselves very well in different temperature's condition, salinity, in taking feed and can be raised in generally including freshwater.

1.3. From the variety of report, revealing that *P.vannamei's* production will be approximately 1-4 ton/rai/ 3 months this due to being able to stock *P.vannamei* in high density, since their behavior is scattering can live in different level of water and be able to intake any natural food very well besides their regular food if the care takers have more experience, assumingly for higher *P.vannamie's* productivity.

1.4. With rather low cost of capital, since *P.vannamei* require less protein than *P.monodon*. In the future, if the price of post larvae is lower, the capital can be even less.

1.5. Meanwhile farmers face with difficulty on raising *P.monodon*, raising *P.vannamei* can be applied instead by using the remaining instrument that being used by *P.monodon*, before this would make marine shrimp's business viable.

1.6. If there is inspection on broodstocks and post larvae whether they are free from disease, controlling on sire raising process under strictly regulation as well as properly managing farm until be able to prevent epidemic that may affect other domestic animals.

1.7. *P. vannamei's* productivity, not only keeping export market for unlimited shrimp types, but also keeping shrimp business viable such as raising shrimp, hatcheries, shrimp's feed, processing manufacturing as well as marketing both domestic and international etc.

2 Disadvantage

2.1. If the standard of inspecting and disease controlling are not efficient, diseases of *P.vannamei* will infect to other domestic shrimp and present economical shrimp *P.monodon*.

2.2. Controlling and inspecting on mentioned diseases may waste on man power as well as budget meanwhile it is high possibility of being infected shrimp even has gone through inspecting process.

2.3. If raising *P.vannamei* is successful for and quite popular among farmers, *P.monodons* business may fade away and less interesting in *P.monodon* study and research.

2.4. Due to the congested raising area of *P.vannamei* and for cutting down on capital for high competitive would cause lower environmental control which will affect the future environment.

2.5. Due to high quality of *P.vannamei* then it is most favorable among around the world for more than 30 countries including the People Republic of China, farmers in South America, Mexico are have more advantage than Thailand this may cause the lower price in the future.

2.6. Even though broodstocks can be raised successfully, but post larvae quality that are from the broodstocks still uncertain, have to import them continuously.

2.7. This imported *P.vannamei* still has the potential to infect different kinds of infection that exist in Thailand such as white spot syndrome virus from *P.monodon*.

2.8. Still uncertain on the impact of diversity if *P.vannamie* has slipped into natural water. Presently, *P.vennamei* have spreader into the sea through natural disaster in Phetchaburi and Prachuap khiri khan Province, meanwhile releasing shrimp at post larvae stage due to unable to distribute them.

Suggestion concerning raising and infected White shrimp in Thailand

1 Regulation prior to importing

- Imported White shrimp requires Health certificate from the origin of the countries and if there is no Health Certificate, importing may be under the consideration of the Fisheries official by following the Controlling Epidemic on Importing Animal Act

- For Quarantine and disease inspection has to be developed for highly efficient for sufficient imported White shrimp in each year.

2 Regulations on Post-importing White shrimp

- Importer has to propose the action plan on importing White shrimp to the Department of Fisheries
- Has to report on epidemic and the decease of White shrimp within the first month directly to the Department of Fisheries
- Hatchery farm and earthen pond have to be registered and passed through CoC standard
- Requirement on the permission of moving imported white shrimp
- Controlling on sewing system of hatchery farm, earthen pond and modified
- White shrimp factory for epidemic outbreak protection
- Developing Broodstock Disease Free in a long term

Import risk analysis of crayfish

Thai farmers have requested for import permit of crayfish from Australia. This crayfish will be introduced to Thailand for aquaculture. Department of fisheries studied import risk analysis since 2005 and has decided to give a permission to importer in 2007.

List of crayfish
Genus *Astacus : A. astacus, A. Leptodactylus, A. Pachypus, A. Pallipes, A. Torrentium*
Genus *Pacifastacus : P. Leniusculus, P. Trowbridgii*
Genus *Procambarus : P. Clrkii, P. Zonangulus*
Genus *Orconectes*
Genus *Cambarus : C. Robustus, C. Bartonii*
Genus *Cherax : C. Tenuimanus, C. Quadricarinatus, C. Albidus, C. destructor*

List of hazard identification
Viral diseases
White spot syndrome virus (WSSV)
Cherax quadricarinatus bacillus virus (CqBV)
Astacus bacilliform virus (AaBV)
Cherax destructor bacilliformvirus (CdBV)
Pacifastacus leniusculus bacilliformvirus (PIBV)
Cherax destructor systemic parvo-like virus (CdSPV)
Spawner-isolated mortality virus (SMV)
Infectious pancreatic necrosis virus (IPNV)
Cherax giardiavirus-like virus (CGV)
Picoma-like virus

REO (Reo-like virus)

Bacterial diseases
Systemic rickettsial-like organism (systemic RLO)
Hepatopancreatic rickettsial-like organism (Hepatopancreatic-RLO)
Asymptomatic bacteraemia and bacterial septicemia
Enteric bacteria
Nocardiosis
Bacterial cuticular fouling

Fungal diseases
Crayfish plaque
Burn spot disease

Parasitic diseases
Microsporidian
Psorospermium spp
Tetrahymena pyriformis
Apostomes
Other fouling protist
Platyhelminthes
-Digenean trematodes
-Cestode
Nematoda
Acanthocephala
Annelida
Arthropod and other metazoan

Risk assessment
Risk evaluation showed that three diseases with high risk for importation were namely WSSV, SMV and crayfish plaque, while the rest of the list is acceptable.

Risk management
To reduce the risk, the import crayfish will be subjected to the available disease control system as follows:
1 The importation and exportation must be complied with the available regulations namely Fishery Act B.E. 2490, Importation and Exportation Act B.E. 2522, Wildlife Act B.E. 2525 of Thailand
2 The import crayfish must be subjected to current quarantine system:
-Import permission will be asked for each shipment
-Health certificate must accompany the product with the declare of origin
3 The animal must be kept in the identified area and must be permitted for any movement by the competent authorities.

Some other measurement will be also implemented to control the imported crayfish including:

1 The farms must be registered to the Department of Fisheries for a regular monitoring
2 Promote a production of the SPF broodstocks for the domestic culture
3 The related industries must be under supervision of the competent authorities
4 The products and animals must be restricted to the purpose of the use to limit the disease discharging

B.10.7. VIETNAM

Still in capacity building, but there is a rule for importing new live species into Vietnam. In order to have importing license, the importer has to evaluate the impact of the new species by carry out a testing culture phase for a grow cycle in Vietnam

B.11. Awareness Program

Raising awareness of all stakeholders in aquatic animal health issues is becoming essential as part of national strategy toward aquatic animal health management.

B.11.1. BRUNEI DARUSSALAM

1. Country Awareness

This will involve development of education and information program for industry and general public:

1.1. On import and quarantine requirement of the Department;
The Department of Fisheries has tackled various aspects of risks, including disease incursions into the country via importation and transfer. The DOF has also established the quarantine facilities and procedures.

1.2. Plan of Actions For Fish Diseases;

1.3. Training programs for industry in aquatic animal health management and improving farm practices to promote disease prevention methods;

1.3.1. In 2006, with the assistance of Seafdec, the Fisheries Department staff who are involved in the aquaculture were being trained on the disease diagnostic.

1.3.2. The Department of Fisheries has organized seminars to the farmers every two months. The resource person are from Integrated Aquaculture International, IAI from USA as well as the Fisheries Officers.

1.4. Leaflets and pamphlets – information on diseases and implications;

1.5. Improve MTU (Mobile Technical Unit) and extension services to develop linkages with industry.

2. Public Awareness

2.1. The public were informed on the import procedures especially the Policy and Regulations as mentioned in the previous section.

B.11.2. INDONESIA

1. **Country awareness:**
   - Produce regulation, procedure, requirement, and quality assurance
   - Conducting workshop for manager, head office and private sector
   - Producing guideline, booklet, pocket book etc.
2. **Public awareness:**
   - Field meeting with farmers groups and field officers
   - Produce posters, leaflets, magazine,
   - Socialization through newspaper, television, radio (most effective but very expensive)

Awareness for the farmers, field extension officers, fisheries staffs on the importantance of reporting disease was done by the formation of farmers group that routinely discuss about their production planning, disease prevention and control, marketing, and inviting resource person. Those forum not only reduce the fear of reporting disease, but increases their awareness of the importane of the application of good aquaculture practices.

To enhance farmers, extension, and staffs knowledge, Directorate General of Aquaculture and Centre of Fish Quarantine, as well as Research Agencies have produced various leaflet, booklet, technical guidance, and conducting several training. Moreover, booklet about the address, qualification, and contact person of the fish health laboratories have also been distributed to the farmer groups, extension officers, and aquaculture staffs, so that, the farmers could reach the competent laboratory and person soonest abnormalities was reported.

B.11.3. MALAYSIA

Full awareness plan for country has not been fully discussed thoroughly as yet. This however, is not neglected by DOF, because the Aquaculture do has their responsibility in educating the target group on the importance of fish health management and fish diseases in aquaculture, as they have the Extension Section.

