

**REPORT OF THE SEVENTH MEETING
OF THE ASIA REGIONAL ADVISORY GROUP ON
AQUATIC ANIMAL HEALTH**



Network of Aquaculture Centres in Asia-Pacific

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Preparation of this document:

This report was prepared by the 7th Asia Regional Advisory Group (AG) on Aquatic Animal Health (AGM-7) that met at NACA Secretariat, Bangkok, Thailand, on the 15th-17th December 2008.

The Advisory Group was established by the Governing Council of the Network of Aquaculture Centres (NACA) to provide advice to NACA members in the Asia-Pacific region on aquatic animal health management, through the following activities: (a) Review and evaluation of quarterly regional aquatic animal disease reporting; (b) Review and evaluation of implementation of the *Technical Guidelines*; (c) Revision of the *Technical Guidelines*¹, *Manual of Procedures*² and *Asia Diagnostic Guide for Aquatic Animal Diseases*³ as required; (d) Development of procedures for advising on Technical Guideline implementation; and (e) Advise on identification and designation of regional aquatic animal health resources, including specialist advisers, Regional Reference Laboratories and Resource Centres. Members of the Advisory Group include invited aquatic animal disease experts, World Animal Health Organization (OIE), Food and Agricultural Organization of the United Nations (FAO) and collaborating regional organizations.

The designations employed and the presentation of the material in this document do not imply that the expression of any opinion whatsoever on the part of the Network of Aquaculture Centres in Asia-Pacific (NACA) concerning the legal or constitutional status of any country, territory or sea area, or concerning the delimitation of frontiers.

Reference: NACA 2009. Report of the Seventh Meeting of the Asia Regional Advisory Group on Aquatic Animal Health. Published by the Network of Aquaculture Centres in Asia-Pacific, Bangkok, Thailand.

¹ Asia Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals and the Beijing consensus and Implementation strategy, 2000. FAO/NACA. Fisheries Technical Paper No 402

² FAO/NACA. 2001. Manual of Procedures for the Implementation of the Asia Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals. *FAO Fisheries Technical Paper*, No. 402, Suppl. 1. FAO, Rome. 2001. 106 p.

³ Bondad-Reantaso, MG, McGladdery SE, East, I and Subasinghe, RP. (Eds.). *Asia Diagnostic Guide to Aquatic Animal Diseases*. *FAO Fisheries Technical Paper*, No. 402, Suppl. 2. FAO, Rome. 2001. 236 p.

Abbreviations and Acronyms

AADCP-RPS	ASEAN Australia Development Cooperation Program – Regional Partnership Scheme
AAHRI	Aquatic Animal Health Research Institute (Thailand)
AAHSC	Aquatic Animal Health Standards Commission of the OIE
AAPQIS	Aquatic Animal Pathogen and Quarantine Information System (FAO)
ACIAR	Australian Centre for International Agricultural Research
ADG	Asia Diagnostic Guide
AG	Advisory Group
AGM	Advisory Group Meeting
AIT	Asian Institute of Technology
ANAAHC	ASEAN Network of Aquatic Animal Health Centres
ASDD	Abdominal segment deformity disease (in <i>P.vannamei</i>)
ASEAN	Association of South East Asian Nations
ASEC	Asean Secretariat
AusAID	Australian Agency for International Development
AVG	Abalone viral ganglioneuritis
AVM	Abalone viral mortality
AVN	Acute viral necrosis (in scallops)
AVNV	Acute viral necrosis virus
BFAR	Bureau of Fisheries and Aquatic Resources (Philippines)
BKD	Bacterial kidney disease
BMGN	Baculoviral midgut gland necrosis
BMP	Better management practices
CAA	Coastal Aquaculture Authority (India)
CCRF	Code of Conduct for Responsible Fisheries (FAO)
CCV	Channel catfish virus
CCVD	Channel catfish virus disease
CIBA	Central Institute of Brackishwater Aquaculture (India)
CSIRO	Commonwealth Scientific and Industrial Research Organisation (Australia)
CVO	Chief Veterinary Officer
DAFF	Australian Government Department of Agriculture, Fisheries and Forestry
DOF	Department of Fisheries (Thailand)
EPC	<i>Epithelioma papulosum cyprini</i>
ESC	Enteric septicaemia of catfish
EU	European Union
EUS	Epizootic ulcerative syndrome
FAO	Food and Agricultural Organization of the United Nations
FHS	Fish Health Section of the Asian Fisheries Society
FIGIS	Fisheries Global Information System (FAO)
GAV	Gill associated virus
GC	Governing Council of NACA
GCHV	Grass carp haemorrhagic virus
GID	Grouper iridoviral disease
HPV	Hepatopancreatic parvo-like virus
HPVD	Hepatopancreatic parvo-like virus disease
ICAR	Indian Council of Agricultural Research
IHHNV	Infectious hypodermal and haematopoietic necrosis virus
IMN	Infectious myonecrosis
IMNV	Infectious myonecrosis virus
IPN	Infectious pancreatic necrosis
ISKNV	Infectious spleen and kidney necrosis virus
KHV	Koi herpesvirus

KHVD	Koi herpesvirus disease
LFF	Live food finfish
LSNV	Laem Singh necrosis virus (in <i>P. monodon</i>)
MBV	Monodon baculovirus
MLD	Milky lobster disease
MoVD	Mourilyan virus disease
MPEDA	Marine Products Export Development Authority (India)
MrNV	<i>Macrobrachium rosenbergii</i> nodavirus
MSGS	Monodon slow growth syndrome
NACA	Network of Aquaculture Centres in Asia-Pacific
NaCSA	National Center for Sustainable Aquaculture (India)
NC	National Coordinator
NHP	Necrotising hepatopancreatitis
OIE	World Organisation for Animal Health
OMRV	<i>Oxyeleotris marmoratus ranavirus</i>
OOD	Oyster oedema disease
PANDA	Permanent Advisory Network for Diseases in Aquaculture (of the EU)
PCR	Polymerase chain reaction
PL	Postlarvae
PvNV	<i>Penaeus vannamei</i> nodavirus
QAAD	Quarterly Aquatic Animal Disease
RRC	Regional resource centre
RRE	Regional resource expert
RRL	Regional reference laboratory
RT-PCR	Reverse transcriptase PCR
RTRV	<i>Rana trigrina ranavirus</i>
SAARC	South Asian Association for Regional Cooperation
SEAFDEC	Southeast Asian Fisheries Development Center
SEAFDEC- AQD	Southeast Asian Fisheries Development Center Aquaculture Department
SOP	Standard operating procedure
SPF	Specific pathogen free
SVC	Spring viraemia of carp
SVCV	Spring viraemia of carp virus
TAC	Technical Advisory Committee of NACA
TG	Technical Guidelines (Asia Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals)
TS	Taura syndrome
TSV	Taura syndrome virus
VER	Viral encephalopathy and retinopathy
VNN	Viral nervous necrosis
VNNV	Viral nervous necrosis virus
WAHIS	World Animal Health Information System
WAHID	World Animal Health Information Database
WSD	White spot disease
WSSV	White spot syndrome virus
WTD	White tail disease
WTO	World Trade Organization
WWF	World Wildlife Fund
XSV	Extra small virus
YHV	Yellowhead virus

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Opening session

The seventh meeting of the Asia Regional Advisory Group on Aquatic Animal Health (AGM-7) was held at the NACA Secretariat, Bangkok, Thailand from 15th to 17th December 2008.

Dr C.V.Mohan, on behalf of the Director General of NACA, formally opened the meeting. He welcomed the Advisory Group (AG) members and the co-opted members to Bangkok and thanked them for their active involvement in supporting the regional aquatic animal health programme. Dr Mohan emphasized the significant role played by the AG in supporting the implementation of a strong aquatic animal health programme in the Asia Pacific region and informed the members that the Advisory Group was established by the Governing Council of the Network of Aquaculture Centres (NACA) in 2001 to provide advice to NACA members in the Asia-Pacific region on aquatic animal health management, through the following activities: (a) Review and evaluation of quarterly regional aquatic animal disease reporting; (b) Review and evaluation of implementation of the *Technical Guidelines*; (c) Revision of the *Technical Guidelines, Manual of Procedures* and *Asia Diagnostic Guide for Aquatic Animal Diseases* as required; (d) Development of procedures for advising on Technical Guideline implementation; and (e) Advise on identification and designation of regional aquatic animal health resources, including specialist advisers, Regional Reference Laboratories and Resource Centres

Election of Chair and Vice Chair

Dr Mohan informed the meeting that Dr Eva-Maria Bernoth, former Chair of the AG, had resigned from her position with the Australian Government and taken on a new role as “Manager Veterinary Services” with Animal Health Australia (AHA). AHA is a not-for-profit public company established by the Australian, state and territory governments and major national livestock industry organizations. Aquatic animals are not within the scope of AHA's work. In view of this she has decided not to continue aquatic animal health activities, neither within Australia nor internationally, and would not be continuing in her role as President of the OIE Aquatic Animal Health Standards Commission (AAHSC). Dr Bernoth has been representing the OIE AAHSC at the annual AG meetings since 2001.

Dr Bernoth informed her decision to NACA in early October 2008 and suggested that we approach Vice President of the OIE AAHSC, Professor Barry Hill to participate in the meeting on behalf of OIE AAHSC. I am very pleased to inform the meeting that Prof Barry Hill readily agreed to our request.

The Vice-Chair of the 6th AG, Dr Celia Pitogo, called the meeting to order. Nominations for Chair and Vice-Chair for the 7th AGM were invited. Dr Celia Pitogo was nominated as the Chair of the AG and Prof Barry Hill was nominated as the Vice-Chair. The incoming Chair thanked members for selecting her and assured members that she would make her best efforts to ensure successful conduct of 7th AGM.

Following the welcome remarks, Dr Celia Pitogo took over as Chairperson of the Meeting and requested the AG members to review the agenda. The participants reviewed and adopted the AG Meeting agenda (Annex A) without any modification. The list of participants is given as Annex B.

Session 1: Progress since AGM-6 and expected outputs from AGM-7

1.1 Progress report from NACA on progress since AGM-6 and expected outputs from AGM-7

The AG was informed of the progress made since AGM-6. The report provided details of the history of NACA's regional aquatic animal health program, its major themes and the various regional activities that have contributed to strengthening aquatic animal health management in the region. The presentation provided information about the following key regional activities to the AG:

- Highlights of AGM-6
- Outcomes of the 19th NACA Governing (GC) meeting
- Outcomes of the 9th NACA Technical Advisory Committee (TAC) meeting
- Quarterly Aquatic Animal Disease (QAAD) reports and regional disease status
- Progress on implementation of Technical Guidelines (TG)
- Progress on implementation of various regional projects in support of aquatic animal health management in the Asia Pacific region
 - Australian Centre for International Agricultural Research (ACIAR) regional shrimp health project - Application of Polymerase chain reaction (PCR) for improved shrimp health management in Asia
 - ACIAR regional better management practices (BMP) communication project- Strengthening regional mechanisms to maximize benefits to small-holder shrimp farmer groups adopting better management practices
 - ASEAN Australia Development Cooperation Program - Regional Partnership Scheme (AADCP-RPS) project 370-021-Strengthening Aquatic Animal Health Capacity and Biosecurity in ASEAN (Association of South East Asian Nations) and follow up activities
 - AADCP-RPS project 370-018-Operationalize Guidelines on Responsible Movement of Live Food Finfish (LFF) in ASEAN and follow up activities
 - PCR training, calibration and harmonization work carried out in India, Indonesia and Vietnam
 - Marine Products Export Development Authority (MPEDA, India)/NACA shrimp BMP project in India and the ongoing follow up activities
 - BMP programs for other key aquaculture commodities
 - Testing WWF shrimp standards in small scale farms of Thailand and India
- Details of various capacity building and training activities conducted
 - Master class in fish pathology, networking of pathology participants, online assistance to disease diagnosis and follow up activities
 - OIE/NACA workshop on disease reporting and setting up of WAHIS regional core
- Development of resource material in support of surveillance and health management
 - Disease cards
 - Field guides
- Details of NACA's participation and provision of technical assistance and collaboration to other related regional activities
- Details of ongoing regional and international collaborations and new project proposals being developed.

Observations and Recommendations:

- The AG congratulated NACA for the excellent progress and noted the impressive developments taking place in the region in the area of aquatic animal health management
- Considering the direct and indirect impacts of various ongoing NACA regional aquatic animal health activities on the implementation of key elements contained in the Asia

Regional Technical Guidelines (TG), the AG recommended that the regional program should be continued and further strengthened.

- The AG also recognized that building capacity on aquatic animal health still represents a major requirement for the region. The AG noted that more and more young researchers are pursuing career in molecular biology (e.g. PCR) and expressed concern that the capacity for conventional disease diagnostics in the region is on the decline. The AG recommended that efforts should be continued to develop capacity in the areas of conventional disease diagnostics (e.g. parasitology, microbiology, mycology and histopathology) and epidemiology as they form the basis for understanding aquatic animal diseases

Session 2 Global Issues and Standards

2.1 Outcomes from the OIE General Session (May 2008) and the Aquatic Animal Health Standards Commission meeting (October 2008)

Prof Barry Hill reported on outcomes from the 76th General Session of the OIE (May 2008) and the outcomes of the Aquatic Animals Health Standards Commission (AAHSC) meeting in October 2008

At the OIE General Session, changes to OIE standards in the Aquatic Health Standards Code and the Manual of Diagnostic Tests for Aquatic Animals proposed by the Aquatic Animals Health Standards Commission (AASHC) were presented to the national delegates of OIE Member Countries by the President of AASHC, Dr Eva-Maria Bernoth in a report of the activities of the Commission. The full text of the report can be seen on the OIE website in the Fifth Plenary Session part of the Report of the 76th General Session of the OIE International Committee. Most of the proposed changes were presented initially in the report of the meeting of AASHC in October 2007 and formally proposed in the report of the meeting of AASHC in March 2008 (both reports, and all previous meetings reports from 2000, can be seen on the AAHSC pages of the OIE web site.

