REPORT OF THE EIGHTH MEETING

OF THE ASIA REGIONAL ADVISORY GROUP ON

AQUATIC ANIMAL HEALTH

Network of Aquaculture Centres in Asia-Pacific

Bangkok, Thailand

2-4 December 2009

Preparation of this document:
This report was prepared by the 8th Asia Regional Advisory Group (AG) on Aquatic Animal Health (AGM-8) that met at NACA Secretariat, Bangkok, Thailand, on the 2-4 December 2009.

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.

Reference: NACA 2009. Report of the Eighth 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
ACIAR	Australian Centre for International Agricultural Research
ADG	Asia Diagnostic Guide
AG	Advisory Group
AGM	Advisory Group Meeting
ANAAHC	ASEAN Network of Aquatic Animal Health Centres
ASDD	Abdominal segment deformity disease (in *P.vannamei*)
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	*Epithelioma papulosum cyprinid*
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
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 *P. monodon*)
MBV	Monodon baculovirus
MLD	Milky lobster disease
MoVD	Mourilyan virus disease
MPEDA	Marine Products Export Development Authority (India)
*Mr*NV	*Macrobrachium rosenbergii* 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	*Oxyeleotris marmoratus ranavirus*
OOD	Oyster oedema disease
PCR	Polymerase chain reaction
PL	Postlarvae
*Pv*NV	*Penaeus vannamei* nodavirus
QAAD	Quarterly Aquatic Animal Disease
RRC	Regional resource centre
RRE	Regional resource expert
RRL	Regional reference laboratory
RT-PCR	Reverse transcriptase PCR
RTRV	*Rana trigrina ranavirus*
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
WWF	World Wildlife Fund
XSV	Extra small virus
YHV	Yellowhead virus

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Opening session

The eighth meeting of the Asia Regional Advisory Group on Aquatic Animal Health (AGM-8) was held at the NACA Secretariat, Bangkok, Thailand from 2-4th December 2009.

Dr SS De Silva, the Director General of NACA, formally opened the meeting and 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 was unable to join the meeting). Dr De Silva 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 Supranee Chinabut was elected to chair this meeting. The meeting agenda was reviewed and adopted as listed (Annex A) without modification. The list of participants is given in Annex B.

Session 1: Progress since AGM-7 and expected outputs from AGM-8

1.1 Progress report from NACA on progress since AGM-7 and expected outputs from AGM-8

The AG was informed of the progress made since AGM-7. The AG was informed that the Coordinator of Aquatic Animal Health Program had been promoted as the Research and Development Program Manager of NACA from 1st Feb 2009 and therefore the position of the Coordinator of Aquatic Animal Health Program had remained vacant since then. This change in responsibilities had affected the progress of the regional health program.

The report provided background 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-7
- Outcomes of the 20th 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
    - PCR training, calibration and harmonization work carried out in India, Indonesia and Vietnam
    - ASEAN Foundation supported project on building capacity of small scale farmers in 5 ASEAN countries on 5 selected aquaculture commodities (e.g. shrimp, seaweeds, tilapia, snakehead, grouper). One key component was development of better management practices to deal with disease issues
    - Provision of IRA training course to 30 Officers of the Department of Fisheries, Government of Malaysia
    - Provision of aquatic animal health advisory service to AFCD, Hong Kong SAR
    - OIE/NACA work on setting up of WAHIS regional core
    - Implementation of a project on fish borne trematodes in Lao PDR in collaboration with FAO
- Details of ongoing regional and international collaborations and new project proposals being developed (e.g. proposal submitted to STDF facility in collaboration with FAO and WFC)
- Publications that have come out of the aquatic animal health program