In the case of public awareness, NaFisH Task Force has conducted few dialogue sessions on fish health management and fish diseases to the target group especially. One was done in the case of KHV in koi carps before initiating surveillance program in koi in Perak state in June 2006. The other was conducted to farmers in Terengganu state by the Tg. Demong Marine Research Centre that is providing monitoring disease program to farmers operating hatcheries and cages in Setiu areas since late last year.

Extension Section of the Aquaculture Division, will be assisting in coming up with a proper plan for both the country and public. At the moment, some dialogue session on koi and other common diseases have started.

B.11.4. MYANMAR

The DOF Township Fishery Officers were trained in surveillance and level I Diagnosis in October, 2006. Occasionally, DOF conducted extension activities with the fish and prawn farmers to dissemination the common disease information in English and Myanmar language such as disease cards, vinyl posters, pamphlets.

B.11.5. SINGAPORE

Awareness Plan in place:

1) Publication of leaflets on common disease information in English/Chinese.
2) Routine extension visits to farms/exporters/importers premises to create awareness.
3) Regular dialogue sessions between AVA & farmers/traders to communicate directives, policies and gather feedback.)
4) Business Cluster Meetings (eg. ornamental fish) as platform for discussion of issues related to the industry.
5) Dissemination of circulars to exporters/importers to create awareness on certain disease issues and to communicate changes/updates in policies.

B.11.6. THAILAND

Country/Public Awareness:

1) The DOF has regularly given awareness through different kinds of media to farmers regarding to aquatic animal diseases. It has been a public announcement warning for some diseases during changing season and temperature such as awareness on shrimp diseases in summer and EUS during cold temperature.
2) Public awareness passed through meeting with the fish farmers. Recently, in April 2007, DOF held a meeting with the koi carp farmers regarding to the Bio-security practice in koi production farms to prevent SVCV and KHV.

B.11.7. VIETNAM

Awareness program had been conducted through:

1) Provincial staffs and field officers/extension workers have been trained (7 courses, app. 350 persons since 2006) on relevant issues
2) Leaflet, booklet, posters on culture technique of certain species (black tiger shrimp, catfish/tra), use of chemicals and drugs, GAP are delivered to hatcheries, farmers
3) Media (local TV and radio program) also used for dissemination of above mentioned contents – by local government budget
4) Education and training of farmers for formulation of cooperative/cluster of small scale shrimp farms on basic of co-management toward BMP/GAP application

B.12. Diagnostic Capability

The purpose of this section is to identify and compile the information regarding diagnostic capability for aquatic animal diseases in ASEAN member countries.

Availability of proper diagnostic capability will ensure valid and perhaps rapid diagnosis about disease outbreak or disease agent. Thus, the right action to control and eradicate the outbreak can be achieved. However, to develop adequate diagnostic capability, financial support and human resource development are necessary.

Regional and national policy makers and planners need to consider disease diagnosis at different levels. ASEAN member countries have different levels of diagnostic capability on aquatic animal diseases relevant to the region and listed in OIE list. The differences are not only in terms of equipment or laboratories but also in terms of trained human resource and methodology. Some ASEAN member countries have had level III diagnosis for most important diseases relevant to the region, while others only up to level II and/or may have capability only for limited kind of diseases.

Specifically, to safeguard against the potentially damaging effects of the introduction of exotic diseases and spreading of the important diseases relevant to the region, ASEAN member countries need to develop coordination and cooperation in aquatic animal diseases diagnosis. Harmonization of diagnostic procedures and improving the diagnostic capacity for some countries to meet the minimal requirement are necessary for gaining regional goal.

B.12.1. BRUNEI DARUSSALAM

The Existing Diagnostic Capability in Brunei Darussalam

Sl.No	Name of the Disease	Laboratory	Personnel	Information
	Finfish			
1	KHV	Level III	Level I and III	Manuals/Brochure
2	VNN	Level III	Level I and III	Manuals/Brochure
3	Grouper iridoviral disease	Level I and III	Level I and III	Manuals/Brochure
4	*Steptococcus* infection	Level II	Level II	Manuals/Brochure
5	*Aeromonas* and *Pseudomonas*	Level II	Level II	Manuals/Brochures
6	*Lernaea*	Level I	Level I	Manuals/Brochure
7	*Argulus*	Level I	Level I	Manuals/Brochure
8	Myxosporideans	Level II	Level II	Manuals/Brochure
9	*Dactylogyrus*	Level I	Level I	Manuals/Brochure
10	*Trichodina*	Level I	Level I	Manuals/Brochure
	Crustaceans			
11	Luminiscen*t Vibriosis*	Level II	Level II	Manuals/Brochure
12	White spot(WSSV)	Level I and III	Level I and III	Manuals/Brochure
13	MBV	Level I and III	Level I and III	Manuals/Brochure
14	IHHNV	Level I and III	Level I and III	Manuals/Brochure
15	TSV	Level I and III	Level I and III	Manuals/Brochure
16	YHV	Level I and III	Level I and III	Manuals/Brochure
17	IMNV	Level I and III	Level I and III	Manuals/Brochure
18	GAV	Level I and III	Level I and III	Manuals/Brochure

B.12.2. CAMBODIA

The Existing Diagnostic Capability in Cambodia

No.	Name of the Disease	Laboratory	Personnel
Viral			
1	EUS	Level I	Level I
2	KHV	No	No
3	Viral encephalopathy and retinopathy (VNNV)	No	No
4	Grouper iridoviral diseases	No	No
5	White spot disease	Level I	Level I
6	Taura syndrome	No	No
7	MrNV and XSV (Freshwater prawn white tail disease-WTD)	No	No
8	Red spot (grass carp reo virus)	No	No
9	BNP (Bacilliary Necrosis in Pangasius) = Bacilliary Necrosis Disease (BND)	No	No
Bacterial			
10	*Vibrio*	Level II	Level II
11	Streptococcus	Level II	Level II
12	Enteric septicaemia of catfish	Level II	No
13	*Flexibacter*	Level II	No
14	*Aeromonas* and *Pseudomonas*	Level II	Level II
Parasitic			
15	*Lernaea*	Level II	Level II
16	*Trichodina*	Level II	Level II
17	*Argulus*	Level II	Level II
18	*Itchthyophthiosis*	Level II	Level II
19	*Alitropus*	Level II	Level II
20	*Gyoductilus*	Level II	Level II
21	*Nematoda*	Level II	Level II
Seaweed disease			
22	Disease of seaweed	No	No

B.12.3. INDONESIA

The Existing Diagnostic Capability in Indonesia

No.	Name of Disease	Lab. Level	Personal	Information
1.	WSSV	I, II, III	Level I, III	
2.	TSV	I, III	Level I, III	
3.	IHHNV	I, III	Level I,III	
4.	IMNV	III	Level II, III	
5.	VNNV	III	Level III	
6.	KHV	I, II, III	Level I, III	
7.	*Vibrio harveyi*	I, II	Level I, II	
8.	*V. parahaemolyticus*	II	Level II	
9.	*Streptococcus iniae*	II	Level II	
10.	*Aeromonas hydrophyla*	I, II	Level I, II	
11.	*A. salmonicida*	I, II	Level I, II	
12.	*Edwardsiella tarda*	II	Level II	
13.	*E. ichtaluri*	II	Level II	
14.	*Mycobacterium*	II	Level II	
15.	*Ichthyopthirius multifiliis*	I, II	Level I, II	
16.	*Gyrodactylus sp*	I, II	Level I, II	
17.	*Dactylogyrus sp*	I, II	Level I, II	
18.	*Myxobolus spp*	II	Level II	
19.	*Argulus sp*	I	Level I	
20.	*Benedinia / Neo*	II	Level II	
21.	*Lerneae sp*	I	Level I	
22.	*Zoothamnium*	I	Level I	

Note :

- Laboratory with qualification Level III only 2 i.e. Standard test Agency, CFQ and Aquaculture Research Agency.
- The rest are lab. Level I and II.

No.	Lab. belong to	Level I	Level II	Level III	Sum
1.	TIU Dir. Gen. Aqua	2	6	4	12
2.	TIU Fisheries Office	30	2	0	32
3.	Aqua. Research	0	1	2	3
4.	Centre of Fish Quarantine	44	6	1	51
5.	University Lab.	4	6	3	13
6.	Private Sector	13	0	0	13
Total					**124**