The principal changes to the Aquatic Code adopted at the General Session were:

In the list of diseases, no diseases have been de-listed and no diseases of fish and molluscs have been added. Three new crustacean (Necrotising hepatopancreatitis, Mourilyan virus diseases and hepatopancreatic parvovirus disease) diseases have been included and listed as under study. Two diseases of amphibians have been added – Infection with ranavirus and Infection with *Batrachochytrium dendrobatidis*. This is the first time that diseases of amphibians have been included in the Aquatic Code. Amendments were made to the chapters on:

- Definitions
- General obligations
- Guidelines for import risk analysis
- Recommendations for safe transport of aquatic animals and aquatic animal products
- *Gyrodactylosis* (*Gyrodactylus salaris*) Infection with *Mikrocytos mackini* Infectious myonecrosis White tail disease

New chapters were added on

- Infection with ranavirus
- Infection with *Batrachochytrium dendrobatidis*
- Introduction to guidelines for the welfare of farmed fish
- Guidelines on the control of aquatic animal health hazards in aquatic animal feed.
- Guidelines for aquatic animal health surveillance

All these changes were subsequently incorporated in the 11th edition of the Aquatic Code (2008), which can be seen on the OIE website or obtained from the OIE as a printed hard copy.

At the meeting of AAHSC in October 2008, changes to be proposed for the 2009 edition of the Aquatic Code were agreed and described in the meeting report that has been distributed to all OIE Member Countries for comment. All comments received will be considered by AAHSC at its meeting in March 2009 and final amendments will then be made to the proposals to be put forward for adoption at the OIE General Session in May 2009. The report is now available on the AAHSC pages of the OIE web site. Amongst the changes proposed is the de-listing of 4 diseases of crustaceans, Tetrahedral baculovirus (*Baculovirus penaei*), Spherical baculovirus (*Penaeus monodon*-type baculovirus), Hepatopancreatic parvovirus disease and Mourilyan virus disease, and the addition of a new disease of crustaceans, Milky haemolymph disease of spiny lobsters.

Other developments for 2009 include an updated edition of the OIE Manual of Diagnostic Tests for Aquatic Animals that will be available as hard copy from about September 2009, and a new Handbook on Aquatic Animal Health Surveillance that is expected to be published in February/March 2009.

Observations and Recommendations:

- The AG thanked Prof. Hill for providing very clear and useful information and commended the AAHSC for their continuous collaboration with the NACA and the AG.
- The AG was pleased to note that the *Ad hoc* Group for the Listing of Crustacean Diseases had proposed delisting of four crustacean diseases. It was noted that the AG in its previous meetings had debated whether the two OIE listed diseases (spherical baculovirus and tetrahedral baculovirus) meet the criteria for listing, and as a result, a country from the region had represented this issue to the consideration of AAHSC of the OIE
- The AG felt that the recent developments within the OIE are of significant relevance to international trade and implementation of national aquatic animal health strategies. In view of this, the AG requested NACA to disseminate the latest updates from OIE to National Coordinators (NCs)/aquatic national focal points as appropriate.

2.2 Current global issues of relevance to aquatic animal health management and opportunities for collaboration between FAO and NACA in Asia, Africa and Eastern Europe

Dr Miao Wemin from FAO-RAP, Bangkok made a brief presentation on various activities FAO is undertaking globally to assist Members in improving national aquatic animal health management activities. FAO recognized the importance of aquatic animal health management in the region. He informed the members that FAO continues to assist Members in improving national aquatic animal health management activities through Technical Cooperation Projects [(TCPs), e.g. Africa, Eastern Europe, Asia, Gulf Region, Pacific Island countries, Asia] or regular programme or extra-budgetary funded thematic projects (e.g. biosecurity, risk analysis, molluscan health, climate change). Brief details are provided below:

AFRICA

- Fourth Meeting of COFI's Sub-Committee on Aquaculture: The Sub-Committee recognised the need for a regional approach concerning disease outbreaks and the need to establish an aquatic biosecurity framework and requested FAO to provide technical assistance through a regional technical cooperation project under the umbrella of SPADA (Special Programme for Aquaculture Development in Africa).
- An emergency disease task force organized by FAO in April 2007 (with AAHRI and NACA) confirmed the presence of EUS in the Chobe/Zambesi Rivser system in Botswana. The findings of the task force paved the way for the development of an

emergency project TCP/RAF/3111. The final report of the Task Force mission will be made available to AGM-7 for reference (for limited circulation as it is expected to be published in early 2009).

- FAO Regional Workshop on Development of an Aquatic Biosecurity Framework for southern Africa, Lilongwe, Malawi (22-24 April 2008) - a capacity assessment questionnaire survey was undertaken from January to March 2008 to evaluate national capacities for managing aquatic biosecurity and presented during this Lilongwe workshop which was attended by 18 representatives from 9 countries participating in the survey, the OIE and FAO.
- TCP/RAF/3111 (E) Emergency assistance to combat Epizootic ulcerative syndrome (EUS) in the Chobe/Zambesi river system (Angola, Botswana, Malawi, Mozambique, Namibia, Zambia, Zimbabwe). As a follow up to the last workshops in Lusaka and Lilongwe, a training workshop on "aquatic animal health management and an introduction to risk analysis in aquaculture", will be held at the Veterinary Medical School of the University of Lusaka, Zambia from 9-15 February 2009. Under this project, two staff (one each from Zambia and Uganda) are also being sent to AAHRI for on-the-job training in January 2009.
- Regional Aquatic Biosecurity Framework for Africa. Five countries (Botswana, Mozambique, Namibia, Uganda and Zambia) have submitted official requests for technical assistance to develop a regional TCP on aquatic biosecurity. The regional TCP is being discussed with the Technical Cooperation department of FAO.

EASTERN EUROPE

- TCP/BIH/3101 Strengthening Aquaculture Health Management in Bosnia and Herzegovina - this TCP will be completed in March 2009.
- A regional seminar/workshop was held in May 2008 which was participated by 2-3 representatives (from veterinary and fisheries authorities) of Croatia, Macedonia, Montenegro and Serbia and OIE. A major outcome was the development of a TCP Facility Concept Note "Assistance for Improving Compliance to International Standards for Aquatic Animal Health". The following activities are anticipated: regional capacity and performance survey, regional field assessment, regional workshop and a regional TCP proposal that will address several key areas considered of high priority to participating countries, i.e., risk analysis, disease surveillance, monitoring and reporting, disease diagnostics including a regional reference laboratory, information and networking and targeted capacity building. It is expected that the TCPF will be approved soon for implementation during first quarter of 2009.

ASIA

- Regional Training/Workshop on Information Requirements for Aquatic Animal Biosecurity, February 2007, Cebu, Philippines (with NACA). The report of this workshop - FAO Fisheries and Aquaculture Report No. 877 (2008) - Report of the FAO Workshop on Information Requirements for Maintaining Aquatic Animal Biosecurity, Cebu City, Philippines, 15-17 February 2007, is in press.
- Expert Workshop on Understanding and Applying Risk Analysis in Aquaculture Production, June 2007, Rayong, Thailand (with NACA). The report of this expert workshop - FAO Fisheries and Aquaculture Technical Paper No. 519 (2008) - Understanding and applying risk analysis in aquaculture (edited by M.G. Bondad-Reantaso, J.R. Arthur and R.P. Subasinghe) is in press

GULF REGION

- A Regional Technical Workshop on Aquatic Animal Health, organized by the Regional Commission for Fisheries (RECOFI), was held in Jeddah, Kingdom of Saudi Arabia from 5 to 10 April 2008 and was participated by 19 consisting of participants and

observers from Bahrain, KSA, Oman, Qatar and United Arab Emirates. The report of the workshop including the results of the RECOFI Regional Aquatic Animal Health Capacity and Performance Survey Report and a Proposal for a Regional Programme for Improving Aquatic Animal Health in RECOFI Member Countries is in the final stages of publication to be published as FAO Regional Commission for Fisheries. Report of the Regional Technical Workshop on Aquatic Animal Health. Jeddah. Kingdom of Saudi Arabia, 6-10 April 2008. FAO Fisheries and Aquaculture Report. No. 831. Rome, FAO. 2008. 120 pp.

- Follow-up work include a workshop on risk analysis and national strategy development to be undertaken during 2009.

PACIFIC ISLANDS

- TCP/MAS/3101 – Sustainable Aquaculture Development in the Republic of the Marshall Islands: Risk Assessment in Aquaculture Development – was successfully completed from 5-7 May 2008.
- Follow-up work will include another TCPF proposal (submitted and waiting approval) on the same subject for Micronesia which develop a tool kit for a training course on risk analysis and which will involve staff from Marshall Island as part of continuing efforts to build a core group of staff with skills on risk analysis training.

Aquaculture Certification: FAO is working with NACA on developing technical guidelines for aquaculture certification, which includes aquatic animal health as one of the four minimum substantive criteria. Technical Guidelines are expected to be ready next year.

Climate Change Issues: FAO convened an Expert Meeting on Climate-related transboundary pests and diseases including relevant aquatic species, in Rome, Italy from 25 to 27 February 2008. Outcomes of the meeting can be found at <http://www.fao.org/foodclimate/expert/em3.html>. The expert meeting recognized that aquatic animals are very vulnerabler as water is their habitat and aquatic ecosystems are fragile. A number of fish diseases may be susceptible to climate change. Temperature and rainfall are critical ecological factors for epizootic ulcerative syndrome (EUS), a fungal disease of cultured and wild fish in fresh and brackishwater that affects more than 60 host species, which recently expanded its distribution to southern Africa. Perkinsus olseni, a major mollusk pathogen affects more than 100 host species and is also temperature dependant. Red tides (harmful algal blooms), influenced by climate change, are being spread into new locations by ships' ballast water.

Animal Welfare: FAO convened an FAO Expert Meeting on Capacity Building to Implement Good Animal Welfare Practices, Rome, Italy from 30 September to 3 October. FIMA participated to be updated on the recent current developments concerning Fish Welfare as preparation in case that member countries request for development work in this area. In this expert meeting, clear linkage between animal welfare, animal health and food safety was recognized.

Aquatic Biosecurity: A project on "Improving fish farm biosecurity through prudent and responsible use of antimicrobials and chemotherapeutants in aquatic food production" is being initiated at the beginning of 2009 through the preparation of a prospectus on a planned expert workshop on the same subject and development of survey questionnaires to understand and assess the current status of the use of antimicrobials and other chemotherapeutants in aquaculture.

Observations and Recommendations:

- The AG thanked FAO for its contribution to the development of aquatic animal health management in the Asia-Pacific region and globally.
- The AG thanked FAO for involving NACA and Regional expertise (AAHRI) in its emergency technical assistance mission to Africa in the wake of EUS outbreaks.

- The AG suggested that NACA collaborate closely with FAO in providing regional expertise to the proposed FAO regional programme in Africa. The lessons learned in the Asia Pacific region over the last ten years in the development and implementation of the aquatic animal health programme could be effectively used in developing simple and sound regional programme for Africa and NACA could play an important role in fostering the south-south cooperation.
- The AG suggested that NACA work with FAO in exploring opportunities for developing a regional TCP primarily to address farm level disease management issues in the Asia-Pacific region

2.3 Import requirements for live aquatic animals and their products for the European Union

Prof Barry Hill gave an overview of the forthcoming new certification requirements for imports of live aquatic animals (including ornamental fish) into the EU. The requirements arise from the new Council Directive 2006/88 published on 24 October 2006. The certification requirements and other conditions attached to imports into the EU are laid down in Commission Regulation (EC) 1251/2008 of 12 December 2008 “implementing Council Directive 2006/86/EC as regards conditions and certification requirements for placing on the market and importing into the Community of aquaculture animals and products thereof and laying down a list of vector species”. The Regulation was published in the Official Journal of the European Journal (L 337/41) on 16 December 2008.

The requirements that will have most impact on countries in the Asia-Pacific region exporting live fish to the EU are those for ornamental fish since this trade is by far the greatest proportion of all consignments. Different conditions and health requirements apply to ornamental fish intended for open ornamental facilities (i.e. all ornamental facilities other than closed ornamental facilities) and those intended for closed ornamental facilities. ‘Closed ornamental facility’ means pet shops, garden centres, garden ponds, commercial aquaria or wholesalers keeping ornamental aquatic animals:

- (i) without any direct contact with natural waters in the Community; or
- (ii) which are equipped with an effluent treatment system reducing the risk of transmitting diseases to the natural waters to an acceptable level.

For imports into the EU, the over-riding rule is that aquaculture animals intended for farming, relaying areas, put and take fisheries and open ornamental facilities shall only be imported into the Community from third countries, territories, zones or compartments listed in the Regulation. No consignments will be permitted entry if they originated from a country not listed. There are many Asian countries that are not listed..