Observations and Recommendations

- It was agreed that recommendations and action points identified at AGM meetings need to be highlighted and more specific definition of needed actions by whom. As a part of the general review of work over the past year, it was recommended that the AG adopt a more action oriented and attributed approach. For instance AG recommendations should be strengthened via greater precision on **what** new action is recommended by **when** and by **whom**. It was suggested that the functioning of the AG should be more action oriented and in this direction some actions were identified (Table 1).
- Continued effort is needed on disease recognition particularly with more specific involvement of the increasing numbers and different stakeholders coming from a variety of levels (local, national, regional and global). The AG discussed various examples (eg Australian, Indian and Chinese experiences were cited) covering approaches on disease recognition (examples were reviewed of the main diseases, the use of disease cards, website documentation etc). It was recommended that efforts be made to get appropriate material to a wider audience including farmers. Building capacity, for instance, to identify and share this information with all concerned parties to initiate more rapid responses to suspected outbreaks was highlighted and it is noted as another follow up recommendation. Partnership, networking and generally more sharing of approaches, material among stakeholders/countries is suggested, hopefully with more advanced countries taking the lead.
- Issues related to plant diseases in seaweeds were noted but it was agreed that the focus of this group is (at least for the moment) is restricted to animal health.
- The important work of OIE and aquatic focal points in the region were also noted and their important role to improve diagnosis and information sharing for new and emerging diseases.
- 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 recommended that the position of coordinator of aquatic animal health program should be filled as soon as possible
- The AG recognized that securing enough resources and funding to implement activities is a major constraint

Table 1: List of actions proposed by AG for improving Aquatic Animal Health in the region

	Action	Responsible Agency or /person	Timing/ Due By	Expected Deliverable	Achievements/ Current Status as of:
	AGM7 Revisited				
1	Regularly update/inform all of upcoming training courses/relevant meetings in the region. NACA to facilitate the collection of information. (Information to be sent to Mohan and dissemination by email and posted on OIE&NACA website).	• All partners • All national coordinators • AG	Year round	Info email, RSS & posted on OIE AP office & NACA website	On going
2	Disseminate the latest updates from OIE to National Coordinators (NCs)/aquatic national focal points as appropriate.	• NACA • OIE regional office	Year round	• General session report • Aquatic commission report	On going
3	Continue close collaboration with FAO in providing regional expertise to the proposed FAO regional programme inside Asia-Pacific and other regions in the world, if relevant.	NACA		Reports provided to AGM	Some work conducted in Africa on EUS
4	Explore further possibilities for developing a regional TCP. • Identify the needs • Strengthen farm level disease management in the Asia-Pacific region. Communication targeting farmers at field level and lab. (e.g. Develop simple disease cards / posters for farmer use)	FAO, NACA	TBA	Project proposal developed and submitted to AGM for comments	
5	Extract relevant information from the EU regulations for Imports and circulate the summary to relevant stakeholders in the region (e.g. CAs, ornamental industry)	NACA	2009	Foreword published in QAAD report	Summaries sent to NCs and CAs
6	Define the scope and explore the possibility for conducting a systematic economic study to identify the impact of aquatic animal diseases in the region	Ingo & Celia NACA	June 2010	Proposal submitted to AG for comments via email	
7	Explore the ways and means for increasing the surveillance and the impact of key mollusc diseases. Conduct tracer	Supranee NACA	TBA		3 master classes conducted

	study to the participants who were trained.				
8	Include ornamentals in their routine surveillance programs so as to avoid future problems in trade	NACA to advise relevant countries	ASAP	NCs already informed	
9	Explore opportunities to develop harmonized guidelines for field testing, licensing and approval of commercial vaccines.	NACA	TBA	NACA to develop a project for submissi on to AG	
10	Continue to facilitate implementation of OIE's "Nouméa Recommendations" in the region for aquatic animal focal points	NACA & OIE Mohan & Karim to monitor progress	Year round	report to AG	On going
11	Expand the program on harmonization in diagnostics (built on ACIAR supported PCR calibration program in India, Indonesia and Vietnam) to other counties in the region	NACA	TBA	Mohan to update AG	
12	Explore opportunities to hold a workshop or expert consultation so that all the relevant stakeholders (including industry) could be brought together	ANAAHC NACA	TBA		
13	Explore the possibility of holding a workshop on tilapia diseases	NACA	TBA	NACA to work with AAHRI and private sector to develop the proposal	
	AGM8				
14	Continue to develop simple disease cards / posters for farmer use to improve awareness and encourage more rapid reporting from farm level	NACA Mohan and selected experts	TBA		
15	Explore/develop a proposal for training, awareness building related to the EU importation requirements for ornamental fish (APEC, AADCP)	Ingo to follow up	TBA		
16	NACA to collect feedback from partners on impact of AADCP	Mohan to follow up with AG contacts	ASAP		
17	Description of the outputs of the regional core data that will be displayed on regional websites (OIE AP & NACA).	NACA/OIE Asia Pacific	Descript ion to be submitte	Simon to send Descripti	

			d by end of 2009	on to AG within 2009	
18	3 tier regional resource base of experts (RRE), laboratories (RRL), and reference center lab (RRC) participation. 1) Update the list on the website 2) Update the status of RRE, RRL &RRC	NACA (Mohan to update)	ASAP	Mohan to confirm to all when updating complete	