B.12.4. MALAYSIA

The Existing Diagnostic Capability in Malaysia

No.	Name of Disease	Levels of inspection	Standardization of diagnostic test	Laboratories
	Finfish			
1.	Epizootic ulcerative syndrome (EUS)	I,II	BACTERIA & HISTOPATHOLOGY	NaFisH
2.	Infection with Koi herpesvirus	I,II,III	IQ 2000 detection Kit	NaFisH & KLIA, Sepang
3.	Viral encephalopathy and retinopathy (VNNV)	I,II,III	IQ 2000 detection Kit	NaFisH
4.	Edwardsiellosis (E.tarda) of catfish	I,II	API 20E	NaFisH
5.	Grouper iridoviral disease	I,II,III	IQ 2000 detection Kit	NaFisH
6.	Vibriosis	I,II	API 20E	NaFisH & UMT
7.	Infection with *Flexibacter*	I,II	API 20E	NaFisH
8.	Streptococcosis	I,II	API 20 STREP	NaFisH
9.	Capsalid (skin monogenean) infestation	I	Light microsopic examination	NaFisH, PPPIL
10.	*Gyrodactylus* infestation	I	Light microsopic examination	NaFisH, KLIA, PPPIL & BKH
11.	Mycobacteriosis	I,II	Histopathology	NaFisH
12.	Nocardiosis	I,II	Histopathology	NaFisH
13.	Isopod infestation	I	Light microsopic examination	NaFisH, PPPIL
	Crustacean			
1.	Taura syndrome	III	IQ 2000 detection Kit	KLIA, PPTAP, IPPS, PPPBUK
2.	White spot disease	I, III	IQ 2000 detection Kit	KLIA, PPTAP, IPPS, PPPBUK KLIA
3.	Yellowhead disease (YH Virus, gill-associated virus)	III	IQ 2000 detection Kit	KLIA, PPTAP, IPPS, PPPBUK KLIA
4.	Spherical baculovirosis (*Penaeus monodon*-type baculovirus)	II, III	IQ 2000 detection Kit	KLIA
5.	Infectious hypodermal and haematopoietic necrosis(IHHNV)	III	IQ 2000 detection Kit	KLIA
6.	Hepatopancreatic parvovirus (HPV)	II, III	IQ 2000 detection Kit	KLIA
7.	White tail disease (MrNV and XSV)	-	*PCR*	*?*
8.	Necrotising hepatopancreatitis (NHP)	-	*PCR*	*?*
	Mollusc			
1.	Infection with *Marteilia sp.*	II	Histopathology	NaFisH

Note: NHP has been found in *P. vannamei* in Sabah 2 years ago.

B.12.5. MYANMAR

Diagnostic capacity at Level II and III has been conducted but with limited and incomplete facilities.

B.12.6. PHILIPPINES

The Existing Diagnostic Capability in Philippines

No	Disease	Laboratory	Personnel	Information
1	Taura syndrome	Level III (PCR)	Level III (PCR)	Flyer Disease Card
2	White Spot virus	Level II (Histopathology) Level III (PCR)	Level III (PCR)	Flyer Disease Card
3	Yellowhead disease	Level II (Histopathogy)		
4	Spherical baculovirosis	Microscopy Level II (Histopathology)	Microscopy	
5	Infectious hypodermal and haematopoeitic necrosis	Level II (Histopathology)		
6	Tetrahedral baculovirosis			
7	Necrotizing hepatopancreatitis	Level III (PCR)	Level III	Disease Card
8	Baculoviral midgut gland necrosis			
9	Infectious myonecrosis	Level III (PCR)	Level III	Disease Card
10	Vibriosis (Luminous)	Level II (Bacteriology, Histopathology)	Level II	
11	Koi herpesvirus disease	Level III (PCR)		Disease Card
11	Spring Viremia of Carp			
12	Epizootic Ulcerative Syndrome	Level II (Histopathology)	Level II (Histopathology)	Flyer
13	Epitheliocytis			
14	Grouper iridoviral disease			
15	Viral encephalopathy and retinopathy	Level II (Histopathology)	Level II (Histopathology)	Flyer
16	Enteric septicemia of catfish			
17	Bacterial disease (*Vibrio, Flexibater, Aeromonas, Streptococcus*)	Level II (Bacteriology)	Level II (Bacteriology)	Flyer
18	Fish louse	Level II (Parasitology)	Level II	Flyer
19	Isopod	Level II	Level II	Flyer
20	Gill fluke (*Dactylogyrus*)	Level II	Level II	Flyer
21	Trichodina	Level II	Level II	Flyer

B.12.7. SINGAPORE

The Existing Diagnostic Capability in Singapore

Name of the Disease	**Laboratory** (Level)*	**Information** (e.g. poster, diseases card, leaflet, manual books, brochures)
FINFISH DISEASES		
OIE-listed diseases		
1. Epizootic haematopoietic necrosis	III	
2. Infectious haematopoietic necrosis	III	
3. Spring viraemia of carp	III	
4. Viral haemorrhagic septicaemia	III	
5. Epizootic ulcerative syndrome	II	
6. Red seabream iridoviral disease	III	
7. Koi herpesvirus disease	III	Poster
Non OIE-listed diseases		
8. Epitheliocystis	II	
9. Grouper iridoviral disease	III	Brochure
10. Viral encephalopathy and retinopathy	III	Brochure, Poster
11. Enteric septicaemia of catfish	II	
12. Bacterial kidney disease	II	
13. Infectious pancreatic necrosis	III	
CRUSTACEAN DISEASES		
OIE-listed diseases		
1. Taura syndrome	III	
2. White spot disease	III	
3. Yellowhead disease (YH virus, gill-associated virus)	III	
4. Spherical baculovirosis (*Penaeus monodon*-type baculovirus)	II	
5. Infectious hypodermal and haematopoietic necrosis	III	
6. Tetrahedral baculovirosis (*Baculovirus penaei*)	II	
Non OIE-listed diseases		
ANY OTHER DISEASES OF IMPORTANCE		
1. Mullet systemic iridoviral disease	III	Brochure

* I = field; II= parasitology, bacteriology, mycology, histology; III= virology, molecular biology, immunology, electron microscopy

Laboratory Staff Strength

(1) Aquatic Animal Health Laboratory (conducts histology & Post-mortem)
-1 Aquatic Animal Health Veterinary & 1 technical staff

(2) Virology Laboratory
- 2 full time technical staff; 1 part-time staff (does other duties)

(3) Bacteriology Laboratory
- 1 full time technical staff, 1 covering

B.12.8. THAILAND

The Existing Diagnostic Capability in Thailand

Name of the Disease (diseases listed in the national law; Animal Epidemic Act)	**Laboratory** (Level)*	**Personnel** (Level)*	**Information** (e.g. poster, diseases card, leaflet, manual books, brochures)	**Additional information** (e.g. number of laboratory and personal)
1. BKD 2. EHNV 3. EUS 4. IHNV 5. Iridoviral disease 6. KHV 7. Nodavirus disease 8. OMV 9. RSIV 10. Streptococcosis 11. SVCV 12. VHS	II - III	II - III	Diseases diagnose according to OIE Manual, scientific publications or NACA Dis card	Thailand DOF has 2 Regaional Laboratories. Please see details below.
13. Crayfish plague 14. HPV 15. IHHNV 16. MBV 17. Taura syndrome 18. Tetrahedral baculovirosis 19. White spot disease 20. Yellowhead disease	II - III			
21. Bonamiosis 22. Perkinsosis 23. Marteiliosis 24. Mikrocytosis 25. MSX disease	II			
26. Septicaemia cutaneous ulcerative disease 27. Poxvirus in crocodile	II - III			

* I = field; II= parasitology, bacteriology, mycology, histology; III= virology, molecular biology, immunology, electron microscopy

Thailand Central Competent Authority:
Department of Fisheries (DOF)
Paholyothin Road, Ladyao, Jatuchak
Bangkok 10900

AAHRI (Inland Aquatic Animal Health Research Institute, Regional Laboratory I) has 5 senior staffs (4 PhD, 1 MSc) and 5 junior staffs (1 PhD, 4 MSc). All seniors had

been graduated and trained in fish diseases. The IFRDB (Inland Fisheries Research and Development Bureau) has 31 IFRDCs (Inland Fisheries research and Development Center). However 7 IFRDCs have already set up a unit in each center for to diseases diagnosis and chemical testing laboratory. Laboratories in another 12 IFRDCs are on going development. AAHRI has been contributing training courses in fish diseases to 7+12 local laboratories which based in the IFRDCs. Each local laboratory has 1-2 senior staffs and 1-2 junior staffs.

CAAHRI (Coastal Aquatic Animal Health Research Institute; Regional laboratory II) has 4 senior staffs (1 PhD, 3 MSc) and 7 junior staffs (2 PhD, 1 MSc., 4 BSc.). Seniors had been graduated in Fish Disease/Biochemistry/Fisheries/Marine Science and all had trained in fish diseases and surveillance. The CFRDB (Coastal Fisheries Research and Development Bureau) has 20 CFRDCs. All units have capability for serving on diseases diagnosis and chemical testing. CAAHRI has been contributing training courses in aquatic animal diseases to 20 local laboratories. Each local laboratory has 2 senior staffs and 1-2 junior staffs.

B.12.9. VIETNAM

Capacity on diagnostic for Aquatic Animal disease has been improved very fast for last 5 years in term of human resources and facilities.

Government has sent many staff abroad to obtain MSc and PhD degree on Aquatic Animal Health. MSc and PhD degree and short training courses on disease diagnostic are also provided at different institutions in Vietnam.

In all RIAs and in many universities have now fulfill level 1,2,3 of diagnostic standard. In all RIAs and in some universities have now level 3 diagnostic labs.

The diagnostic labs level 3 are also being established in NAFIQAVED's regional branches.