The conditions and requirements for imports of ornamental fish are complex and are stipulated in Chapter IV (Articles 10 and 11). Those for aquaculture animals intended for open ornamental facilities, as laid down in Article 10, are that consignments must

- (a) be accompanied by an animal health certificate completed in accordance with the model set out in Part A of Annex IV and the explanatory notes in Annex V;
- (b) comply with the animal health requirements set out in the model certificate and explanatory notes, as referred to in point (a).

The requirements, as laid down in Article 11, for ornamental aquatic animals intended for closed ornamental facilities are:

1. Ornamental fish of species susceptible to one or more of the diseases listed in Part II of Annex IV to Directive 2006/88/EC and intended for closed ornamental facilities shall

only be imported into the Community from third countries, territories, zones or compartments listed in Annex III to this Regulation.

2. Ornamental fish which are not of susceptible species to any of the diseases listed in Part II of Annex IV to Directive 2006/88/EC, and ornamental molluscs and ornamental crustaceans, intended for closed ornamental facilities, shall only be imported into the Community from third countries or territories that are members of the World Organisation for Animal Health (OIE).
3. Consignments of the animals referred to in paragraphs 1 and 2 shall:
 - (a) be accompanied by an animal health certificate completed in accordance with the model set out in Part B of Annex IV and the explanatory notes in Annex V; and
 - (b) comply with the animal health requirements set out in the model certificate and explanatory notes, as referred to in point (a).

The requirements apply not only to the fish species listed as susceptible to the diseases covered by Directive 2006/86 but also the vector species listed in Annex I of the Regulation.

Although the Regulation enters into force on 1 January 2009, Article 20 provides for derogations to delay the dates for full implementation of the new import requirements to give EU countries and third-countries a longer transitional period in order to avoid disruption of established trade. For example, for a transitional period until 31 December 2010, Member States may authorise the import of ornamental aquatic animals of species susceptible to epizootic ulcerative syndrome (EUS) intended solely for closed ornamental facilities from third countries or territories that are Members of the World Organisation for Animal Health (OIE). During that transitional period, the requirements concerning EUS set out in Part II.2 of the animal health certificate set out in Part B of Annex IV, shall not apply to ornamental aquatic animals intended solely for closed ornamental facilities.

Annex V of the Regulation provides useful explanatory notes to the general requirements but the model health certificates themselves in Annex IV are complex, multi-choice type, documents that require words and sentences not applicable to be struck out, and there are detailed notes to provide guidance. It is possible that this degree of complexity will cause some confusion with the exporters and the competent authorities responsible for signing the certificates. Prof Hill suggested that it would be very useful if NACA were to break down the certificates into the parts relevant to the types of exports from the different exporting countries in the Asia-Pacific region and to provide workshops to explain the new requirements.

Observations and Recommendations

- Considering the complex and stringent nature of the proposed requirements for import of ornamental fish to EU, the AG felt that the Competent Authorities (CAs) of exporting countries from the region would find it extremely difficult to comply with the requirements and sign the necessary documents including health certificates with a certain degree of confidence. The AG also felt that imposition of these requirements would impact the ornamental industry in the region which supports the livelihood of several thousands of people.
- The AG recommended that NACA extract relevant information from the EU Commission on Regulations for Imports and circulate the summary to relevant stakeholders in the region (e.g. CAs, ornamental industry)
- For the benefit of the region, the AG recommended that NACA in collaboration with regional partners and EU experts develop a program for “**Assessing the impact of EU regulations on ornamental trade from Asia-Pacific**” and then develop guidelines to support the industry to prepare for better compliance to EU requirements.

- The AG also suggested that NACA work with EU experts in developing capacity building and awareness programs in the region to better equip policy makers and other relevant stakeholders for dealing with the EU requirements

Session 3: Review of regional disease status

3.1 Emerging crustacean diseases in the region

Prof Timothy Flegel provided a detailed presentation to the AG of emerging crustacean diseases in the region. He highlighted the following points in his presentation:

- Discrepancies in names of shrimp viruses commonly used and those accepted by ICTV. Two major examples include Hepatopancreatic parvoviruses in penaeid shrimp and Rod-shaped, intranuclear viruses of penaeid shrimp. He suggested that it may be necessary to include both names for the interim and pointed to the possible confusions that would arise while listing diseases for global and regional reporting.
 - *Penaeus monodon polyhedrovirus* (PemoNPV). PemoNPV was formerly called monodon baculovirus (MBV) and is common in Thailand and elsewhere in Asia including Australia
 - *Penaeus vannamei polyhedrovirus* (PevaNPV). PevaNPV formerly called *Baculovirus penaei* or BP currently restricted to the Americas
- Yellowhead virus (YHV) and White spot syndrome virus (WSSV) are lethal to all cultivated shrimp in the region. WSSV still remains an important problem in the region. Six geographical types of YHV have been identified. YHV-1 found in Thailand is considered to be highly virulent followed by YHV-II (Gill associated virus - GAV) found in Australia. All other types of YHV were considered to be non virulent and therefore not significant.
- Taura syndrome virus (TSV) is still an important problem of *P.vannamei*. Even though TSV is known to infect local species such as *P.monodon*, *M.rosenbergii* and *P.japonicus*, its effects were considered to be not significant. There has been no reported effect on cultivated Asian shrimp reported since 1998 (almost ten years). Most domesticated stocks of *P.vannamei* are highly tolerant. Thus, the impact on *P. vannamei* culture is relatively low. There is a possibility for the development of more virulent types as reported from elsewhere
- TSV outbreaks would appear to originate from postlarvae (PLs) that are not specific pathogen free (SPF), although carriers such as wild crabs, which have been shown to be susceptible to long-term infection, may play an important role.
- IMN was recognized as the most recent threat. IMN was reported for the first time in the region (Indonesia) in June 2006 and, for its close similarity (99.6%) with the Brazilian strain it would appear to have been associated with the movement of crustaceans from Brazil to the region. It is now reported from *P. vannamei* farms on both Java and Sumatra islands. PCR kits are now available in the region for screening PL for IMNV. IMNV is not reported from other leading white shrimp producing countries (e.g. Thailand, India, Vietnam and China)
- Muscle cramp syndrome, similar in pathology and clinical appearance to IMN, has been reported from many countries. This condition, for some unknown reason, is common in *P.vannamei*, but these shrimp test negative for IMNV infection
- Infection with *P.vannamei* nodavirus (*PvNV*), first reported from Belize (2004) is indistinguishable from IMN in gross signs and histopathology has not yet been reported from Asia.
- Abdominal segment deformity disease (ASDD) was reported from Thailand and Indonesia in *P.vannamei*. The appearance of affected shrimp is similar to some infections with Infectious hypodermal and haematopoietic necrosis virus (IHHNV) except there is no retarded growth and no bent rostra. PCR tests for IHHNV are negative as are PCR and Reverse transcriptase PCR (RT-PCR) tests for other viruses including IMNV, *PvNV* and

Laem Singh necrosis virus (LSNV). Many viral-like particles are found in the muscle and ventral nerve cord and it appears to be caused by a new pathogen originating from natural Asian carrier species. Although not affecting survival, the occurrence of ASDD in *P.vannamei* farms in Thailand and Indonesia is associated with deformities that lead to a reduction in market prices of about 10 baht/kg, therefore leading to significant financial losses.

- For *P.monodon*, WSSV and YHV are still considered most serious pathogens. The next most serious problem in *P.monodon* is Monodon slow growth syndrome (MSGS). This is followed by HPV and Monodon baculovirus (MBV) that do not appear to cause mortality but retarded growth.
- MSGS is the most significant problem of shrimp in Thailand, and possibly in some other *P. monodon* culturing countries like India. Recent results have shown that small shrimp from MSGS ponds show retinopathy. They are positive by RT-PCR for LSNV and also show strong *in situ* hybridization reactions in necrotic retinas. Large shrimp from the same ponds are also positive for LSNV by RT-PCR but show no retinopathy. Shrimp from normal growth ponds may also be positive by RT-PCR but show no retinopathy. Therefore, LSNV appears to be associated with MSGS but the possibility of involvement of other factors (including pathogen(s)) is being studied. Further work in this direction is underway. LSNV has also been reported from some other countries in the region. It is suggested include LSNV in the working case definition of MSGS. Non-pathogenic YHV “type-4” and an unknown, icosahedral, viral-like particle associated with tegumental glands (tentatively called tegumental gland associated virus) are being investigated for their role as potential partners of LSNV in causing MSGS.
- A new *Macrobrachium baculovirus* and HPV have been detected. They cannot be detected with MBV or HPV methods
- Milky lobster disease (MLD) has been reported recently from caged lobsters in Vietnam (10 million USD losses). It appears to be caused by a new rickettsial type bacterium. An intensive research programme is underway in Vietnam
- NHP is still exotic to the region and is considered a potential threat to shrimp farming in the region.
- *Macrobrachium rosenbergii* nodavirus (*MrNV*) was considered to be a serious problem in freshwater prawn farming in some countries of the region. *MrNV* is capable of infecting *P.monodon*, but till recently, there is no evidence of any disease. However, unconfirmed reports suggest the possibility of *MrNV* and XSV causing mortality in *P. indicus* and *P. Monodon*. Use of common hatchery facilities for both species and lack of strict biosecurity appears to be reason. It may be prudent to add *MrNV* to the list of viruses for penaeid shrimp screening
- The AG was also informed of a breakthrough in cultivation of shrimp viruses in insect cell lines, which will greatly facilitate work with shrimp viruses.

Observations and Recommendations:

- Realizing the value of the information from health management and surveillance point of view, it was suggested, that NACA make the summary information available to all member countries at the earliest.
- Laem-Singh virus (LSNV) should be added to the exclusion list for broodstock and PL in rearing of *P. Monodon*. In countries where *P. vannamei* has already been introduced, *P. vannamei* and *P. monodon* should be reared separately, particularly at the maturation and hatchery phases. National authorities should increase surveillance for slow growth syndrome in *P. monodon*
- Countries considering introduction of living, exotic shrimp species or any other crustacean species for aquaculture should add LSNV to the inspection list and to avoid other unknown

viruses, should follow the full ICES protocol with the addition of co-habitation tests employing important, endemic crustacean species

- The practice of using non-SPF pond raised *P.vannamei* in breeding programs should be strongly discouraged by national authorities as this might lead to serious health problems in future

3.2 Emerging finfish diseases in the region

Status of emerging finfish diseases in the region was informed to the AG by Dr Wendover. The following points were highlighted:

- The “normal” mortality rate in an Asian fish farm remains high (20 – 60%). Still few publications on finfish diseases in the region but getting better. Epidemiological data is still needed. A large number of health problems in finfish are still detected in several countries in the region.
- *Edwardsiella tarda* was identified as a problem in several countries and associated with outbreaks in red seabream, Japanese flounder, turbot, catfish and eel.
- “BB” or big belly is associated probably with a new *Vibrio* sp. causing high mortality in seabass fry. The syndrome can be easily diagnosed based on the occurrence of clinical signs (blackening of fish, thin tail musculature and swollen abdomen filled with granulomatous connective tissue). Mortality is high (up to 80% in one week) and so far is found to affect only Asian seabass.
- *Streptococcus dysgalactiae* is an emerging disease of yellowtail in Japan, affecting primarily larger fish and detected also in China.
- *Francisella* sp. is an emerging problem and is now causing emerging problems in tilapia in Indonesia. This is the first *Francisella* sp described in fish. The homogeneity of the isolates from different locations is still unclear and requires further investigation.
- *Streptococcus iniae* remains a major problem in the marine environment and is found also in freshwater environments.
- *Tenacibaculum maritimum* is a global problem affecting most aquaculture marine species with mortalities up to 90% in fingerlings. Its isolation is difficult, leading most likely to an underestimation of the problem
- *Nocardia seriolae* is a problem of increasing importance, being associated with higher mortality and showing an increasing geographical spread. It seems that some fish species are more susceptible than others. Isolation is difficult and is successful in only approximately 50% of all cases.
- *Streptococcus agalactiae* is still a major problem in freshwater environments and especially in tilapia culture
- *Edwardsiella ictaluri* is a major problem in catfish in the US. A vaccine is registered in the US.
- *Flavobacterium columnare* is a global problem in the freshwater environment and particularly important in tilapia culture. It is known to cause up to 90% mortality in fry rearing systems
- Among viral pathogens, KHV, SVC, and GCRV are considered significant for freshwater culture in the region
- Among viral diseases, RSIV and VNN are still considered to be economically significant in marine finfish farming

Observations and Recommendations

- In view of the fact that health problems in finfish are often underestimated, the AG recommended that systematic studies be undertaken to identify the impact of finfish diseases

- The AG recommended that NACA work with regional resource experts and develop disease cards for some of the emerging bacterial finfish diseases to support capacity building and surveillance
- Because of the difficulties in isolating some of the pathogens associated with the occurrence of important diseases of finfish, the AG recommended the development of surveillance systems based on the occurrence of abnormal clinical signs (syndromic surveillance) should be encouraged
- Considering the importance of conventional diagnostics in bacterial disease studies, the AG suggested that more capacity building activities should be considered in this area
- NACA should encourage the NCs to report other diseases that are not listed in the QAAD regional list but appear to be important health problems.