Session 2 OIE Aquatic Standards & Global Issues

2.1 Outcomes from the OIE General Session (May 2009) and the Aquatic Animal Health Standards Commission meeting (October 2009)

This report, presented by Dr Hill, continued the on-going process of updating the AG on OIE aquatic animal health developments including outcomes from the OIE General Session in May 2009 and the AAHSC Sept/Oct meeting, and an explanation of Commission membership changes, continuing participation of others (e.g. Dr Subasinghe, FAO, Prof Lightner, USA and Dr Katunguka-Rwakishaya, Uganda) and future program orientation. For instance, a variety of amendments to the Aquatic Code for 2010 are proposed (revised disease listing, new chapters, certification guidelines, competent authorities, model certificates, safety of aquatic animal commodities, and welfare of farmed fish). At the global level, there is a move to strengthen certain regions e.g. more emphasis on Africa, there are key meetings in 2009 and there will be increasing use of ad hoc groups to support the Commission. The mandate for the AAHSC has been expanded to include aquatic animal production food safety and aquatic animal welfare.

Some of the key amendments to the *Aquatic Animal Health Code* in 2009:
Revised disease list:

- 4 crustacean diseases de-listed:
  - tetrahedral baculovirosis
  - spherical baculovirosis
  - hepatopancreatic parvovirus disease
  - mourilyan virus disease
- 1 crustacean disease listed:
  - Milky haemolymph disease of spiny lobsters ('under study')
- mollusc disease, name change/full listing:
  - Infection with abalone herpes-like virus (change from abalone viral mortality)

New Chapters:

- Criteria to assess safety of aquatic animal commodities (Ch 5.3)
- Welfare of farmed fish during transport (Ch 7.2.)
- Model certificates (Ch 5.10) – major revision
- Quality of Competent Authorities (Ch 3.1)
- Aquatic Code restructured to align with Terrestrial Code

Details:

- Definitions
- Diseases listed by the OIE
- General obligations related to certification and certification procedures
- Quality of Competent Authorities
- One disease chapter (Crayfish plague)
- Model international health certificates

- Criteria to assess the safety of aquatic animal commodities
- Criteria to assess the safety of aquatic animal commodities for human consumption
- Welfare of farmed fish during transport

The roles and responsibilities of aquatic focal points was emphasized:

- establish a network of aquatic animal health experts within their country;
- establish and maintain a dialogue with the CA for aquatic animal health in their country, and to facilitate cooperation and communication among several authorities where responsibility is shared;
- under the authority of the OIE Delegate, provide aquatic animal disease information to the OIE through WAHIS, thereby meeting OIE Member obligations;
- act as a contact point with the OIE Animal Health Information Department on matters related to information on aquatic animals including aquatic animal diseases;
- receive the AAC meeting reports and conduct the in-country consultation process with aquatic animal health experts on text proposed in those reports;
- prepare comments for the Delegate on relevant meeting reports including comments on the proposals for new or revised OIE standards related to aquatic animals;

Documentation:

- Amendments to OIE Manual of Diagnostic Tests for Aquatic Animals (6th edition, 2009) were described (the possibility of web version and printed version differences were noted). Updating challenges were described and noted.
- The full reports of meetings of the Aquatic Animals Commission describing new initiatives and proposed amendments to the Aquatic Code are sent out to OIE National Delegates for comment and discussion and are available on the AAHSC pages of the OIE website.
- New publications: a new science-based OIE Guide for Aquatic Animal Health Surveillance has just been published, and there will be future development of disease-specific surveillance chapters (initially for VHS, Infection with Bonamia ostreae and WSD) for the Aquatic Code.