There are many laboratories in provinces, especially coastal provinces, have capacity for disease diagnostic including PCR

The three levels of diagnosis referred to in this section are provided below:

LEVEL	SITE	ACTIVITY
I	Field	Observation of animal and the environment Clinical examination
II	Laboratory	Parasitology Bacteriology Mycology Histopathology
III	Laboratory	Virology Electron microscopy Molecular biology Immunology

ANNEXES - List of Participants

STRENGTHENING AQUATIC ANIMAL HEALTH CAPACITY AND BIOSECURITY IN ASEAN (AADCP:RPS 370-021)

FIRST POLICY WORKSHOP PARTICIPANTS (Bangkok, Thailand, 3-6 April 2006)

Name	Address
BRUNEI	
Mr Haji Abd. Rajid Haji Metali	Acting Senior Fisheries Officer Department of Fisheries Ministry of Industry and Primary Resources, Jln. Menteri Besar, Brunei Darussalam Telephone +67 3 2383067, +67 3 2771159 Fax. +67 3 2382069 Email: rajid_metali@fisheries.gov.bn
CAMBODIA	
Dr Chea Tharith	Chief of Laboratory Division Fisheries Ecology, Valuation and Mitigation, Department of Fisheries 186, Norodom Blvd, Phnom Penh, Cambodia Telephone +855 11 970587 Fax. +855 221 485 Email: cheatharit@yahoo.com
Mr Thach Phanara	Vice Chief of Laboratory Division Fisheries Ecology, Valuation and Mitigation Department of Fisheries 186, Norodom Blvd, Phnom Penh, Cambodia Telephone +855 12 632 079 Fax. +855 221 485 Email: thachphanara@yahoo.com
INDONESIA	
Dr Slamet Budi Prayitno	Head of Fisheries Office Province Central Java Jl. Imam Bonjol No. 134 Semarang, Indonesia Telephone +62 24 3550580 Fax. +62 24 3551289 Email: sbprayitno@telkom.net
Dr Darnas Dana	Director Directorate Fish Health and Environment Ministry of Marine Affairs and Fisheries Jl. Harsono RM No. 3, Gd B Lt. VI, Pasar Minggu, Jakarta Selatan 12550, Indonesia Telephone +62-21-7827844 Fax. +62-21-7827844 Email: darnas_dna@yahoo.com
LAO PDR	

Mr Vanhphaeng Houangsavanh	Technical Officer Department of Agriculture and Forestry Vientiane, Lao PDR PO Box 3176 Telephone +856 21 480502, +856 20 5693647 Fax. +856 21 480502 Email: vanhphengh@yahoo.com
Mr Bouasavanh Viengsombath	Technical Officer Department of Livestock and Fisheries Vientiane, Lao PDR PO Box 811 Telephone +856 21 416932 Fax. +856 21 415674 Email: bouasavanh_v@yahoo.com
MALAYSIA	
Dr Siti Zahrah Abdullah	Fish Health National Coordinator National Fish Health Research Centre (NaFisH), Fisheries Research Institute Batu Maung, 11960, Pulau Pinang, Malaysia Telephone 6 04 6263922 Fax. 6 04 6263977 Email: sitizaham@yahoo.co.uk
Mr Arthur Besther Sujang	Fisheries Officer Quarantine and Fish Health Section, Department of Fisheries Level 1-6, Block 4G2, Wisma Tani, Prescint 4, 62628 Putrajaya, Malaysia Telephone +6 03 88704000 Ext. 4723 Fax. +6 03 88891130 Email: lukart@mail.com
MYANMAR	
Ms Daw May Thanda Wint	Fishery Officer Department of Fisheries Sinmin Road, Ahlone T/S, Yangon, Myanmar Telephone +02 52191 Fax. +95 01 228258 Email: DOF@mptmail.net.mm
Ms Daw Ohn Mar Moe	Deputy Fishery Officer Department of Fisheries Sinmin Road, Ahlone T/S, Yangon, Myanmar Telephone +01 211375 Fax. +95 01 228258 Email: DOF@mptmail.net.mm
PHILIPPINES	
Dr Joselito R. Somga	Senior Aquaculturist Fish Health Section Bureau of Fisheries and Aquatic Resources 860 Arcadia Bldg., Quezon Avenue, Quezon City, Philippines Telephone +63 02 3725055 Fax. +63 02 3725055 Email: jsomga@bfar.da.gov.ph, josomga@yahoo.com
Ms Simeona E. Regidor	Chief, Fish Health Section

	Bureau of Fisheries and Aquatic Resources 860 Arcadia Bldg., Quezon Avenue, Quezon City, Philippines Telephone +63 02 3725055 Fax. +63 02 3725055 Email: sregidor@bfar.da.gov.ph, simeona03@yahoo.com
SINGAPORE	
Mr Hanif Loo Jang Jing	Programme Manager Agri-Food & Veterinary Authority of Singapore 5 Maxwell Road, #01-01, MND Complex. Singapore 069110 Telephone + 65 98223825 Fax. + 65 97146449 Email: loo_jang_jing@ava.gov.sg
THAILAND	
Dr Somkiat Kanchanakhan	National Coordinator Inland Aquatic Animal Health Research Institute (AAHRI) Department of Fisheries, Jatuchak, Bangkok 10900, Thailand Telephone + 662 5794122, +662 5796803 Fax. +662 5613993 Email: kanchanakhan@yahoo.com
Mr Pradit Chonchuenchob	Senior Fisheries Biologist Coastal Aquatic Animal Health Research Institute (CAAHRI) Department of Fisheries, 130/2 Tinnasulanon Rd. M008, Pawong, Muang, Songhkla 90100, Thailand Telephone + 66 074 334516-8, 06291 3577 Fax. + 66 074 334515 Email: Praditch@surat.loxinfo.co.th
VIETNAM	
Ms Phan Thi Van	Vice Director Centre for Aquatic Environment, Disease Monitoring and Warning-RIA1 Dinh Bang - Tu Son - Bac Ninh - Viet Nam Telephone +84 4 8780102/+84 91 3236939 Fax. +84 4 8780102 Email: phanvan@hn.vnn.vn/ ria1@hn.vnn.vn
Ms Bui Thi Cuong	Fisheries Veterinarian Aquatic Animal Health Division, NAFIQAVED Hanoi, Vietnam Telephone +84 04 8310983 Fax. +84 04 8317221 Email: buicuong.nafi@mofi.gov.vn
Department of Fisheries, Thailand	
Dr Supranee Chinabut	Department of Fisheries Kasetsart University Campus Ladyao, Jatujak, Bangkok 10900,Thailand Telephone +66 2 5796803 Fax. +66 2 5613993 Email: supranee@fisheries.go.th
SEAFDEC	

Dr Celia Lavilla-Pitogo	Fish Health Section SEAFDEC Aquaculture Department Tigbauan 5021, Iloilo, Philippines Telephone +63 33 3362965 Fax. +63 33 3351008 ; 5119070 Email: celiap@aqd.seafdec.org.ph
AusVet	
Dr David Kennedy	AusVet Animal Health Services PO Box 2321 Orange NSW 2800 Australia Telephone +61 2 6365 6016 Fax. +61 2 6365 6088 Email: david@ausvet.com.au
Dr Angus Cameron	AusVet Animal Health Services 4 place Puvis de Chavannes 71480 CUISEAUX, France Telephone +33 (0)3 85 72 77 31 Fax. +33 (0)3 85 72 56 69 Email: angus@ausvet.com.au
NACA	
Dr CV Mohan	Network of Aquaculture Centres in Asia-Pacific Suraswadi Building, Department of Fisheries Kasetsart University Campus Ladyao, Jatujak Bangkok 10900 Thailand Telephone 66-2-561-1728 (ext 117) Fax. 66-2-561-1727 Email: mohan@enaca.org
Dr Flavio Corsin	Network of Aquaculture Centres in Asia-Pacific Suraswadi Building, Department of Fisheries Kasetsart University Campus Ladyao, Jatujak Bangkok 10900 Thailand Telephone 66-2-561-1728 (ext 117) Fax. 66-2-561-1727 Email: flavio.corsin@gmail.com
Dr Agus Irianto	Network of Aquaculture Centres in Asia-Pacific Suraswadi Building, Department of Fisheries Kasetsart University Campus Ladyao, Jatujak Bangkok 10900 Thailand Telephone 66-2-561-1728 (ext 117) Fax. 66-2-561-1727 Email: a_irianto@enaca.org

SECOND POLICY WORKSHOP PARTICIPANTS
(Bali, Indonesia, 7-10 May 2007)

Name	Address
BRUNEI	
Mr Haji Abd. Rajid Haji Metali	Acting Senior Fisheries Officer Department of Fisheries Ministry of Industry and Primary Resources, Jln. Menteri Besar, Brunei Darussalam Telephone +67 3 2383067, +67 3 2771159 Fax. +67 3 2382069 Email: rajid_metali@fisheries.gov.bn
Mr Sheikh Al-Idrus Sheikh Nikman	Fisheries Officer Department of Fisheries Ministry of Industry and Primary Resources, Jln. Menteri Besar, Brunei Darussalam Telephone +67 3 2383067, +67 3 2771159 Fax. +67 3 2382069 Email: idrus.nikman@fisheries.gov.bn
CAMBODIA	
Dr So Nam	Deputy Director Inland Fisheries Research and Development Institute (IFReDI) 186, Norodom Blvd., Phnom Penh, Cambodia Telephone: +855 23 221 486 Fax: +855 23 221 485 E-mail: sonammekong2001@yahoo.com
Dr Chea Tharith	Chief of Laboratories Division Inland Fisheries Research and Development Institute (IFReDI) P.O. Box: 582 Phnom Penh. Cambodia Telephone +855 11 970587, +855 23 221 485 Fax. +855 221 485 Email: IFRIC@online.com.kh,: cheatharit@yahoo.com
INDONESIA	
Dr Slamet Budi Prayitno	Governor Assistance for Social Affairs Central Java Province Jl. Pahlawan no. 9 Semarang Telephone/fax : +62 24-8311181 Email: sbprayitno@telkom.net
Djumbuh Rukmono	Directorate Fish Health and Environment Ministry of Marine Affairs and Fisheries Jl. Harsono RM No. 3, Gd B Lt. VI, Pasar Minggu, Jakarta Selatan 12550, Indonesia Telephone +62-21-7827844 Fax. +62-21-7827844 Email : d_rukmono@yahoo.co.id
MALAYSIA	
Dr Siti Zahrah Abdullah	Fish Health National Coordinator National Fish Health Research Centre (NaFisH), Fisheries Research Institute Batu Maung, 11960, Pulau Pinang, Malaysia