3.3 Emerging mollusk diseases in the region

The mollusk disease expert could not be present at the meeting. However a summary of the status of mollusk diseases in the region is provided below

- Of the seven OIE-listed mollusk diseases, only three are known to be present in the region (Infection with *Bonamia exitiosa*, Infection with *Perkinsus olseni* and AVM)
- The AG was informed of the constraints for mollusk disease study in the region. Among others, these include:
 - Lack of scientists working on mollusk diseases in the region
 - There is no method for diseases control in the natural environment. However, mortality can be minimized by avoiding stress conditions such as high densities, harvesting stress or overcrowding in depuration plants during the warmer months
 - Less funding support for mollusk disease research programmes.
- It was noted that mollusk are generally of low export value and hence received less research attention. In recent years, there has been more focus on oyster, scallop and abalone, because of their higher export value.

Observations and Recommendations:

- Considering the severe shortage of capacity for mollusk disease diagnosis and surveillance in the region, the AG suggested that NACA take up further work on capacity building for mollusk diseases in the region.
- In view of the occurrence of serious diseases in abalone and scallops in the region, the AG recommended that the available information should be widely disseminated and countries encouraged to strengthen their surveillance of mollusk diseases

3.4 Emerging amphibian diseases in the region

Intensive frog culture farms have developed in Thailand since the early 1990's. Many frog diseases caused by bacterial infection have been reported. However, till recently, there has been no report of viral isolation in frog in Thailand or in other countries Southeast Asia. Previously, viruses have been reported from diseased frogs and healthy frogs from many parts of the world (e.g. United Kingdom, United State, Canada, Croatia, Venezuela and Australia). Three different families of frog viruses have been isolated, they are *Iridoviridae*, *Herpesviridae* and *Adenoviridae*. Most frog viruses are usually found to be associated with tumor diseases and the iridovirus is more often isolated. Iridoviruses have a wide host range including insects, mollusks, amphibians, reptiles and mammals.

Ranavirus in frog; A new frog disease occurred in frog culture farms located in Central Thailand since early 1998. The disease affected 20-100% of the frog population in affected farms. Diseased adult frogs exhibited ulcerative lesions on the dorsal part of the body and legs with moderate mortality (20-50%). Some frogs examined had red lip, ulcerated mouth and rostrum.

Histopathological changes included cutaneous ulceration and systemic inflammation with exuberant hematopoiesis. No bacteria could be isolated from kidneys, spleen and livers of frogs with the early stage of the disease. The diseased tadpoles and small frogs appeared weak and had high mortality (50-100%) with systemic inflammation. A total of 70 virus isolates could be isolated from 107 diseased samples collected from 8 Provinces using the *Epithelioma papulosum cyprini* (EPC) cell line at 25°C. All viruses caused a similar round lytic plaque cytopathic effect. One virus isolate AV9803 was later characterized and identified as a viral member of the family *Iridoviridae*. DNA analysis showed that the frog iridovirus is similar to ranavirus type strain FV3. This virus strain is temporally designated "*Rana tigrina ranavirus* (RTRV)" (previously named "tiger frog iridovirus").

Ranavirus in marble goby fish; A high mortality disease of cultured marble goby, *Oxyeleotris marmoratus* occurred in Nakornpathom province, Central Thailand in March 2000. The diseased fish exhibited minor ulcer lesions on the body and around mouth area. No external parasites and blood parasites were observed. No bacteria could be isolated from internal organs, liver, kidney and spleen. Three diseased fish were used for virological investigation. Viruses could be isolated from these 3 fish specimens using EPC cell line. The new virus isolate was classified as a virus member of the Family *Iridoviridae*. This virus was named as *Oxyeleotris marmoratus ranavirus* or OMRV. Genomic DNA restriction profiles of ranaviruses from frog and marbled goby were similar after cleaved by BamHI and XbaI.

Ranavirus in frog from Sakeaw province (frogs imported from Cambodia): The frogs were obtained from a private fish farm located in Srakaew province, East of Thailand, in January 2004. The diseased frogs were originally imported from Cambodia and showed ulcers or wounds on the rostrum and legs with over 50% mortality. A virus was isolated and molecularly identified as a ranavirus.

DNA sequence comparisons of ranaviruses isolated from diseased goldfish, *Carrasius aratus*, marble goby (*Oxyeleotris marmoratus*) and culture frog (*Rana tigrina*) in Thailand; Thirteen iridoviruses had been isolated from diseased goldfish (unpublished data), *Carrasius aratus*, marble goby (*Oxyeleotris marmoratus*) and culture frog (*Rana tigrina*) using *Epithelioma papulosum cyprini* (EPC) cell line during 1998 - 2002. Specific primers were designed from *Rana tigrina ranavirus* GenBank #AF389451.1 and used for polymerase chain reaction amplifications of major capsid protein (MCP) gene and adenosine triphosphatase (ATPase) gene of these iridovirus isolates. The PCR products obtained were cloned and sequenced. The findings indicate that the ranaviruses found in diseased gold fish, marble goby and culture frog in Thailand are most likely the same *Ranavirus* of the *Iridoviridae*.

In summary;

- Ranaviruses reported in frog, goldfish and marble goby in Thailand (1998-2000)
- Ranavirus found in diseased dwarf gourami in Southeast Asia (Sudthongkong et al., 2002).
- Ranavirus reported in diseased frog in Guangdong and Hainan (Weng et al., 2002) and soft-shelled turtle in Shenzhen, China (Chen et al., 1999).
- The findings of ranaviruses in frog farms in Thailand seems to correlate with the high numbers of frog culture farms. Since 2002, the numbers of farms culturing frogs has reduced due to the diseases and low profit. New cases of diseases associated with ranaviruses have been getting less and less since year 2003 in Thailand.
- finding of ranaviruses in Thailand (1998-2000) coincided with the recognition that the wild frog population is declining in Thailand especially in the National Zoo in Bangkok.

Observations and Recommendations

- Considering the strong possibility of introduction of viruses (e.g. ranavirus) through trade in ornamental frogs, the AG suggested that countries involved in import/export of

ornamental frogs, should consider strengthening their disease surveillance, and health certification work on amphibians

- Considering the possibility of transfer of pathogens especially viruses between fish (marbel goby), amphibians (frog) and reptiles (soft turtle), the AG suggested that detailed studies be undertaken to establish the pathways of such transfers (if any) amongst unrelated species inhabiting the aquatic environment.
- Considering the listing of two amphibian diseases by the OIE in the 2008 Aquatic Code, the AG recommended that NACA should include these diseases in the regional QAAD for 2009 and encourage NCs and OIE aquatic focal points to initiate surveillance programs for amphibian diseases

3.5 Emerging diseases in ornamentals and trade implications for Asian exporters

Dr Chinabut provided a brief presentation on emerging diseases in ornamentals and emphasized the fact that trade in ornamentals is less regulated and ornamental trade could be responsible for movement of trans-boundary pathogens. She indicated that many a times the reliability of health certificates provided for export of ornamentals is under question as they are not based on strong surveillance programs. She suggested that regional programs need to be initiated to develop harmonized guidelines for quarantine and health certification of ornamental fish. She also drew the attention of members to the proposed EU regulations for import of ornamental fish from Asia and its likely impact to the ornamental industry in the region

Observations and Recommendations:

- The AG recommended that NACA in collaboration with other regional organizations initiate a **regional program on bio-security in ornamental trade and develop harmonized guidelines for quarantine and health certification**
- The AG recommended that countries consider including ornamentals in their routine surveillance programs so as to avoid future problems in trade

3.6 Key and emerging aquatic animal diseases in Chinese aquaculture

Prof Zhan provided a detailed account of diseases in China. The meeting was informed that beginning of each year, aquatic animal health experts gather to make an annual report on the status of aquatic animal diseases on the basis of the surveillance information received from different areas for the previous year. The following details were presented:

- In recent years, members of the family Iridoviridae are an emerging group of viral pathogens that threaten most of cultured fish, such as flounder, turbot, red sea bream, grouper, mandarin fish (*Siniperca chuatsi*) and so on, causing great economic losses in China.
- Vibriosis is one of the most prevalent fish diseases in China. Vibriosis caused by *Vibrio anguillarum* and *Vibrio alginolyticus* has been particularly devastating
- Edwardsiellosis frequently occurred in marine and freshwater fish, including tilapia, catfish, carp, eel, yellowtail, sea bream, flounder and so on. Recently, *E. tarda* has been an economically important problem for flounder production in northern China.
- In 2007, white spot disease of marine fish caused by *Cryptocaryon irritans*, has become one of the most common fish disease in China. White spot disease brought about heavy loss to the cultured sea perch, large yellow croaker, black porgy, grouper, pomfret and red sea bream in Fujian and Guangdong province
- Benedeniasis frequently occurred in marine cage-cultured fish in China, the major infected fish included black rockfish (*Sebastes schlegeli*), large yellow croaker, grouper, red sea bream, yellowtail.

- WSSV and TSV were still the most virulent pathogens that threaten the shrimp farming industry in China. Mixed infection of WSSV and TSV often occurred in China, such as in Guangdong, Guangxi, Fujian, Shandong provinces
- Main diseases of cultured crab
 - Swimming crab (*Portunus trituberculatus*) and Green crab (*Scylla serrata*) were seriously affected by emulsification disease in Fujian and Zhejiang province, which was induced by *Candida oleophila*.
 - Chinese mitten crab (*Eriocheir sinensis*) suffered from the Pectoral limb shiver disease severely in Jiangsu and Zhejiang province.
 - Filamentous bacterial disease and gill-rot disease occurred in Jiangxi and Anhui also brought large economic loss.
- Chinese scallop (*Chlamys farreri*) Japanese scallop (*patinopecten yessoensis*) and Bay scallop (*Argopecten irradians*) are the main cultured scallop species in China. Till now, the main causative factors associated with scallop loss known are virus (acute viral necrosis virus), vibrio, parasites and abnormal environmental factors.
- Sea cucumber suffer from skin ulcerative syndrome. This disease is suspected to be caused mainly by *Vibrio splendidus*, *Pseudoalteromonas nigrifaciens* and *Aeromonas salmonicida masoucida*.
- “The Law of the People’s Republic of China on Animal Epidemic Prevention” was revised and adopted at the 29th meeting of the Standing Committee of the 10th National People’s Congress of the People’s Republic of China on August 30th, 2007. The revised version was promulgated and came into force as of January 1st, 2008.

Observations and Recommendations:

- The AG thanked the expert from China and noted the massive economic impact of diseases in Chinese aquaculture
- The AG suggested that the information should be widely shared in the region so that other countries culturing similar species could strengthen their surveillance programs
- The AG noted that “The Law of the People’s Republic of China on Animal Epidemic Prevention” promulgated from 1st Jan 2008 would go a long way in supporting aquatic animal health management in China and also provide the necessary mechanism for national authorities to comply with regional and international disease reporting obligations.
- The AG hoped that under the new law, MOA of China will resume reporting to the regional QAAD at the earliest.

3.7 Preventive strategies for combating infectious diseases in aquatic animals

Dr Gravningen provided a brief account of preventive strategies for combating infectious aquatic animal diseases. In order to combat infectious diseases, these diseases need to be understood and identified by good diagnostic capabilities and services, surveillance programs, good general health management programs. When infectious diseases of high prevalence and high economic impact are identified such diseases can be combated by; vaccination programs. Vaccine development is long term commitment that requires basic understanding of immunology and antigenic properties. The key challenges for vaccine development in the region are;

1. High diversification of species and high variation of diseases between regions
2. Lack of licensing procedures for fish vaccines
3. Lack of harmonization of regulatory requirements between the countries within the region
4. Lack of recognition of approvals between countries

She also emphasized the importance of breeding programs in health management. Currently there have been developed shrimp (*P. vannamei*) resistant towards TSV, carp resistant to *A. hydrophila*

and tilapia that show improved resistance to streptococcus disease. Breeding programs for important species focusing on disease resistance should be encouraged.

Observations and Recommendations

- Considering the potential food safety issues associated with use of therapeutic chemicals in food fish aquaculture, the AG strongly recommended strengthening of research and development work in the area of immunoprophylactic strategies including vaccination for key aquaculture commodities against important bacterial and viral diseases
- The AG recommended that the immunology of key aquaculture commodities in the region be further strengthened and indigenous species given due consideration
- The AG noted that several commercial vaccines are presently available but recognized the problems associated with licensing and approval of commercial fish vaccines in different countries.
- Regulatory framework for vaccines is not well developed in the region. In view of this, the AG strongly recommended that NACA initiate steps to undertake a regional exercise of **developing harmonized guidelines for field testing, licensing and approval of commercial vaccines**. The AG felt that such harmonized guidelines would hasten the process of application of vaccines in Asian aquaculture

3.8 Outcomes of the active surveillance programme implemented by SEAFDEC-AQD in the region

The ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security that was held in Bangkok in November 2001 paved the way for the Fish Disease Trust Fund Programs of the Aquaculture Department of SEAFDEC. The first Trust Fund project was on the Development of Fish Disease Inspection Methodologies for Artificially-bred Seeds that was implemented from 2000-2004. An international workshop in December 2001 reviewed the components of the project and led to the development of a new phase of the program on Development of Fish Disease Surveillance System (2005-2009). Just before the new program was implemented, a Meeting on Current Status of Transboundary Fish Diseases in Southeast Asia: Occurrence, Surveillance, Research and Training was convened in Manila to gather information on its status in SEAFDEC member countries. The surveillance and research projects are:

1. Monitoring and surveillance of transboundary pathogens in cultured shrimps and prawn – C.R. Lavilla-Pitogo (SEAFDEC AQD, Philippines)

This study covers Myanmar, Cambodia and the Philippines and includes the following diseases in its surveillance and monitoring activities:

- White Spot Syndrome Virus (WSSV)
- Taura Syndrome Virus (TSV)
- Infectious Myonecrosis Virus (IMNV)
- Infectious hypodermal and hematopoietic necrosis virus (IHHNV)
- White tail disease (WTD)

Significant increase in shrimp samples that tested positive for IHHNV were obtained in 2006, 2007 and 2008. The continuing problem with WSSV remains as a major cause of economic losses among shrimp farmers. So far, no positive samples were analyzed for TSV, IMNV, and WTD in samples from the Philippines. The viral disease, Yellow head/gill associated virus (YHV/GAV), was not covered in the monitoring activity starting 2008 due to new evidence showing that the virulent type of that virus is found only in Thailand. Activities in Myanmar and Cambodia are not surveillance and monitoring *per se*, but are geared towards developing human capacity to enable staff of these countries' fisheries departments to conduct surveillance activities.