AAHSC Workplan for 2010: some highlights include:

- Welfare of farmed fish during transport (given the increasing number and variety of species) were mentioned as one example of the coming challenges.
- An initial list of coming meetings was provided and is available in the annex.
- Increased cooperation with FAO especially for biosecurity in Africa and with NACA in Asia especially through continued participation in AG meetings.
- Planned 2nd OIE Global Conference on Aquatic Animal Health in 2012 in Asia, perhaps in China.
- An initial list of planned training workshops for national aquatic focal points

Observations and Recommendations:

- The AG thanked Dr Hill for providing very clear and useful information and commended the AAHSC for their continuous collaboration with the NACA and the AG.
- The AG felt that there will be considerable discussion around the interpretation and implementation of the welfare of animals guidelines (e. g. SPS and TPT links) and highlighted some of challenges that countries in the region would face.
- Traceability concerns were also reviewed in terms of country of production and country of origin issues. OIE has published a technical paper on traceability of aquatic animals and their products (Dr Hill as co-author) which provides further background thinking and guidance. Strengthening the traceability is an important issue on which to continue to focus and it was suggested that NACA pursue with the country aquatic focal points to provide comments/update on this subject.

- 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 the region. In view of this, the AG requested NACA to disseminate the latest updates from OIE to National Coordinators (NCs)/ national aquatic 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

Unfortunately Dr R Subasinghe was unable to attend this meeting and Miao Wemin from FAO-RAP, Bangkok presented a summary of the FAO aquatic animal biosecurity (aquatic animal health) work with a focus on Asia and a summary of the recent work in Africa (mainly in the Zambezi R watershed). In brief, most of the previous FAO activities continue mainly around assisting members in improving national aquatic animal health management activities. FAO recognized the importance of aquatic animal health management in the region and FAO continues to assist Member countries in improving national 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).

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 suggested that NACA collaborate closely with FAO in providing regional expertise to the proposed FAO biosecurity programme in Africa.
- 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

Session 3: Review of regional disease status

3.1 Emerging crustacean diseases in the region

Prof Timothy Flegel provided an update on Shrimp Diseases in Asian aquaculture.

- Yellowhead virus (YHV) and White spot syndrome virus (WSSV) are lethal to all cultivated shrimp in the region. As noted at the last AG, WSSV still remains an important problem in the region. WSSV is a problem everywhere but YHV is only a problem in Thailand.
- Diseases in *Penaeus vannamei* in Asia in the order of their severity:
    - most serious are WSSV and YHV
    - next most serious is infectious myonecrosis virus (IMNV)
    - Possibly *Macrobrachium nodavirus* (MrNV)
    - Followed by TSV (but a diminishing problem due to SPF tolerant stocks)
    - Followed by IHHNV or PstDNV (also a diminishing problem due to SPF stocks)
    - Abdominal segment deformity disease (ASDD)
- IMNV(Infectious myonecrosis virus) 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)

- 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.
- 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. It is easily induced by stress, if conditions are reversed quickly, cramps disappear. If not, they become permanent and shrimp will die. Similar condition is also caused by 2 other viruses: *Penaeus vannamei* nodavirus (PvNV) and *Macrobrachium rosenbergii* nodavirus (MrNV)
- *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.
- 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 the most serious pathogens. The next most serious problem in *P.monodon* is Monodon slow growth syndrome (MSGS). 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 to include LSNV in the working case definition of MSGS.

Observations and Recommendations:

- 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*
- 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.

3.2 Emerging finfish diseases in the region

Status of emerging finfish diseases in the region was informed to the AG by Dr Cedric Komar. Three diseases were highlighted as emerging problems in the region:

- *Streptococcus agalactiae* in tilapia
- *Nocardia* spp. in marine fish
- *Tenacibaculum maritimum* in marine fish

Streptococcus agalactiae was considered important to the region for the following reasons

- The most common Streptococcal disease of tilapia in many countries and the disease is much more complex
- Geographical repartition of biotypes
- No cross protection through preventive treatment through vaccination
- There is a risk of spreading from one zone to the other. Due to transportation of tilapia between countries, the spread of Sa1 into Sa2 zones or vice-versa is possible
- Capacity of diagnostics is extremely important
- Should identify some regional mechanisms to prevent the spread of the disease in the region

Nocardia spp was considered important to the region for the following reasons

- Disease which is chronic and very difficult to treat (once noticed = usually too late) and can damage the industry (similar to mycobacterium)
- Poor response to antibiotics and vaccine development extremely complex
- Even if mortality is low in some cases: lesions cause depreciation of fish value
- Some species are more susceptible than others: (ex: Pompano, snappers)
- Become more important when susceptible species are mixed with less susceptible species

Tenacibaculum maritimum in marine fish was considered important to the region for the following reasons

- Devastating in marine fish
- Link between stress/manipulation and disease
- When fish are exposed to the pathogen directly under optimal conditions the disease might not develop however on farm observations show that farmers can lose all production because of *T. maritimum* before the stocks reach 8 grams.
- No effective and authorized antibiotic treatment is available
- Multi factorial diseases require deeper understanding of the triggering factors.