	Telephone 6 04 6263922 Fax. 6 04 6263977 Email: sitizaham@yahoo.co.uk
Mr Arthur Besther Sujang	Fisheries Officer Quarantine and Fish Health Section, Department of Fisheries Level 1-6, Block 4G2, Wisma Tani, Prescint 4, 62628 Putrajaya, Malaysia Telephone +6 03 88704000 Ext. 4723 Fax. +6 03 88891130 Email: lukart@mail.com
MYANMAR	
Ms Daw May Thanda Wint	Fishery Officer Department of Fisheries Sinmin Road, Ahlone T/S, Yangon, Myanmar Telephone +95-1- 541294 Fax. +95-1-228258 Email: tunwinkyi@myanmar.com.mm
Ms Daw Ohn Mar Moe	Deputy Fishery Officer Department of Fisheries Sinmin Road, Ahlone T/S, Yangon, Myanmar Telephone +95-1- 228624, 222962 Fax. +95-1- 228258 Email: tunwinkyi@myanmar.com.mm
PHILIPPINES	
Dr Joselito R. Somga	Head, IRA Panel Bureau of Fisheries and Aquatic Resources 860 Arcadia Bldg., Quezon Avenue, Quezon City, Philippines Telephone +63 02 3725055 Fax. +63 02 3725055 Email: jsomga@bfar.da.gov.ph, josomga@yahoo.com
Ms Simeona E. Regidor	Chief, Fish Health Section Bureau of Fisheries and Aquatic Resources 860 Arcadia Bldg., Quezon Avenue, Quezon City, Philippines Telephone +63 02 3725055 Fax. +63 02 3725055 Email: sregidor@bfar.da.gov.ph, simeona03@yahoo.com
SINGAPORE	
Mr Hanif Loo Jang Jing	Programme Manager Agri-Food & Veterinary Authority of Singapore 5 Maxwell Road, #01-01, MND Complex. Singapore 069110 Telephone + 65 98223825 Fax. + 65 97146449 Email: loo_jang_jing@ava.gov.sg
THAILAND	
Dr Somkiat Kanchanakhan	National Coordinator Inland Aquatic Animal Health Research Institute (AAHRI) Department of Fisheries, Jatuchak, Bangkok 10900, Thailand Telephone + 662 5794122, +662 5796803 Fax. +662 5613993 Email: kanchanakhan@yahoo.com

Dr Jiraporn Kasornchandra	Director Coastal Aquatic Animal Health Research Institute (CAAHRI) Department of Fisheries, 130/2 Moo 8. Pawong, Muang District, Songhkla 90100, Thailand Telephone + 66 074 334516-8 Fax. + 66 074 334515 Email: jibkasorn@yahoo.com
VIETNAM	
Dr. Nguyen Nhu Tiep	Head of Aquatic Animal Health Division National Fisheries Quality Assurance and Veterinary Directorate (NAFIQAVED) The Ministry of Fisheries of Vietnam No. 10, Nguyen Cong Hoan, Ba Dinh, Hanoi, Vietnam Tlp: +84 4 7715383, cell phone: + 84 91 3398994 Fax. 84 4 831 7221 E-mail: nhutiep.nafi@mofi.gov.vn
Mr. Bui Duc Manh	Officer of Aquatic Animal Health Division National Fisheries Quality Assurance and Veterinary Directorate (NAFIQAVED) The Ministry of Fisheries of Vietnam No. 10, Nguyen Cong Hoan, Ba Dinh, Hanoi, Vietnam
AusVet	
Dr David Kennedy	AusVet Animal Health Services PO Box 2321 Orange NSW 2800 Australia Telephone +61 2 6365 6016 Fax. +61 2 6365 6088 Email: david@ausvet.com.au
Dr Jenny Hutchison	AusVet Animal Health Services 124 Perry Drive Chapman ACT 2611 Australia Phone: + 61 2 6287 4483 Fax: + 61 2 6287 4468 Mobile: + 61 423 403 214 Email: jenny@ausvet.com.au
NACA	
Dr CV Mohan	Network of Aquaculture Centres in Asia-Pacific Suraswadi Building, Department of Fisheries Kasetsart University Campus,Ladyao, Jatujak Bangkok 10900 Thailand Telephone 66-2-561-1728 (ext 106) Fax. 66-2-561-1727 Email: mohan@enaca.org
Dr Agus Irianto	Network of Aquaculture Centres in Asia-Pacific Suraswadi Building, Department of Fisheries Kasetsart University Campus Ladyao, Jatujak - Bangkok 10900 Thailand Telephone 66-2-561-1728 (ext 119) Fax. 66-2-561-1727 Email: a_irianto@enaca.org

TRAINING WORKSHOPS

FIRST TRAINING WORKSHOP
(Singapore, 7-13 May 2006)

Name	Address
BRUNEI	
Ms Wanidawati Tamat	Department of Fisheries Ministry of Industry and Primary Resources, Jln. Menteri Besar, Brunei Darussalam Telephone +67 3 2383067 Fax. +67 3 2382069 Email: Wanidawati.tamat@fisheries.gov.bn
CAMBODIA	
Dr Chea Tharith	Chief of Laboratory Division Fisheries Ecology, Valuation and Mitigation, Department of Fisheries 186, Norodom Blvd, Phnom Penh, Cambodia Telephone +855 11 970587 Fax. +855 221 485 Email: cheatharit@yahoo.com
Mrs.Chhy Savry	Aquaculture Officer Aquaculture Division, Administration of Fisheries 186,Norodom Blvd, Phnom Penh Cambodia Telephone +855 23 220 417 /Mobile Phone +855 11 310707 Fax + 855 23 220 417 chhysavry@yahoo.com
INDONESIA	
Mr Jumbuh Rukmono	Directorate Fish Health and Environment Ministry of Marine Affair and Fisheries Jl. Harsono RM No. 3, Gd B Lt. VI, Pasar Minggu, Jakarta Selatan 12550, Indonesia Telephone +62-21-7827844 Fax. +62-21-7827844 Email: dit_kesehatanikan@dkp.go.id
Mr Dwika Herdikiawan	Directorate Fish Health and Environment Ministry of Marine Affair and Fisheries Jl. Harsono RM No. 3, Gd B Lt. VI, Pasar Minggu, Jakarta Selatan 12550, Indonesia Telephone +62-21-7827844 Fax. +62-21-7827844 Email: dwikahdk@indosat.net.id
LAO PDR	
Mrs Thongphoun Theungphachanh	Quality Control Animal Product Department of Livestock and Fisheries DLF PO Box 811, Lao PDR Telephone + 856 21 216380 or Mobile: 856 20 7720433 Fax. + 856 21 216380 Email: theungphachan@yahoo.com

Mr Saleumphone Chanthavong	LARReC(Living Aquatic Resource Research Centre) NARI (National Aquatic Research Institute) Telephone +(856-21)223436 or Mobile: (856-20)5696119 Fax. +(856-21)214855 Email: saleum@yahoo.com
MALAYSIA	
Dr Azila Abdullah	National Fish Health Research Centre (NaFisH), Fisheries Research Institute Batu Maung, 11960, Pulau Pinang, Malaysia Telephone 6 04 6263922 Fax. 6 04 6263977 Email: Azi_dolah@hotmail.com
Miss Noormahya Yusof	Fish Health Management Quarantine Centre (FHMQC) FHMQC, KLIA, Sepang, 64000 Selangor , Malaysia Telephone +6 03 87874095 Fax. +6 03 87874107 Email: maya_yusof@yahoo.com
MYANMAR	
Ms Daw Nu Nu Ye	Department of Fisheries Sinmin Road, Ahlone T/S, Yangon, Myanmar Telephone +02 52191 Fax. +95 01 228258 Email: DOF@mptmail.net.mm
Ms Daw Win Win Han	Department of Fisheries Sinmin Road, Ahlone T/S, Yangon, Myanmar Telephone +01-708520 Fax. +95 01 228258 Email: DOF@mptmail.net.mm
PHILIPPINES	
Ms Sonia S. Somga	Fish Health Section Bureau of Fisheries and Aquatic Resources 860 Arcadia Bldg., Quezon Avenue, Quezon City, Philippines Telephone +63 02 3725055 Fax. +63 02 3725055 Email: ssomga@bfar.da.gov.ph
Ms Maria Abegail A. Albaladejo	Fish Health Section Bureau of Fisheries and Aquatic Resources 860 Arcadia Bldg., Quezon Avenue, Quezon City, Philippines Telephone +63 02 3725055 Fax. +63 02 3725055 Email: aalbaladejo@bfar.da.gov.ph
SINGAPORE	
Dr Diana Chee	Animal & Plant Health Laboratory Division, Agri-Food & Veterinary Authority of Singapore 6 Perahu Road, Singapore 718827 Telephone +65 6316 5164/5 Fax. +65 6316 1090 Email: Diana_Chee@AVA.gov.sg