2. Surveillance of emerging fish viral pathogens in Southeast Asia - G.D. Lio-Po (SEAFDEC AQD, Philippines)

This study involves the detection of emerging viral pathogens in Cambodia, Laos PDR, Myanmar, Philippines and Vietnam covering the following:

- a. Koi Herpesvirus (KHV)
- b. Spring Viremia of Carp Virus (SVCV)
- c. Grass Carp Hemorrhagic Virus (GCHV) among koi carp, common carp, grass carp and silver carp

After 4 years of active surveillance in the four countries, no positive samples were obtained. This study has contributed significantly to Vietnam's strategy for surveillance of these diseases because it provides records of the country's targeted surveillance. Since 2007, this project has been turned over to Vietnam for them to continue.

Others research and surveillance studies that are implemented under the project by researchers from various institutions in the region are:

3. Screening of important viral diseases of marine fish = L.D. de la Peña (SEAFDEC/AQD, Philippines)
4. Surveys of giant freshwater prawn viral diseases, *Mr NV* and *XSV* in Thailand = by S. Kanchanakhan and J. Polchana (Inland Aquatic Animal Health Research Institute (AAHRI), Thailand)
5. Survey of viral diseases of Pacific white shrimp, *Litopenaeus vannamei*, in Indonesia = by Taukhd (Research Institute for Freshwater Aquaculture, Indonesia)
6. Haemorrhage Disease on Cultured Freshwater Catfish (*Pangasianodon hypothalmus*) in Mekong Delta (Vietnam) = Ly Thi Thanh Loan, (Research Institute for Aquaculture No. 2, Vietnam)

The following studies were implemented from 2005-2006:

7. Screening of parasites of mollusk - Parasitic fauna of green mussel cultured in Thailand = Supraanee Chinabut and T. Somsiri (Inland AAHRI, Thailand)
8. Screening and monitoring of parasites of fish - Diseases of Nile tilapia (*Oreochromis niloticus*) by T. Somsiri (Inland AAHRI, Thailand)

SEAFDEC's training strategy has shifted from the traditional lecture and hands-on program into online delivery via e-learning. It has also evolved from the fellowship-funded type to being self-liquidating with private funds. Six sessions of the course AquaHealth Online has been offered since 2002. Another training strategy is to conduct them on-site in conjunction with the trips that are conducted for active surveillance. On-site trainings have been conducted in Myanmar and Vietnam in 2007. Recently, another on-site training was held in Phnom Pehn, Cambodia on September 22-24, 2008 for freshwater fish and September 25-27, 2008 for marine fish. Participants were mostly fisheries officers of the Fisheries Administration of Cambodia. The goals of the training sessions were to provide participants with theoretical and practical knowledge on: (1) signs and epizootiology of economically-important freshwater and marine fish diseases, (2) evaluation of fish epizooties, (3) submission of diseased fish samples for diagnosis, and (4) basic laboratory skills for detection of viral, bacterial, and parasitic pathogens.

These activities will continue with funding from the Government of Japan Trust Fund until 2009.

Observations and Recommendations:

- The AG noted the results of the targeted surveillance implemented by SEAFDEC-AQD and appreciated the contributions towards improving surveillance and reporting in the region.
- The AG recommended that NACA and SEAFDEC-AQD further strengthen their collaboration to support surveillance and disease reporting in the region.

Session 4: Disease Reporting

4.1 New OIE Disease list and status of Global reporting on aquatic animal health

Prof Hill reported on the list of diseases in the 2008 edition of the *Aquatic Code*. There are now nine diseases of fish, seven diseases of mollusk and twelve diseases of crustaceans listed in Chapter 1.2.3 of the OIE *Aquatic Code*. Amphibian diseases have been included for the first time and two diseases have been included:

Diseases of fish (no changes since 2006 edition of the *Aquatic Code*)

1. Epizootic haematopoietic necrosis
2. Infectious haematopoietic necrosis
3. Spring viraemia of carp
4. Viral haemorrhagic septicaemia
5. Infectious salmon anaemia
6. Epizootic ulcerative syndrome
7. Gyrodactylosis (*Gyrodactylus salaris*)
8. Red sea bream iridoviral disease
9. Koi herpesvirus disease

Diseases of molluscs (no changes since 2006 edition of the *Aquatic Code*)

1. Infection with *Bonamia ostreae*
2. Infection with *Bonamia exitiosa*
3. Infection with *Marteilia refringens*
4. Infection with *Perkinsus marinus*
5. Infection with *Perkinsus olseni*
6. Infection with *Xenohaliotis californiensis*
7. Abalone viral mortality

Diseases of crustaceans

1. Taura syndrome
2. White spot disease
3. Yellowhead disease
4. Tetrahedral baculovirus (*Baculovirus penaei*)
5. Spherical baculovirus (*Penaeus monodon*-type baculovirus)
6. Infectious hypodermal and haematopoietic necrosis
7. Crayfish plague (*Aphanomyces astaci*)
8. Infectious myonecrosis
9. White tail disease¹ (emerging disease)
10. Necrotising hepatopancreatitis ² (listed as under study)
11. Hepatopancreatic parvovirus disease ² (listed as under study)
12. Mourilyan virus disease ² (listed as under study)

Diseases of Amphibians

1. Infection with ranavirus
2. Infection with *Bachtrachytrium dendrobatidis*

The OIE list of aquatic animal diseases in 2008 thus comprises:

- 9 fish diseases
- 7 mollusc diseases
- 12 crustacean diseases
- 2 amphibian diseases

Prof Hill also provided information on the proposed changes for 2009. The proposed changes for 2009 include:

- Any listed diseases in doubt are assessed against the listing criteria (adopted in 2003).
- Some crustacean diseases were found not to meet the listing criteria
- The delisting of 4 crustacean diseases proposed
 - Tetrahedral baculovirus (*Baculovirus penaei*)
 - Spherical baculovirus (*Penaeus monodon*-type baculovirus)
 - Hepatopancreatic parvovirus disease
 - Mourilyan virus disease
- One disease of crustaceans added
 - Milky haemolymph disease of spiny lobster (*Panulirus* spp)
- Abalone viral mortality renamed
 - Abalone herpes-like virus disease
- One disease of molluscs added
 - Infection with *Terabrasabella heterouncinata*

Prof Hill emphasised the point that the primary purpose of listing a disease is to assist the OIE to fulfill its mission to ensure the transparency of the aquatic animal health status world-wide, by enabling the Central Bureau to collate and disseminate the information received in reports on the status of those listed diseases. The notification and reporting requirements apply to all the listed diseases

He reminded the AG that the disease reporting obligations for Member Countries are:

- Immediate (within 24 hours) notification, must be provided to the OIE under specific epidemiological circumstances; this applies to all listed diseases.
- Weekly reports by fax or electronically subsequent to a *notification*; in each case, a final report on the incident should information on the evolution of an incident that justified immediate *notification*. These reports should continue until the *disease* has been eradicated or the situation has become sufficiently stable that six-monthly reports be submitted.
- Six-monthly reports on the absence or presence and evolution of all listed diseases, and findings of epidemiological importance to other countries with respect to diseases not listed by OIE
- Annual questionnaire on any other information of significance to other countries (World Animal Health)

Immediate notification is required for all listed diseases in the following situations:

- the first occurrence or re-occurrence of a disease in a country or zone or compartment of the country, if the country or zone or compartment of the country was previously considered to be free of that particular disease; or
- the disease has occurred in a new host species; or
- the disease has occurred with a new pathogen strain or in a new disease manifestation; or
- there is potential for international spread of the disease; or
- the disease has newly recognised zoonotic potential.

He explained that for non-listed diseases the reporting obligations also apply if there is a case of an emerging disease or pathogenic agent when there are findings that are of epidemiological

significance to other countries. 'Emerging disease' means a newly recognised serious disease, the cause of which may or may not yet be established, that has the potential to be spread within and between populations, for example by way of trade in aquatic animals and/or aquatic animal products. He emphasised to the AG that In this context, it is important to understand that the circumstances for regular as well as immediate notification of aquatic animal diseases do not require the presence of clinical disease or mortality. The Aquatic Code clarifies this in Article 1.2.1.2.4 that states "The presence of an infectious agent, even in the absence of clinical disease, should be reported."

Prof Hill then provided some examples of disease reporting as displayed in WAHID and the weekly 'Disease information' on the OIE web site, and in the FAO/NACA/OIE regional QAAD reporting, highlighting good points and weak points. He finished with a display of the OIE and non-OIE disease information for the current and previous OIE-listed diseases available on-line in the International Database for Diseases of Aquatic Animals maintained by the OIE Collaborating Centre for Information on aquatic Animal diseases.

Observations and Recommendations:

- The AG took note of the OIE listed diseases for 2008 and the proposed changes for 2009. The AG recommended that the OIE list for 2008 should be considered while revising the QAAD list for 2009. The proposed changes for 2009, should be considered by the AG at its 8th Meeting in 2009.

4.2 QAAD list for 2008 and status of regional reporting

The AG was informed about the progress in regional reporting. The FAO/NACA/OIE regional QAAD reporting came into effect from the 3rd quarter of 1998. By June 2008, a total of 40 reports had been published. Of the 21 participating countries, reports could be obtained from 15 (2007/3), 17 (2007/4), 16 (2008/1) and 17 (2008/2) countries for the respective quarters. The quality of reports and epidemiological comments provided by many countries had improved significantly over the years. The advantages of the regional reporting especially in terms of sharing information and supporting countries in the region to address diseases that are significant beyond trade considerations were reported. Improved understanding of the implications of regional reporting by NCs appears to be the underlying reason for the increase in quality of reports. QAAD reports are regularly downloaded from NACA website (2007/3-383; 2007/4-317; 2008/1-247; 2008-207). From disease occurrences published in the last 4 QAAD reports, the following QAAD listed diseases were recognized as important to the region:

- Fish
 - KHVD
 - VNN
 - EUS
 - Grouper iridoviral disease (GID)
- Crustaceans
 - WSD
 - TS
 - IMN
 - WTD
 - Milky Lobster disease
- Molluscs
 - AVM

In addition, the AG was informed about the following emerging diseases in the region:

- Fish
 - Red spot disease (red hemorrhagic disease) in grass carp (3 countries)

- Red spot in tilapia (2 countries)
- Infection with *Streptococcus* sp.
- Crustaceans
 - MSGS (LSNV) (3 countries)
 - Loose shell syndrome in *P.monodon* (1 country)
 - Milky syndrome in lobsters (1 country)
- Mollusk
 - AVG (1 country)
 - Oyster oedema disease (OOD) (1 country)
 - Babylonia mortality (1 country)

Observations and Recommendations:

- The AG noted the present status of occurrence of important diseases in the region and appreciated the improvements achieved over the years in the quality of reports submitted.
- The AG noted the history of QAAD reporting (over ten years) and agreed that the regional QAAD reporting is a useful mechanism for recognizing emerging diseases in the region.
- The AG appreciated the value of epidemiological information gathered through the QAAD system
- The AG agreed that there is a need to further improve the quality of QAAD reports. As per the present reporting requirement, QAAD reports are submitted within 75 days of the end of the reporting quarter. In view of this, it is suggested that in emergency situations regarding all diseases listed in the QAAD as well as non-listed diseases, immediate notification should be conducted in line with the provisions of the OIE *Aquatic Code* for such situations⁴.

4.3 Global online reporting system (WAHIS) of OIE and progress made with respect to establishing OIE WAHIS-NACA regional Core for aquatic animal diseases

Dr Karim Ben Jebara, Head of the OIE Animal Health Information Department, could not attend the meeting. Information provided by him was shared with the AG. The MOU between OIE and NACA had been signed for setting up and operationalizing the regional core. The meeting was informed that development work is still in progress and it may not be possible to launch the regional core as originally planned in 2009. The OIE is exploring funding opportunities to support the database development work and has asked NACA and FAO to consider providing financial support to the development of WAHIS regional core database.

WAHIS allows online entry of all the different types of reports and uses maps and geographic coordinates of the outbreaks. The OIE Delegate has to nominate persons responsible for the submission of the various reports. Those nominated (focal points) are allowed access to WAHIS.

The AG was informed of the concept of WAHIS regional core customized to NACA members. The aquatic national focal points will enter data on OIE-listed aquatic animal diseases and other, regional aquatic animal diseases of concern. The database associated with this core will therefore contain information on both groups of diseases. The database can be used to produce outputs on the NACA/OIE Asia Pacific websites to meet the requirement of the region. The data can also be used to produce hard copies of QAAD reports as a single joint publication of NACA/OIE/FAO. Through this option, members would only once process information that can then be used for different purposes, e.g. to meet the objectives of the regional programme and its needs while respecting members' obligations to notify diseases to the OIE.