Ms Wendy Sng Beng Guat	Senior Animal Health Officer Agri-Food & Veterinary Authority of Singapore Epidemiology & Surveillance Branch c/oAnimal & Plant Health Centre 6 Perahu Road Singapore (718827) Telephone +65-63165147 Fax. +65-63162767 Email: wendy_sng@ava.gov.sg
Mr Tan Yit Wee	Senior Scientific Officer Agri-Food & Veterinary Authority of Singapore Marine Aquaculture Branch Sembawang Research Station Lorong Chencharu (769194) Telephone +65-67519853 Fax. +65-67523242 Email : tan_yit_wee@ava.gov.sg
Mr Amos Koh Chee Boon	Manager (Hatchery, Reproduction, Breeding) Agri-Food & Veterinary Authority of Singapore Hatchery Branch 5 Maxwell Road, #01-01, MND Complex. Singapore (069110) Telephone +65-98223825 Fax. +65-97146447 Email : koh_chee_boon@ava.gov.sg
THAILAND	
Ms Montira Thavornyutikarn	Coastal Aquatic Animal Health Research Institute (CAAHRI) Department of Fisheries, 130/2 Tinnasulanon Rd. Moo8, Pawong, Muang, Songhkla 90100, Thailand Telephone + 66 074 334516-8 Fax. + 66 074 334515 Email: monora-tha@yahoo.com
Ms Varinee Panyawachira	Inland Aquatic Animal Health Research Institute (AAHRI) Department of Fisheries, Jatuchak, Bangkok 10900, Thailand Telephone + 662 5794122, +662 5796803 Fax. +662 5613993 Email: ninee43@hotmail.com
VIETNAM	
Mr Nguyen Viet Khue	Centre for Aquatic Environment, Disease Monitoring and Warning-RIA1 Dinh Bang - Tu Son - Bac Ninh - Viet Nam Telephone +84 4 8780102 Fax. +84 4 8780102 Email: ria1@hn.vnn.vn
Ms Bui Thi To Nga	Officer Aquatic veterinary unit, NAFIQAVED, Vietnam 10 Nguyen Cong Hoan, Ba Dinh, Hanoi Viet Nam Telephone +84 4 7712574 Fax. +84 4 8317221 Email: tonga.nafi@mofi.gov.vn

Facilitators	
Dr Jenny Hutchison	AusVet Animal Health Services 124 Perry Drive Chapman ACT 2611 Australia Telephone: + 61 2 6287 4483 Mobile + 61 423 403 214 Fax. + 61 2 6287 4468 Email: jenny@ausvet.com.au
Dr Belinda Wright	Aquatic Animal Health Officer Office of the Chief Veterinary Officer Australian Government Department of Agriculture, Fisheries and Forestry AUSTRALIA Tel: 61 2 6271 6300; Fax: 61 2 6273 5237 E-mail: Belinda.Wright@affa.gov.au
Dr CV Mohan	Network of Aquaculture Centres in Asia-Pacific Suraswadi Building, Department of Fisheries Kasetsart University Campus Ladyao, Jatujak Bangkok 10900 Thailand Telephone 66-2-561-1728 (ext 106) Fax. 66-2-561-1727 Email: mohan@enaca.org

SECOND TRAINING WORKSHOP
(Ho Chi Minh City, 4-10 February 2007)

Name	Address
BRUNEI	
Ms Wanidawati Tamat	Department of Fisheries Ministry of Industry and Primary Resources, Jln. Menteri Besar, Brunei Darussalam Telephone +67 3 2383067 Fax. +67 3 2382069 Email: Wanidawati.tamat@fisheries.gov.bn
Mrs Noraini Haji Anggas	Fisheries Officer Brunei Fisheries Department Ministry of Industry and Primary Resources, Jalan Menteri Besar, Barakas, BB3910, Brunei Darussalam Telephone +67 3 2383067 Fax. +67 3 2382069 Email: noraini_anggas@fisheries.gov.bn
CAMBODIA	
Dr. Prum Somany	Deputy Director Inland Fisheries Research and Development Institute (IFReDI) 186, Norodom Blvd, Phnom Penh, Cambodia Mobile: 855 16811827 Fax. +855 23 220 417 Email: prumsomany35@yahoo.com
Mrs.Chhy Savry	Aquaculture Officer Aquaculture Division, Administration of Fisheries 186,Norodom Blvd, Phnom Penh Cambodia Telephone +855 23 220 417 /Mobile Phone +855 11 310707 Fax + 855 23 220 417 Email: chhysavry@yahoo.com
INDONESIA	
Mr Tri Hariyanto	Head of Environmental Surveillance Directorate Fish Health and Environment Ministry of Marine Affair and Fisheries Jl. Harsono RM No. 3, Gd B Lt. VI, Pasar Minggu, Jakarta Selatan 12550, Indonesia Telephone +62-21-7890552 Fax. +62-21-78835853 Email: hariyanto003@yahoo.com
Ms Fatmah	Head of Environmental Surveillance Directorate Fish Health and Environment Ministry of Marine Affair and Fisheries Jl. Harsono RM No. 3, Gd B Lt. VI, Pasar Minggu, Jakarta Selatan 12550, Indonesia Telephone +62-21-7890552 Fax. +62-21-78835853 Email: subditski@yahoo.com

LAO PDR	
Mrs. Bonaphanh Chanthasith	Deputy of Livestock and Fisheries Unit Sikhothabong Agriculture and Forestry Extension Office Sikhothabong District, Vientiane Capital, Laos Telephone + 856-21 813262 or 856 20 2408934 Fax. + 856 21 415674 Email: eulaodlf@laotel.com
MALAYSIA	
Dr Azila Abdullah	National Fish Health Research Centre (NaFisH), Fisheries Research Institute Batu Maung, 11960, Pulau Pinang, Malaysia Telephone 6 04 6263922 Fax. 6 04 6263977 Email: Azi_dolah@hotmail.com
Miss Noormahya Yusof	Fish Health Management Quarantine Centre (FHMQC) KLIA, Sepang, 64000 Selangor , Malaysia Telephone +6 03 87874095 Fax. +6 03 87874107 Email: maya_yusof@yahoo.com
MYANMAR	
Mrs Shoon Lai Ko Ko	Deputy Assistant Fishery Officer Department of Fisheries Sinmin Road, Ahlone T/S, Yangon, Myanmar Telephone +01 220597/ 223036 Fax. +95 01 228258 Email: DOF@mptmail.net.mm
Mrs Maw Maw Than	Fishery Officer, Department of Fisheries Sinmin Road, Ahlone T/S, Yangon, Myanmar Telephone +01-220597/223036 Fax. +95 01 228258 Email: DOF@mptmail.net.mm
PHILIPPINES	
Ms Sonia S. Somga	Fish Health Section Bureau of Fisheries and Aquatic Resources 860 Arcadia Bldg., Quezon Avenue, Quezon City, Philippines Telephone +63 02 3725055 Fax. +63 02 3725055 Email: ssomga@bfar.da.gov.ph
Ms Maria Abegail A. Albaladejo	Fish Health Section Bureau of Fisheries and Aquatic Resources 860 Arcadia Bldg., Quezon Avenue, Quezon City, Philippines Telephone +63 02 3725055 Fax. +63 02 3725055 Email: aalbaladejo@bfar.da.gov.ph
SINGAPORE	
Dr Diana Chee	Animal & Plant Health Laboratory Division, AgriFood & Veterinary Authority of Singapore 6 Perahu Road, Singapore 718827 Telephone +65 6316 5164/5 Fax. +65 6316 1090 Email: Diana_Chee@AVA.gov.sg

Mr Amos Koh Chee Boon	Manager (Hatchery, Reproduction, Breeding) Agri-Food & Veterinary Authority of Singapore Hatchery Branch 5 Maxwell Road, #01-01, MND Complex. Singapore (069110) Telephone +65-98223825 Fax. +65-97146447 Email : koh_chee_boon@ava.gov.sg
THAILAND	
Ms Montira Thavornyutikarn	Coastal Aquatic Animal Health Research Institute (CAAHRI) Department of Fisheries, 130/2 Tinnasulanon Rd. Moo8, Pawong, Muang, Songhkla 90100, Thailand Telephone + 66 074 334516-8 Fax. + 66 074 334515 Email: monora-tha@yahoo.com
Ms Varinee Panyawachira	Inland Aquatic Animal Health Research Institute (AAHRI) Department of Fisheries, Jatuchak, Bangkok 10900, Thailand Telephone + 662 5794122, +662 5796803 Fax. +662 5613993 Email: ninee43@hotmail.com
VIETNAM	
Mr Nguyen Viet Khue	Centre for Aquatic Environment, Disease Monitoring and Warning-RIA1 Dinh Bang - Tu Son - Bac Ninh - Viet Nam Telephone +84 4 8780102 Fax. +84 4 8780102 Email: ria1@hn.vnn.vn
Ms. Bui Thi To Nga	Officer Aquatic veterinary unit, NAFIQAVED, Vietnam 10 Nguyen Cong Hoan, Ba Dinh, Hanoi Viet Nam Telephone +84 4 7712574 Fax. +84 4 8317221 Email: tonga.nafi@mofi.gov.vn
Mr Nguyen Cong Dung	Research Institute For Aquaculture No2 116 Nguyen Dinh Chieu – HCM city – VietNam Telephone: +84 8228976 Fax: +84 8237051 Email: ncdung1981@yahoo.com
Facilitators	
Dr Jenny Hutchison	AusVet Animal Health Services 124 Perry Drive Chapman ACT 2611 Australia Telephone: + 61 2 6287 4483 Mobile + 61 423 403 214 Fax. + 61 2 6287 4468 Email: jenny@ausvet.com.au
Dr Iain East	Department of Agriculture Fisheries & Forestry GPO Box 858 Canberra ACT 2601 Australia Telephone number is 02 6272 3106; Mobile 0421 044 907 Email: iain.east@daff.gov.au

Dr Agus Irianto	Network of Aquaculture Centres in Asia-Pacific Suraswadi Building, Department of Fisheries Kasetsart University Campus Ladyao, Jatujak Bangkok 10900 Thailand Telephone 66-2-561-1728 (ext 119) Fax. 66-2-561-1727 Email: a_irianto@enaca.org

TECHNICAL MISSIONS

CAMBODIA (3-8 July 2006)

No	Name	Organization
1	Dr So Nam	IFReDI
2	Dr Chea Tharit	IFReDI
3	Mr Srun Lim Song	IFReDI
4	Mr Hav Viseth	Aquaculture Division
5	Mr Thach Phanara	IFReDI
6	Mr Sem Viryak	Quality Control Division
7	Dr Prum Somany	IFReDI
8	Ms Chhy Savry	Aquaculture Division
9	Ms Chin Deth	IFReDI
10	Ms Kim Sopheap	IFReDI
11	Mr Sim Thavary	IFReDI
12	Mr Hap Navy	IFREDI
13	Mr Soeun Norng	IFReDI
14	Dr Celia Pitogo	SEAFDEC, Philippines
15	Ms Karina Scott	DAFF, Australia
16	Dr Supranee Chninabut	DOF, Thailand
17	Dr CV Mohan	NACA

LAO PDR (12-17 July 2006)

No	Name	Organization
1	DDG	Department of Livestock and Fisheries
2	Dr Syseng Khounsy	Deputy Director of NAHC
3	Mr Bounthong Saphakdy	Chief of Technical Division, DLF
4	Mr Hun Choundara	DLF Staff
5	Ms Thongphoun	NAHC Staff
6	Ms Bouaphan Chanthasit	Sykhottabong Staff
7	Mr Nantha Phandavong	Namhum Fisheries Station
8	Mr Khemphone	Nongteng Fish Farm
9	Ms Paphaphone	NAHC Staff
10	Mr Kongrea Pudomvilay	Naxaythong District Staff
11	Mr Thongtem	Xaytany District Staff
12	Mr Bouasavanh Viengsmobath	NADC
13	Mr Vanpheng Houangsavanh	Vientiane Municipality
14	Mr Saleumphone Chanhthavong	LARReC staff
15	Ms Karina Scott	DAFF, Australia
16	Dr Supranee Chninabut	DOF, Thailand
17	Dr CV Mohan	NACA

MYANMAR (4-8 September 2006)

No	Name	Organization
1	U.Khin Ko Lay	Department of Fisheries
2	U Khin Maung Soe	Department of Fisheries
3	U Saw Lah Paw Wah	Department of Fisheries
4	U Than Win	Department of Fisheries
5	U Aung Soe Win	Department of Fisheries
6	U Tint Wai	Department of Fisheries
7	U Tin Tun Lin	Department of Fisheries
8	Daw Myat Myat Htwe	Department of Fisheries
9	Daw May Thandar Wint	Department of Fisheries
10	Daw Kyawt Kyawt Nyein	Department of Fisheries
11	Daw Ohn Mar Moe	Department of Fisheries
12	Daw Yi Yi Cho	Department of Fisheries
13	Daw Khine Khine Mya	Department of Fisheries
14	Daw Nyo Nyo Thein	Department of Fisheries
15	Daw Shoon Lai Ko Ko	Department of Fisheries
16	Daw Htet Moe Win	Department of Fisheries
17	Daw Nu Nu Yi	Department of Fisheries
18	Daw Mar Lar Win	Department of Fisheries
19	Daw Win Win Han	Department of Fisheries
20	Daw Yin Pa Pa Tun	Department of Fisheries
21	Daw Maw Maw Myint	Department of Fisheries
22	U Aung Hlain Win	Department of Fisheries
23	U Ngwe Min Tun	Department of Fisheries
24	Dr Kyaw Sunn	Livestock Breeding and Veterinary Dept.
25	Dr Cho Cho Su Mon	Livestock Breeding and Veterinary Dept.
26	Daw Thi Thi Taw	Yangon University
27	Dr Moe Kyi Han	Mandalay University
28	Daw Soe Soe Oo	Maubin University
29	U Soe Tun	Myanmar Shrimp Association
30	Dr Myint Swe	Myanmar Fish Farmer Association
31	U One Tin	Myanmar Fish Farmer Association
32	U Nyan Wai Tun	Myanmar Fish Farmer Association
33	Daw Moe Thidar Oo	Myanmar Fish Farmer Association
34	U Aye Ko	Myanmar Fish Farmer Association
35	U Saw Wonderful	Myanmar Fish Farmer Association
36	Dr Ohn Kywe	Myanmar Fish Farmer Association
37	Dr Aung Win	Myanmar Fish Farmer Association
38	Dr San Aung	Myanmar Academy of Agriculture, Forestry, Livestock and Fishery Science
39	U Han Tun	Myanmar Fisheries Federation
40	U Kyee Ngwe	Myanmar Fisheries Federation
41	Daw Toe Nandar Tin	Myanmar Fisheries Product Processor and Exporter Association
42	U Lokin Sai	
43	Ms Karina Scott	DAFF, Australia
44	Dr CV Mohan	NACA, Thailand

VIETNAM (4-8 December 2006)

No	Name	Organization
1	CV Mohan	NACA
2	Flavio Corsin	NACA
3	Ingo Ernst	DAAF
4	Supranee Chinabut	DOF Thailand
5	Nguyen Tu Cuong	General Director of NAFIQAVED
6	Nguyen Nhu Tiep	Chief of Aquatic Animal Health Division - NAFIQAVED
7	Nguyen Van Thanh	Chairman of National Committee (NACAAH)
8	Le Thanh Luu	Director of RIA 1
9	Phan Thi Van	RIA 1
10	Nguyen Thi Xuan Thu	Vice director of RIA 3
11	To Long Thanh	Department of Animal Health (MARD)
12	Nguyen Thi Minh	Department of Aquaculture - MOFI
13	Le Duy Binh	Vice Director of NAFIQAVED 4
14	Le Thi Nhan	Vice Director of NAFIQAVED 1
15	Nguyen Hien Nang	Chief of Aquatic Animal Health Division - NAFIQAVED 5
16	Nguyen Dinh Xuan Quy	Chief of Aquatic Animal Health Division - NAFIQAVED 6
17	Dinh Thanh Phuong	Director of NAFIQAVED2
18	Nguyen Thi Phuong Mai	NAFIQAVED 3
19	Nguyen Huu Nghia	RIA 1
20	Pham Van Thu	RIA 1
21	Nguyen Viet Khue	RIA 1
22	Do Huu Dung	Department of Animal Health (MARD)
23	Bui Thi To Nga	NAFIQAVED
24	Bui Thi Viet Hang	NAFIQAVED
25	Vi The Dang	NAFIQAVED
26	Bui Duc Manh	NAFIQAVED
27	Nguyen Van Be	NAFIQAVED
28	Lê thị Huệ	NAFIQAVED
29	Luu Phuong Thanh	NAFIQAVED branch 1
30	Nguyen Hai Ha	NACA
31	Le Van Quy	Sub-department of Fishery Quality Assurance and Veterinary in Ho Chi Minh City

List of participants involved with a related project "Operationalise Guidelines on Responsible Movement of Live Food Finfish within ASEAN" (AADCP:RPS 370-018) run concurrently with AADCP:RPS 370-021

Name	Address
BRUNEI	
Mr Haji Ajamain Haji Sawal	Senior Fisheries Officer Department of Fisheries Minister of Industry and Primary Resources, Jln. Menteri Besar, Brunei Darussalam Telephone +673 2383067 Fax. +673 2382069 Email: ajamain_sawal@fisheries.gov.bn
Mr Haji Abd. Rajid Haji Metali	Acting Senior Fisheries Officer Department of Fisheries Ministry of Industry and Primary Resources, Jln. Menteri Besar, Brunei Darussalam Telephone +67 3 2383067, +67 3 2771159 Fax. +67 3 2382069 Email: rajid_metali@fisheries.gov.bn
CAMBODIA	
Mr Sem Viryak	Vice Chief of Quality and Processing Division Department of Fisheries 186, Norodom Blvd, Phnom Penh, Cambodia Telephone +855 11 948 088 Fax. +855 23 210 154 Email: viryak@gmail.com
Mr Nouv Buntha	Officer of Quality and Processing Division Department of Fisheries 186, Norodom Blvd, Phnom Penh, Cambodia Telephone +855 12 887 768 Fax. +855 23 215 470 Email: buntha_n@yahoo.com
INDONESIA	
Mr Hardjono	Director of Center for Fish Quarantine Center for Fish Quarantine Jl. Raya Setu No. 1, Cilangkap-Jakarta Timur 13880, Indonesia Telephone +62 21 8448506 Fax. +62 21 8448679 Email: puskari@dkp.go.id
Dr M. Murdjani	Head of Main Center for Brackishwater Aquaculture Development, Jepara Jl. Pemandian Kartini PO. Box 1 Jepara Telephone +62 291 591 125 Fax. +62 291 591 724 Email : bbbpap.jpr@rad.net.id