⁴ see Chapter 1.2.1 of the *Aquatic Code*

Observations and Recommendations:

- The AG reaffirmed its support for setting up of a WAHIS Regional Core on Aquatic Animal Diseases.
- The AG supported the concept that the regionally collected data will be displayed in the regional websites of both NACA and OIE Asia Pacific, and that one joint (NACA/FAO/OIE) hard copy of the QAAD publication be maintained for a transitional period.
- The AG emphasized that there needs to be a clear mechanism, involving the AG, for identifying the regional, non OIE-listed diseases for inclusion in the WAHIS-NACA Regional Core on Aquatic Animal Diseases.
- The AG suggested that the WAHIS regional core should take into consideration the epidemiological information collected in the present QAAD and make suitable provisions to capture the epidemiological data.

Session 5: Review of QAAD Regional Reporting System

5.1 Way forward with regional QAAD reporting

Views of NACA: On the way forward with regional QAAD, NACA made the following observations. The QAAD reporting system in the Asia-Pacific region is being implemented as a joint activity between NACA, FAO and OIE Asia Pacific since the second quarter of 1998. To date, 40 reports have been published and widely disseminated. Twenty-one countries from the region participate in the reporting system. The reporting system for aquatic animal diseases was developed following the recommendations of the NACA/OIE Expert Consultation in 1996 and was eventually integrated into the Regional aquatic animal health programme of NACA. The NACA/FAO/OIE disease list includes all diseases listed by OIE in the latest edition of the OIE *Aquatic Animal Health Code*, plus diseases of concern to the Asia-Pacific region. The information generated through the regional reporting system provides up-to-date information on important diseases in the Asia-Pacific region, serves as an early warning system for emerging diseases (e.g. KHVD, AVM, GID, WTD in *Macrobrachium rosenbergii*, IMN, milky lobster disease), and is a valuable source of information to support risk analysis. The AG was informed that an excellent regional networking had been established over the years to support regional surveillance and QAAD reporting. NACA supports the setting up of WAHIS regional core and would like to see close collaboration between OIE, NACA and FAO in accomplishing this task

Views of FAO: FAO considers QAAD reporting to be very important to the region and recommends its continuation. FAO supports the initiative of WAHIS regional core. FAO encourages continued collaboration with NACA and OIE (Central Bureau and Asia Pacific) on this issue and happy to discuss further on possible options for way forward. The initial QAAD reporting was done as a collaborative activity by NACA, OIE and FAO and FAO wishes to be involved in the process and OIE and NACA should continue to recognize the role played by FAO in initiating the entire process. FAO will not be in a position to “fund” NACA or OIE. The meeting was informed that FAO is playing an increasing role in aquatic animal health management in the world and OIE recognizes it. FAO promotes disease reporting and recent evidence from Africa is very significant. FAO is happy to hear the suggestions and recommendations of the AG on this matter.

Views of the Representative from the OIE Regional Representation for Asia and the Pacific: The information on aquatic animal diseases in the Asia and Pacific region is collected by two different ways, i.e. the Quarterly Aquatic Animal Disease (QAAD) reporting system which is a joint activity between OIE and NACA and the OIE World Animal Health Information System (WAHIS). Since national data reported in QAAD reports and those in OIE WAHIS are sometimes contradictory, a

regional workshop on aquatic animal health to train National Focal Points on international standards and disease notification was jointly organised by OIE and NACA in Bangkok, Thailand, in March 2008. The Workshop recommended that (a) activities by the aquatic animal health focal points nominated by the OIE Delegates from veterinary authorities or other competent authorities such as fisheries when applicable, should be strengthened for exchange of information at the regional level and for active participation through the OIE Delegates in the OIE international standard setting process, (b) the aquatic animal health focal points should submit aquatic animal health information to the OIE Delegate, (c) the on-going QAAD reporting system should continue to be used during the transitional period, until the on-line WAHIS/OIE-NACA Regional Core becomes functional and (d) the MOU on the cooperation between NACA and OIE should be developed for further strengthening cooperation between both organizations on aquatic animal health information for the Region and to set up WAHIS/OIE-NACA Regional Core.

The WAHIS/OIE-NACA Regional Core will accept data of QAAD targeted diseases, i.e. both OIE-listed and non-listed diseases, and provide regional data to NACA and OIE Regional Representation for Asia and the Pacific. After the launch of the WAHIS Regional Core for Aquatic Animal Diseases, QAAD reports will not be collected at the regional level.

Views of OIE AAHSC: President of the AAHSC informed the meeting that QAAD is a very good regional initiative and it should be continued and further strengthened. He was very appreciative of the value of epidemiological information collated through QAAD. He considered setting up of WAHIS regional core as a very good way forward and suggested that efforts should be made to capture all the epidemiological information in the WAHIS regional core by making appropriate provisions for entry of epidemiological data. A searchable database in the form of WAHIS regional core that includes OIE listed and regional diseases could be a model for other regions to follow.

Observations and Recommendations:

- The AG stressed that the effective networking established under the regional QAAD reporting system should be utilized for the WAHIS Regional Core on Aquatic Animal Diseases.
- The AG recommended that OIE, NACA and FAO work together and explore opportunities to make the WAHIS regional core functional as early as possible
- The AG recommended to continue the QAAD reporting system for 2009 and explore opportunities to further improve the quality of reports.
- The AG recommended an overlapping time period for both QAAD and WAHIS regional core to operate, before QAAD is abolished.
- The AG suggested that following this overlapping period, the way forward with QAAD be reconsidered at the coming AG meeting (AGM-8 in 2009).

5.2 Criteria for listing of diseases in QAAD

The meeting was informed about the decisions taken at AGM6 concerning the criteria for listing of diseases in the QAAD. A disease listed in the QAAD regional list must be a disease that can be recognized and that requires a certain degree of management. The fact that a disease is listed does not *per se* provide a justification for sanitary measures. Diseases considered important for the region are listed in QAAD to encourage surveillance and stimulate reporting. It was decided to apply the current OIE listing criteria regionally (Criteria under “consequence” and “diagnosis” could be applied as they are, those under “spread” could be applied from a regional point of view) for the purpose of listing non OIE-listed diseases in the QAAD system. In addition, it was agreed that due considerations should be given to the need for collating epidemiological information for an emerging disease while listing a disease. Development of a robust “reporting case” definition should form the basis for considering a disease for listing in the QAAD. The AG decided that individual diseases recognized as emerging in the region could be assessed against some of the

above criteria and a decision made on their listing or otherwise on a case by case basis. It was also pointed out that diseases listed by AG in the past for the QAAD reporting system (e.g. KHVD, IMN, WTD, AVM and milky lobster syndrome) have all now been listed by OIE in the *Aquatic Code*.

5.3 Review of comments received concerning assessment of 4 bacterial diseases for inclusion in the 2009 QAAD

The AG was provided background information concerning the above agenda item. Four bacterial diseases (Infection with *Streptococcus iniae*, *Streptococcus agalactiae*, *Edwardsiella tarda* and *Nocardia seriolae*, respectively) were assessed during AGM6 in 2007 for listing in 2008 QAAD. For lack of sufficient information to assess OIE criteria 6 and 7, the AG could not come to any conclusion. In view of this, the AG recommended that NACA in consultation with the finfish disease expert, develop a background paper on the assessment of emerging bacterial diseases in the region for listing in QAAD and seek expert opinion from RREs. To guide the process of assessment, it was suggested that RREs be requested to compare infections with the four emerging pathogens cited above with other bacterial diseases such as vibriosis and motile *Aeromonas* septicaemia (considered ubiquitous) and ESC (retained in the QAAD for 2008). It was suggested that the findings of the RREs be placed before the 7th AGM for decision.

In line with the decision of AGM6, a background paper was developed and circulated to RRE seeking their opinion. Comments received from 5 bacterial disease experts from the region was placed before the AG for review and decision. The AG reviewed the comments and made an attempt to reassess the 4 bacterial diseases using the OIE listing criteria applied regionally. Members deliberated at length and considering the arguments and doubts expressed by the members, and lack of sufficient information to support listing, it was decided not to list any of the four bacterial diseases for inclusion in the QAAD.

Observations and Recommendations

- Considering the lack of sufficient justification to support listing, the AG decided not to list any of the four bacterial diseases for inclusion in the QAAD
- However, considering the economic impact of these diseases, the AG emphasized the need to increase awareness about the serious nature of these four diseases and collate epidemiological information.
- The AG recommended that a write up about these 4 diseases be developed and made available in one of the QAAD and member countries encouraged to report these diseases under any other disease category
- It was also recommended that NACA work with RREs and develop disease cards for these diseases to increase awareness and build capacity.

5.4 Review of diseases listed in QAAD, revision of reporting form and instructions

The relation between OIE and regional QAAD reporting was noted. To help OIE Member Countries and Territories meet their reporting obligations to the OIE at the same time as reporting through the QAAD systems, it was agreed that all those diseases listed by the OIE in the latest version of the *Aquatic Code* should be included in the regional reporting system. However, delisting of diseases by the OIE from the *Aquatic Code* should not lead to their automatic delisting from the regional list because a globally delisted disease may still have relevance to the region.

The AG considered the revisions required to the regional QAAD list. Revisions take into account changes in the OIE list plus diseases of regional concern not listed by OIE. The QAAD list will include all diseases listed by the OIE plus diseases of regional concern. The following revisions to

the QAAD list were approved by the AG. The revised list effective for reporting in 2009 is provided in Annex C.

Observations and Recommendations:

- Considering the listing of Necrotising hepatopancreatitis, hepatopancreatic parvo virus and Mourilyan disease under crustacean diseases by the OIE, the AG decided to include them for QAAD reporting for 2009.
- No emerging fish, mollusk and crustacean disease was proposed for listing in the QAAD for 2009
- Considering the listing of 2 amphibian diseases by the OIE (infection with ranavirus and infection with *Batrachochytrium dendrobatidis*), the AG decided to include them in the QAAD for reporting in 2009

Session 6: Review and evaluate implementation of the Technical Guidelines (TG)

6.1 Briefing on progress in implementation of the ‘Asia Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals’

The AG was informed of the progress in implementation of the various elements in the ‘Asia Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals’ (TG). Many activities implemented in 2008 (projects, workshops, training programmes, technical missions) have contributed to progress the implementation of the various elements contained in the TG. Core funding from NACA is being used to support and sustain only limited activities (e.g. holding of annual AG meetings, publication of QAAD reports), while all other activities have to be supported through national and regional projects. Since these projects have defined outcomes and target countries, many a times it will not be possible to extend the benefits to all the member governments. The AG was informed that the “progress matrix” is being used as a tool to assess overall regional progress in the implementation of TG and the same is being presented in all relevant meetings to raise awareness about the need for developing and implementing national strategies for aquatic animal health management.

Observations and Recommendations:

- Considering the differences in TG implementation across countries, the AG recommended that the status of TG implementation highlighting the differences should be presented to the NACA GC on a regular basis.
- The AG recommended that NACA undertake a survey to make a realistic assessment of the implementation of various elements contained in the TG
- The AG recognised the importance of the “progress matrix” as a tool to assess overall regional progress in the implementation of TG and suggested NACA to continue using this tool in its monitoring efforts.

6.2 Initiatives and programs of FAO globally (and in the region) in support of implementation of elements contained in the Technical Guidelines (see agenda item 2.2)

The AG was informed of the various initiatives of FAO to progress the implementation of the elements contained in the TG. The AG appreciated the role played by FAO and suggested that NACA explore opportunities to develop regional programs targeting those countries that need assistance. FAO informed the AG that request for a regional TCP should come from the member countries.

Observations and Recommendations

- It is recommended that NACA work with some of the south Asian countries and try to explore the possibility for initiating a regional TCP to support implementation of aquatic animal health management in SAARC countries.

6.3 Role of the ASEAN Network of Aquatic Animal Health Centres (ANAAHC) in supporting health management in the region

Dr Somkiat Kanchanakhan provided a detailed background to the setting up of ASEAN Network of Aquatic Animal Health Centres (ANAAHC) by the ASEAN, its purpose, objectives and plan of work. ANAAHC will serve as focal point for ASEAN and facilitate building up of diagnostic and health certification capabilities in ASEAN Member Countries critical for exporting live aquatic animals. The ANAAHC will provide training for ASEAN scientists on key disease of concern to ASEAN. The AG was informed that the DOF Thailand will provide suitably qualified staff, existing capacity and necessary infrastructure of the Inland Aquatic Animal Health Research Institute (AAHRI) for the operation of ANAAHC.

The meeting was informed of the progress made by ANAAHC and some of the recent initiatives. These include identification of focal points and national reference labs in 9 countries, collaboration with NACA in the conduct of master class in fish pathology, participation in technical missions under the ASEAN AADCP projects, and training of scientists from Lao PDR.

Observations and Recommendations:

- The AG was pleased with this new initiative in the region
- The AG suggested that ANAAHC develop work programs for the ASEAN in consultation with 9 identified national reference laboratories
- The AG recommended that NACA work closely with ANAAHC and explore opportunities to develop programs in support of aquatic animal health management in the Asia-Pacific region.