Mrs Nila Widodari	Head of Section Fish Health Monitoring Directorate of Fish Health and Environment Jl. Harsono RM No. 3, Gd B Lt. VI, Pasar Minggu, Jakarta, Selatan 12550, Indonesia. Telephone +62 21 7827844 Fax. +62 21 7827844 Email: widodari_nr@yahoo.com
LAO PDR	
Mr Bounma Luangamath	Head of Fisheries Conservation Unit Department of Livestock and Fisheries DLF PO Box 811, Lao PDR Telephone + 856 21 416932 Fax. + 856 21 415674 Email: LMA@yahoo.com / sysombath@yahoo.com
Ms Thongphoun Theungphachanh	Head of Quality Control Animal Product National Animal Health Centre Department of Livestock and Fisheries DLF PO Box 811, Lao PDR Telephone + 856 21 216380 or Mobile: 856 20 7720433 Fax. + 856 21 216380 Email: theungphachan@yahoo.com
Mr Vannapha Thammache	Namxouang Aquaculture Development Centre Department of Livestock and Fisheries
MALAYSIA	
Mrs Faazaz binti Abdul Latiff	Head of National Fish Health Centre National Fish Health Research Centre (NaFisH) Jalan Batu Maung, 11960 Batu Maung, Penang, Malaysia Telephone +6 04 6263922 Fax. +6 04 6263977 Email: faazaz88@yahoo.com
Mrs Fauzidah bte Othman	Head, Quarantine and Fish Health Section Quarantine and Fish Health Section, Aquaculture Development Division Level I -7, Blok 4G2, Wisma Tani, DOF, Ministry of Agriculture and Agro-Based, 62628 Putrajaya, Malaysia Telephone +6 03 88702614 Fax. +6 03 88891130 Email: fauzidahoth@yahoo.com.my
Mr Arthur Besther Sujang	Fisheries Officer Quarantine and Fish Health Section, Department of Fisheries Level 1-6, Block 4G2, Wisma Tani, Prescint 4, 62628 Putrajaya, Malaysia Telephone +6 03 88704000 Ext. 4723 Fax. +6 03 88891130 Email: lukart@mail.com
MYANMAR	
Mr U Saw Lah Pah Wah	Assistant Director, Department of Fisheries Sinmin Road, Ahlone T/S, Yangon, Myanmar Telephone +95 01 211382 Fax +95 01 228258 Email: DOF@mptmail.net.mm

Ms Daw Mar Lar Win	Deputy Assistant Fishery Officer Department of Fisheries Sinmin Road, Ahlone T/S, Yangon, Myanmar Telephone +95 01 225562 Fax +95 01 228258 Email: DOF@mptmail.net.mm
PHILIPPINES	
Dr Juan D. Albaladejo	Supervising Aquaculturist and Chair, Shrimp Task Force Fish Health Section Bureau of Fisheries and Aquatic Resources Arcadia Bldg. 860, Quezon Avenue, Quezon City, Philippines Telephone +63 2 3725055 Fax. +63 2 3725055 Email: jalbaladejo@bfar.da.gov.ph, jalbaladejo99@yahoo.com
Mr Edwyn B. Alesna	Officer-in-Charge Fisheries Regulatory and Quarantine Division, Bureau of Fisheries and Aquatic Resources Arcadia Bldg. 860, Quezon Avenue, Quezon City, Philippines Telephone +63 2 3725046/ 3726715 Fax. +63 2 3737453 Email: edwyn_alesna@yahoo.com
Dr Tomas Cuyos	Regional Fish Health Officer, BFAR Regional Office
Mr Jeffrey Cortez	Chief, Regional Fisheries Quarantine Service, BFAR Regional Office
Ms Carolina Lopez	Regional Fish Health Officer, BFAR Regional Office
SINGAPORE	
Mr Poh Yew Kwang	Senior Import & Export Officer Import & Export Division, AgriFood & Veterinary Authority of Singapore Sembawang Research Station, 17 km Sembawang Road Telephone +65 6751 9802 Fax. +65 6759 5042 Email: Poh_Yew_Kwang@AVA.gov.sg
Dr Diana Chee	Aquatic Animal Health Veterinarian Animal & Plant Health Laboratory Division, AgriFood & Veterinary Authority of Singapore 6 Perahu Road, Singapore 718827 Telephone +65 6316 5164/5 Fax. +65 6316 1090 Email: Diana_Chee@AVA.gov.sg
THAILAND	
Dr Temdoung Somsiri	Fish Pathologist Inland Aquatic Health Research Institute (AAHRI), Department of Fisheries, Paholyothin Rd. Jatuchak, Bangkok 10900, Thailand Telephone +662 5794122, 662 5796803 Fax. +662 5613993 Email: tsi_f@yahoo.com

Mrs Yoop-ee Getpech	Fisheries Biologist License and Fisheries Management Section Bureau of Fisheries Administration and Management, Department of Fisheries, Paholyothin Rd. Jatuchak, Bangkok Telephone +662 5614689, +662-5620600 ext. 4023, Email: k_1earth@yahoo.com
VIETNAM	
Mr Pham Van Thu	Disease expert Reseach Institute for Aquaculture No.1 Dinh Bang - Tu Son - Bac Ninh - Vietnam Telephone +84 4 8780102/ 8785748 Fax. +84 4 8780102 Email: thupham@ria1.org
Mr Le Duy Binh	Quarantine, export expert NAFIQAVED branch 4- Ho Chi Minh city, Vietnam Telephone 84 88 216627 Fax. 84 88212613 Email: nafiqaved@mofi.gov.vn / duybinhnafi4@hcm.vnn.vn
ASEAN SECRETARIAT	
Dr Somsak Pippopinyo	ASEAN Secretariat 70A Jalan Sisingamangaraja, Jakarta 12110, Indonesia
Department of Fisheries, Malaysia	
Mr Ibrahim bin Saleh	Deputy Director General of Fisheries Malaysia Department of Fisheries Malaysia Wisma Tani, Level 2, Lot 4G2, Presint 4 Federal Government Administrative Centre, 62628 Putrajaya Tel: 6-03-88704210 Fax:6-03-88891195 Email: geikhong88@hotmail.com
Department of Fisheries, Thailand	
Dr Supranee Chinabut	Department of Fisheries Kasetsart University Campus Ladyao, Jatujak, Bangkok 10900,Thailand Telephone +66 2 5796803 Fax. +66 2 5613993 Email: supranee@fisheries.go.th
AusVet	
Dr David Kennedy	AusVet Animal Health Services PO Box 2321 Orange NSW 2800 Australia Telephone +61 2 6365 6016 Fax. +61 2 6365 6088 Email: david@ausvet.com.au
Dr Angus Cameron	AusVet Animal Health Services 4 place Puvis de Chavannes, 71480 CUISEAUX, France Telephone +33 (0)3 85 72 77 31 Fax. +33 (0)3 85 72 56 69 Email: angus@ausvet.com.au

Ms Robyn Tynan	Project Administrator AusVet Animal Health Services PO Box 3180 South Brisbane Qld 4101 Australia Telephone +61 7 3255 1712 Fax. +61 7 3844 8374 Email: robyn@ausvet.com.au
Dr Jenny Hutchison	AusVet Animal Health Services 124 Perry Drive Chapman ACT 2611 Australia Telephone: + 61 2 6287 4483 Mobile + 61 423 403 214 Fax. + 61 2 6287 4468 Email: jenny@ausvet.com.au
NACA	
Dr CV Mohan	Network of Aquaculture Centres in Asia-Pacific Suraswadi Building, Department of Fisheries Kasetsart University Campus Ladyao, Jatujak Bangkok 10900 Thailand Telephone 66-2-561-1728 (ext 106) Fax. 66-2-561-1727 Email: mohan@enaca.org
Dr Flavio Corsin	Network of Aquaculture Centres in Asia-Pacific Suraswadi Building, Department of Fisheries Kasetsart University Campus Ladyao, Jatujak Bangkok 10900 Thailand Telephone 66-2-561-1728 (ext 117) Fax. 66-2-561-1727 Email: flavio.corsin@gmail.com
Mr Koji Yamamoto	Network of Aquaculture Centres in Asia-Pacific Suraswadi Building, Department of Fisheries Kasetsart University Campus Ladyao, Jatujak Bangkok 10900 Thailand Telephone 66-2-561-1728 (ext 124) Fax. 66-2-561-1727 Email: koji@enaca.org
Dr Agus Irianto	Network of Aquaculture Centres in Asia-Pacific Suraswadi Building, Department of Fisheries Kasetsart University Campus Ladyao, Jatujak Bangkok 10900 Thailand Telephone 66-2-561-1728 (ext 119) Fax. 66-2-561-1727 Email: a_irianto@enaca.org