6.4 Strengthening National Coordination and Communication and promoting cooperation between veterinary and Fisheries authorities

The AG was informed of initiatives taken by NACA to promote national networking, communication and promoting cooperation between fisheries and veterinary authorities in the region. The attention of the AG was drawn to the Nouméa Recommendations to OIE Member Countries and Territories, which state that "Where primary responsibility for aquatic animal health rests with an authority other than the Veterinary Services, nominate an 'aquatic national focal point' from the other authority, so that the OIE may circulate Aquatic Animals Commission reports to the 'aquatic national focal point' at the same time as when circulating to national Delegates (providing comments back to the OIE must take place through, and with the endorsement of, the national Delegate to the OIE)". As of October 2007, 16 countries out of 32 in the region had nominated an aquatic national focal point. The OIE/NACA workshop in March 2008 provided an opportunity to bring veterinary and fisheries authorities in the region together and promote further cooperation. The meeting was also informed of the role played by OIE and the AAHSC in promoting cooperation between veterinary and fishery authorities. The veterinary authorities are being regularly asked to involve appropriate national authorities (e.g. fisheries) responsible for aquatic animal health. The AG recognized that it is a slow process and would take time to achieve full cooperation. The experience of Norway in this regard was shared with the meeting. The meeting was informed that in Norway fish health biologists could prescribe treatment to aquatic animals and there is good cooperation between fisheries and veterinary authorities.

Observations and Recommendations:

- The AG appreciated the role played by NACA in working with the fisheries authorities towards helping member countries to send comments to reports of AAHSC and in the nomination of aquatic national focal points.
- The AG recommended that NACA continues working in this direction and facilitate implementation of OIE's "Nouméa Recommendations" in the region

6.5 Harmonization in Diagnostics: Experiences and lessons learned from the ACIAR supported PCR calibration program in India, Indonesia and Vietnam

The AG was informed about the PCR training and calibration work done under the ACIAR supported project in India, Indonesia and Vietnam to promote harmonization. Between 2005 and 2008, two PCR training workshops and two PCR inter-laboratory calibration (ring testing) exercises were conducted in India, Indonesia and Vietnam, primarily targeting laboratories providing PCR services to the shrimp aquaculture sector. The objective was to improve the effectiveness of PCR-based viral screening in shrimp hatcheries and service laboratories. The underlying principles were: to provide an assessment of individual lab performances, compare the performance with other labs in the country, not designed (or in any way intended to assess the performance of different test kits, one of the central principles was to allow each lab to use whichever test kit they wish to select and finally to prepare the PCR laboratories for participation in a future PCR laboratory accreditation programme. The AG was informed that in the 3 countries, 40-60 % of labs were capable of providing reliable PCR service to the shrimp farming sector. The AG was informed that more countries from the region have expressed interest to participate in such programs

Observations and Recommendations:

- The AG was very pleased to note the excellent work done under the project in support of harmonization.
- The AG supported the idea of promoting a regional ring testing initiative to ensure improved quality and promote harmonization amongst PCR service providing laboratories in the region.
- The AG asked NACA to explore funding opportunities to expand the program to other countries in the region

Session 7: Revision of the Technical Guidelines⁵, Manual of Procedures⁶ and Asia Diagnostic Guide (ADG) for Aquatic Animal Diseases⁷, as required

The AG was informed that the TG and Manual of Procedures are very broad documents and cover all the aspects required for responsible movement of live fish. In addition, the AG was also informed that the outputs of the FAO expert consultation held in Sri Lanka in 2005 (FAO. 2007. Aquaculture development. 2. Health management for responsible movement of live aquatic animals; and FAO Technical Guidelines for Responsible Fisheries. No. 5, Suppl. 2. Rome, FAO. 2007. 31pp) cover many of the issues relevant to the TG. The FAO Technical Guidelines for Responsible Fisheries which were prepared to support sections of FAO's Code of Conduct for

⁵ Asia Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals and the Beijing consensus and Implementation strategy, 2000. FAO/NACA. Fisheries Technical Paper No 402

⁶ FAO/NACA. 2001. Manual of Procedures for the Implementation of the Asia Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals. *FAO Fisheries Technical Paper*, No. 402, Suppl. 1. FAO, Rome. 2001. 106 p.

⁷ Bondad-Reantaso, MG, McGladdery SE, East, I and Subasinghe, RP. (Eds.). Asia Diagnostic Guide to Aquatic Animal Diseases. *FAO Fisheries Technical Paper*, No. 402, Suppl. 2. FAO, Rome. 2001. 236 p.

Responsible Fisheries (CCRF). They address responsible fisheries management, aquaculture development, international trade and fisheries research. The global guidelines have expanded the perspective and considered strategies at national level and health management at the farm level as parallel measures. The global guidelines have two major components: (1) national strategy and biosecurity and (2) farm-level health management and biosecurity programmes.

7.1 Progress in ADG revision

The need for updating the FAO Fisheries Technical Paper 402/2 Asia Diagnostic Guide to Aquatic Animal Diseases ADG was agreed at AGM-4. The AG was reminded that the ADG revision proposal was approved at AGM-5. FAO informed the AG that the ADG is presently being revised and the work is continuing, as planned. Many chapters have been completed. Many scientists and experts have contributed and are contributing. FAO expects the first draft to be ready around April 2009 for comments.

The revised Diagnostic Guide will now have a global scope. Twenty-seven global experts (from Australia, Canada, China, Denmark, France, India, Italy, New Zealand, Norway, Spain, Thailand, UK, USA) have accepted FAO's invitation to participate either as contributing authors, or peer-reviewers, or both. There will be at least fifty diseases/pathogens that will be included and each disease chapter will have the following information: background information, causative agent, host range, geographic distribution, clinical aspects, diagnostic methods, corroborative diagnostics, modes of transmission, control measures and their impacts, and up to ten key references.

Observations and Recommendations

- The AG recognized that ADG has been very useful in the region in supporting disease diagnosis and surveillance.
- The AG noted the progress in ADG revision and appreciated the lead role taken by FAO. The AG requested NACA to work closely with FAO in facilitating the ADG revision.

7.2 Progress in updating AAPQIS database

The AG was informed that the AAPQIS database has now been upgraded and revised. The new database is named Aquatic Animal Health E-Governance Tool and can be accessed at www.aapqis.org. The new database has been expanded to cover additional aquatic animal health aspects and to increase compatibility with other FAO resources such as FI Homepage, the Fisheries Global Information System (FIGIS), Aquaculture Gateway Page, etc. The available resources have been integrated in order to facilitate decision making by including resources on risk analysis. Social networking (e.g. online AAPQIS community) has been included to increase interaction and knowledge sharing. The meeting was informed that the database at present does not have provision for uploading QAAD information.

The AG was informed that the AAPQIS was one of the outputs of the regional FAO TCP implemented between 1999-2001 in the region in collaboration with NACA and 21 governments in Asia-Pacific. In its old form, the AAPQIS was exclusively an information database on pathogens with complete information on about forty pathogens of relevance to the region.

The AG was provided with a demonstration of the website and its various available features and resources

Observations and Recommendations

- The AG was very pleased to see the new updated version of the AAPQIS and congratulated FAO for the good work.

- The AG felt that the database will be very useful for the region and requested NACA to inform the NCs, aquatic focal points and other relevant stakeholders about the database and its potential applications
- The AG recommended that NACA work closely with FAO in assisting member countries to utilize the AAPQIS resources
- The meeting was informed that OIE AAHSC and NACA would provide links to the AAPQIS database from their respective websites
- The AG suggested that NACA in consultation with FAO take responsibilities for regularly updating the pathogen information sheets for diseases listed in the QAAD

7.3 Recent FAO publications in support of implementation of Technical Guidelines

The AG was informed of the recent FAO publications in support of implementation of TG. Key publications include:

- Bondad-Reantaso, M.G., Arthur, J.R. and Subasinghe, R.P. (eds.). 2008. Understanding and applying risk analysis in aquaculture. *FAO Fisheries and Aquaculture Technical Paper. No. 519*. Rome, FAO. 2008. 304p.
- FAO. Report of FAO Workshop on Information Requirements for Maintaining Aquatic Animal Biosecurity. Cebu City, Philippines, 15–17 February 2007. *FAO Fisheries and Aquaculture Report. No. 877*. Rome, FAO. 2008. 27p.
- FAO Regional Commission for Fisheries. Report of the Regional Technical Workshop on Aquatic Animal Health. Jeddah. Kingdom of Saudi Arabia, 6-10 April 2008. *FAO Fisheries and Aquaculture Report. No. 831*. Rome, FAO. 2008. 120 pp.
- FAO. 2009. Report of the International Emergency Disease Investigation Task Force on a Serious Finfish Disease in Southern Africa, 18-26 May 2007. Rome, FAO. 2009.
- FAO and State Veterinary Office of BiH. 2009. National Strategy on Aquatic Animal Health for Bosnia and Herzegovina

Observations and Recommendations

- The AG felt that the publications will be very useful for national competent authorities in developing and implementing national aquatic animal health strategies
- The AG recommended that NACA work closely with FAO in disseminating the publications widely in the region

Session 8: Identification and designation of regional aquatic animal health resources

8.1 Functioning of the three tier regional resource base

The AG was informed of the progress made in the operation of the three tier regional resource base on aquatic animal health. The AG noted with appreciation the contributions of Regional Reference Laboratories (RRLs), RREs and Regional Resource Centres (RRCs) in developing disease cards, contributing to training programmes, providing special technical assistance to member countries on a case by case basis. The AG highlighted the potential utility of the regional resource base in terms of assisting member countries in dealing with disease diagnosis and responding to disease emergencies. The AG recognized the fact that the regional resource base, specifically, the regional reference laboratory, can be established only for regional diseases not listed by OIE and for the benefit of the region. The AG discussed several approaches to make the best use of three tier regional resource base. The AG was also informed that AAHRI of Thailand, one of NACA regional resource centre, has been recognized as ANAAHC to support capacity building and harmonization efforts within ASEAN.

Observations and Recommendations

- Considering the potential utility of the regional resource base, the AG recommended that the number of RREs and RRCs be expanded.
- Considering the expertise available, it was suggested to utilize RREs and RRCs to gather additional information on the non OIE-listed diseases in the QAAD.
- The expertise available with the RREs should be used also to identify and evaluate emerging diseases
- The AG suggested that NACA regularly update the contact details of RRE including their email addresses.

8.2 Progress on OIE reference laboratory for MrNV and IMNV

The meeting was informed that OIE Reference Laboratory for MrNV had been identified. The AG was very pleased to note that the NACA RRL for white tail disease had been recognized as the OIE Reference Laboratory. The meeting was informed of the AGM-1 decision that NACA RRL would be identified only for non OIE-listed diseases. The meeting was also informed that the process for identifying OIE Reference Laboratories for IMN had already been initiated by the OIE.

Observations and Recommendation

- In view of the identification of OIE Reference Laboratory for white tail disease, the NACA RRL for white tail disease will now be designated as a NACA RRC

8.3 Evaluation of applications received (if any) for RRE, RRC and RRL by the AG

The AG was informed that no application/expression of interest was received during the period under review for RRC. Considering the listing of IMN by OIE, NACA had not proceeded with the formal process of identifying NACA RRL for IMNV.

Session 9: Regional and international cooperation

The AG was briefed on the ongoing regional and international cooperation in regional aquatic animal health. The AG was pleased to note the excellent regional and international cooperation that had contributed to the development and implementation of the regional aquatic animal health programme in Asia. It was generally agreed that such cooperation should be further pursued, and the AG took note of various opportunities to further strengthen cooperation with regional and international bodies to support Asia in effective implementation of the regional aquatic animal health programme. The following is the list of regional and international organizations collaborating with NACA in the regional aquatic animal health program:

- World Organisation for Animal Health (OIE)
- Food and Agricultural Organization of the United Nations (FAO)
- Department of Agriculture, Fisheries and Forestry (DAFF), Australia
- Southeast Asian Fisheries Development Center (SEAFDEC)
- Permanent Advisory Network for Diseases in Aquaculture (PANDA)
- ACIAR
- AusAid
- AusVet
- ASEC
- ASEM platform
- FHS of AFS
- ISVEE
- Association of South East Asian Nations (ASEAN)

- Secretariat of the Pacific Community(SPC)
- ICAR
- MPEDA/ NaCSA
- Crawford Fund
- ANAAHC
- WWF
- Private sector

Session 10: Any other business

10.1 Any other business

Under any other matters, one of the AG members raised the issue of mass mortalities of tilapia occurring in Thailand, Lao PDR and Cambodia, since March 2008. The meeting was informed that several laboratories and scientists are working on this problem but there is limited collaboration and coordination amongst the different laboratories. The problem has occurred primarily in cage culture facilities in rivers and reservoirs. Till date over 130 cases have been reported and in majority of the cases the mortalities have been very significant. All stages of tilapia seem to be affected with this syndrome. Different labs have obtained different diagnosis and each of it appears to be correct. Several pathogens (e.g. bacteria and viruses) have been isolated from affected animals. The problem is not confined to seed from any single hatchery. Seeds supplied from several hatcheries have experienced similar outbreaks in cage culture systems. The primary etiology and risk factors for the disease appear to be still unresolved.

Observations and Recommendations

- The AG suggested that the efforts should be made immediately to bring all the laboratories working on this problem together and exchange information in order to understand the problem and address it suitably before it gets unmanageable.
- The AG suggested that NACA and ANNACH should explore opportunities to hold a workshop or expert consultation so that all the relevant stakeholders (including industry) could be brought together
- The AG suggested to explore the possibility of holding a workshop on tilapia diseases along with the VIV March 2009

10.2 Review of the AG Terms of Reference

The AG deliberated at length the current TOR and felt it needed to be broadened so that the AG can provide advice on other matters of relevance to the region. It was decided to include two more items to the AG TOR. The revised Terms of Reference is provided as Annex D. The new TOR to be included in the AG TOR will read as follows:

- To identify issues of relevance to the region that require in depth review and then propose appropriate actions needed
- To review emerging diseases in the region

10.3 Date of next meeting

The meeting date for AGM-8 was fixed for November 2009. The NACA Secretariat will advise the final date in good time.

Session 11: Presentation of meeting report and closing

The draft report was adopted and the meeting closed.

Annex A: Meeting Agenda

Monday, 15th December 2008: Morning session 0900-1200h

Opening session

- Welcome (Dr Sena De Silva, Director General, NACA)
- Adoption of AGM-7 agenda
- Election of Chair and Vice chair
- Election of Rapporteur

Session 1: Progress Report since AGM-6 and expected outputs from AGM-7

1.1 Progress report from NACA on progress since AGM-6 and expected outputs from AGM-7 – presentation by Dr CV Mohan, followed by short discussion session as required.

Session 2: Global issues and standards

2.1 Outcomes from the OIE General Session (May 2008) and the Aquatic Animal Health Standards Commission meeting (October 2008) - presentation by Professor Barry Hill followed by discussion

2.2 Current global issues of relevance to aquatic animal health management and opportunities for collaboration between FAO and NACA in Asia, Africa and Eastern Europe-short presentation by FAO - Dr Rohana Subasinghe/Dr. Miao Weimin

2.3 Import requirements for live aquatic animals and their products for the European Union – presentation by Prof Barry Hill followed by discussions

Session 3: Review of Regional disease status

3.1 Emerging Crustacean diseases in the region-short presentation by Prof Tim Flegel followed by discussion

3.2 Emerging fish diseases in the region - short presentations by Dr Cedric Komar followed by discussions

3.3 Emerging mollusk diseases in the region - short presentation by Dr Temduong Somsiri followed by discussions

Monday 15th December 2008: Afternoon Session 1330-1730

3.4 Emerging amphibian diseases in the region - short presentation by Dr Somkiat Kanchanakhan followed by discussions

3.5 Emerging diseases in ornamentals and trade implications for Asian exporters - short presentation by Dr Supranee Chinabut followed by discussions

3.6 Key and emerging aquatic animal diseases in Chinese aquaculture-short presentation by Dr Wenbin Zhan

3.7 Preventive strategies for combating infectious diseases in aquatic animals-short presentation by Dr. Kjersti Gravningen

3.8 Outcomes of the active surveillance programme implemented by SEAFDEC-AQD in the region– *short presentation by SEAFDEC representative*

Tuesday 16th December 2008: Morning session 0900-1200h

Session 4: Disease Reporting

4.1 New OIE Disease list and status of Global reporting on aquatic animal health-*short presentation by Prof Barry Hill followed by discussion*

4.2 QAAD list for 2008 and status of regional reporting – *presentation by CV Mohan*

4.3 Global online reporting system (WAHIS) of OIE and progress made with respect to establishing OIE WAHIS-NACA regional Core for aquatic animal diseases
-*presentation by Dr Karim followed by discussions*

Session 5: Review of QAAD Regional Reporting System

5.1 Way forward with regional QAAD reporting

- Views of NACA by CV Mohan
- Views of the OIE Regional Representation for Asia-Pacific by Dr Sakurai
- Views of FAO by Dr Rohana Subasinghe/Miao Weimin
- Views of OIE by Prof Barry Hill/Dr Karim

5.2 Criteria for listing of diseases in QAAD-*discussion session*

5.3 Review of comments received concerning assessment of 4 bacterial diseases for inclusion in the 2009 QAAD – *discussion session*

5.4 Review of diseases listed in QAAD, revision of reporting form and instructions (group to consider changes made to the OIE list, WAHIS online reporting and diseases of regional concern) - *discussion session*

Tuesday, 16th December 2008: Afternoon session 1330-1730h

Session 6: Review and evaluate implementation of the Technical Guidelines

6.1 Briefing on progress in implementation of the ‘Asia Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals’ – *discussion session*

6.2 Initiatives and programs of FAO globally (and in the region) in support of implementation of elements contained in the Technical Guidelines – *short presentation by Dr Rohana Subasinghe/Dr Miao Weimin*

6.3 Role of ASEAN Network of Aquatic Animal Health Centre (ANAAHC) in supporting health management in the region-*presentation by Dr Somkiat followed by discussion*

6.4 Strengthening National Coordination and Communication and promoting cooperation between veterinary and Fisheries authorities-*discussion session*

6.5 Harmonization in Diagnostics: Experiences and lessons learned from the ACIAR supported PCR calibration program in India, Indonesia and Vietnam -short presentation by Dr CV Mohan followed by discussions

Session 7: Revision of the Technical Guidelines⁸, Manual of Procedures⁹ and Asia Diagnostic Guide for Aquatic Animal Diseases¹⁰ as required;

7.1 Progress in ADG revision-presentation by Rohana Subasinghe/Dr Miao Weimin

7.2 Progress in updating AAPQIS database-presentation by Rohana Subasinghe/Dr Miao Weimin

7.3 Recent FAO publications in support of implementation of Technical Guidelines - presentation by Rohana Subasinghe/Dr Miao Weimin

Wednesday, 17th December 2008: Morning session 0900-1200h

Session 8: Identification and designation of regional aquatic animal health resources, including regional resource experts (RRE), Regional Reference Laboratories (RRL) and Regional Resource Centres (RRC)

8.1 Functioning of the three tier regional resource base – discussions

8.2 Progress on OIE reference laboratory for MrNV and IMNV

8.3 Evaluation of applications received (if any) for RRE, RRC and RRL by the AG

Session 9: Regional and International Cooperation

- World Organisation for Animal Health (OIE)
- Food and Agricultural Organization of the United Nations (FAO)
- Department of Agriculture, Fisheries and Forestry (DAFF), Australia
- Southeast Asian Fisheries Development Center (SEAFDEC)
- Permanent Advisory Network for Diseases in Aquaculture (PANDA)
- ACIAR
- AusAid
- ASEC
- ASEM platform
- Collaboration with FHS
- ISVEE
- Association of South East Asian Nations (ASEAN)
- Secretariat of the Pacific Community (SPC)
- Private sector

Session 10: Any other business

10.1 Any other business

⁸ Asia Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals and the Beijing consensus and Implementation strategy, 2000. FAO/NACA. Fisheries Technical Paper No 402

⁹ FAO/NACA. 2001. Manual of Procedures for the Implementation of the Asia Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals. *FAO Fisheries Technical Paper*, No. 402, Suppl. 1. FAO, Rome. 2001. 106 p.

¹⁰ Bondad-Reantaso, MG, McGladdery SE, East, I and Subasinghe, RP. (Eds.). Asia Diagnostic Guide to Aquatic Animal Diseases. *FAO Fisheries Technical Paper*, No. 402, Suppl. 2. FAO, Rome. 2001. 236 p.

10.2 Review of the AG Terms of Reference

10.3 Date of next meeting

Wednesday, 17th December 2008: Afternoon session 1400-1700h

Session 11: Closing Session

Adoption of the report and recommendations

Annex B: List of Participants

I Advisory Group Members	
Aquatic Animal Health Standards Commission (AAHSC) of the OIE	
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Food and Agricultural Organization of the United Nations (FAO)	
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III NACA Secretariat	
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Annex C: List of Diseases in the Asia-Pacific

Quarterly Aquatic Animal Disease Report (Beginning 2009)

1. DISEASES PREVALENT IN THE REGION	
1.1 FINFISH DISEASES	
OIE-listed diseases	Non OIE-listed diseases
1. Epizootic haematopoietic necrosis	1. Grouper iridoviral disease
2. Infectious haematopoietic necrosis	2. Viral encephalopathy and retinopathy
3. Spring viraemia of carp	3. Enteric septicaemia of catfish
4. Viral haemorrhagic septicaemia	
5. Epizootic ulcerative syndrome	
6. Red seabream iridoviral disease	
7. Infection with koi herpesvirus	
1.2 MOLLUSC DISEASES	
OIE-listed diseases	Non OIE-listed diseases
1. Infection with <i>Bonamia exitiosa</i>	1. Infection with <i>Marteilioides chungmuensis</i>
2. Infection with <i>Perkinsus olseni</i>	2. Akoya oyster disease
3. Abalone viral mortality	3. Acute viral necrosis (in scallops)
1.3 CRUSTACEAN DISEASES	
OIE-listed diseases	Non OIE-listed diseases
1. Taura syndrome	1. Monodon slow growth syndrome
2. White spot disease	2. Milky lobster syndrome
3. Yellowhead disease (YH virus, gill-associated virus)	
4. Spherical baculovirus (<i>Penaeus monodon</i> -type baculovirus)	
5. Infectious hypodermal and haematopoietic necrosis	
6. Tetrahedral baculovirus (<i>Baculovirus penaei</i>)	
7. Infectious myonecrosis	
8. White tail disease (MrNV)	
9. Necrotising hepatopancreatitis	
10. Hepatopancreatic parvo virus disease	
11. Mourilyan virus disease	
1.4 AMPHIBIAN DISEASES	
OIE-listed diseases	Non OIE-listed diseases
1. Infection with Ranavirus	
2. Infection with <i>Bachtracochytrium dendrobatidis</i>	
2. DISEASES PRESUMED EXOTIC TO THE REGION	
2.1 Finfish	
OIE-listed diseases	Non OIE-listed diseases
1. Infectious salmon anaemia	1. Channel catfish virus disease
2. Gyrodactylosis (<i>Gyrodactylus salaris</i>)	
2.2 Molluscs	
OIE-listed diseases	Non OIE-listed diseases
1. Infection with <i>Bonamia ostreae</i>	
2. Infection with <i>Marteilia refringens</i>	
3. Infection with <i>Perkinsus marinus</i>	
4. Infection with <i>Xenohaliotis californiensis</i>	
2.3 Crustaceans	
OIE-listed diseases	Non OIE-listed diseases
1. Crayfish plague (<i>Aphanomyces astaci</i>)	

Annex D: Revised TOR of the AG

The Terms of Reference (TOR) of the Advisory Group are to provide advice to NACA through the following activities:

- To review emerging diseases in the region
- Review and evaluate quarterly regional aquatic animal disease reporting;
- Evaluate progress made on implementation of the *Technical Guidelines*;
- Revise *Technical Guidelines*¹¹, *Manual of Procedures*¹² and *Asia Diagnostic Guide for Aquatic Animal Diseases*¹³ as required;
- Develop procedures for advising on Technical Guidelines implementation;
- Advise in identification and designation of regional aquatic animal health resources, as Regional Resource Experts, Regional Resource Centres and Regional Reference Laboratories
- To identify issues of relevance to the region that require in depth review and then propose appropriate actions needed
- Review the TOR as and when required.

The AG will consist of ten members, including: Chairperson, Vice Chairperson, and Technical Secretary. The criteria for selecting members are based on their technical competence in the subject matter areas of interest to aquatic animal health management in the region. They are as follows:

NO.	CRITERIA/COMPETENCE IN AQUATIC ANIMAL HEALTH
1	Policies and national programme development, harmonisation and standardisation of diagnostics and health management procedures
2	Quarantine and health certification. Trade related issues of aquatic animal health, international treaties, agreements, etc.
3	Regional Centres, research needs, training and capacity building, etc.
4	Information systems, surveillance and reporting
5	Private sector involvement including knowledge on contingency planning and early warning, etc.
6	Representing the OIE Regional Representation for the Asia-Pacific
7	Representing the OIE Aquatic Animal Health Standards Commission
8	Representing FAO Fisheries Department
9	Representing SEAFDEC Aquaculture Department
10	NACA Regional Aquatic Animal Health Specialist – as Technical Secretary

¹¹ Asia Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals and the Beijing consensus and Implementation strategy, 2000. FAO/NACA. Fisheries Technical Paper No 402

¹² FAO/NACA. 2001. Manual of Procedures for the Implementation of the Asia Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals. *FAO Fisheries Technical Paper*, No. 402, Suppl. 1. FAO, Rome. 2001. 106 p.

¹³ Bondad-Reantaso, MG, McGladdery SE, East, I and Subasinghe, RP. (Eds.). *Asia Diagnostic Guide to Aquatic Animal Diseases*. *FAO Fisheries Technical Paper*, No. 402, Suppl. 2. FAO, Rome. 2001. 236 p.

The AG members will be recruited for an initial period of two years. The Chairperson and Vice-Chairperson will be selected by the AG. The Chairperson will serve for one term (two-years) and if required and willing, could be extended for another term, pending the Chairperson's consent and if required, the term may be extended by another two years.

As and when required the AG will co-opt technical experts for their work.

At least three selected members of the AG will only serve for a two-year term and at least three new members will be recruited at two-year intervals to guarantee a degree of continuity in the composition of the AG. NACA's Aquatic Animal Health Specialist will serve as the Technical Secretary to the AG with no fixed-term basis. The NACA Secretariat will nominate or select new membership as required on the basis of the advice of the AG.

The AG will meet on an annual basis, and the meetings will be held usually at the NACA Secretariat in Bangkok unless otherwise decided by the AG. The AG meetings will be held during the first week of November each year unless otherwise specified. The dates and venue for the next meeting will be decided at the end of each meeting by the AG.