Observations and Recommendations

- Recognizing the extent of research work done by Intervet, the AG suggested that NACA collaborate with Intervet to work on some of the AG identified priority diseases in the region
- The meeting noted that there is need to develop more skilled scientists for fin fish diseases comparable to that working on crustaceans
- The AG observed that there is still a general lack of proper diagnosis of fish diseases (rapid and accurate on-farm diagnostic kits are not available)
- The AG stressed the need to gain better understanding of these 3 diseases in the region so that better solutions can be developed
- The AG recommended that NACA work with resource experts from Intervet and develop disease cards for some of the emerging bacterial finfish diseases to support capacity building and surveillance
- The issue of Rickettsia infection in tilapia was noted as another emerging problem in the region.

3.3 Emerging mollusc diseases in the region

The mollusc disease expert could not be present at the meeting and these results were presented by Dr Supranee:

- Occurrence of diseases by country and by disease were summarized. Main OIE listed mollusc diseases present in the region are as follows:
    - *Bonamia exitiosa*,
    - *Perkinsus olseni* (also called MSX)
    - and Abalone viral mortality
- Important non OIE listed diseases present in the region include:
    - *Marteilioides chungmuensis*, Haplosporidiosis, Vibrio sp, Fungal disease of abalone (*Haliphthorous milfordensis)*, trematode infections in oysters (*Gymnophalloides tokiensis),* Cryptobia sp, swollen feeding siphon disease of Babylon snail (*Babylonia aerolata*) and Acute Viral Necrobiotic Disease (AVND) in scallops.

Observations and Recommendations

- The lack of scientists working on mollusk diseases in the region was again noted indicating some of the risks related to this issue. It was noted that molluscs 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.
- Considering the growing importance of mollusk culture and limited 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.

3.4 **Status of amphibian diseases in the region**

A presentation on status of amphibian diseases in the region was made by Dr Somkiat Kanchanakhan. Iridovirus/ranavirus diseases have been reportedly isolated from fishes and amphibians in the region. These include:

- Ranavirus disease in guppy fish and dwarf gourami in Singapore;
- Ranavirus disease in goldfish, marble goby and frog in Thailand (1998-2003);
- Ranavirus disease in frog in Guangdong and Hainan and soft-shelled turtle in Shenzhen, China

Ranavirus can infect both fishes and frog and parts of their major capsid protein gene sequence analysis are similar. Ranavirus diseases in cultured frog, marble goby and goldfish have the same etiological agent. DNA sequence comparisons of ranaviruses isolated from diseased goldfish were described as in the previous AG. It noted that more information is needed worldwide on this group particularly undertaken by disease specialists.

Observations and Recommendations

- The AG observed that for Ranavirus in frogs not enough information is available on global distribution. Considering this, the AG suggested that country focal points carefully look into strengthening surveillance for ranavirus and start reporting about it.
- The AG recommended that associated diagnostic capability for amphibian diseases needs to be developed in the region
- At present, Brazil & Argentina are the only countries requiring health certificates for trade of amphibians, due to their ecological value they are protected in the country (not because of impact on farming in the country). There is an increasing concern and need for requesting a health certificate for amphibians in the Asia-Pacific region.
- Countries in the region that have not yet established national disease surveillance systems for Amphibians, should develop them soon.
- Considering the possibility of transfer of pathogens especially viruses between fish (marble 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. The AG strongly recommended the need to select some focal countries and agree on priority actions to carry out further research in this area.

3.5 Key and emerging aquatic animal diseases in Chinese aquaculture

Prof Zhan provided an updated account of diseases in China with a focus on marine finfish. Each year, national 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 main pathogens for cultured marine fish were listed as follows:

- Viruses
  - Lymphocystis disease virus (LCDV)
  - Red sea bream iridovirus (RSIV)
  - Grouper iridovirus (GIV)
  - Turbot reddish body iridovirus (TRBIV)
  - Infectious spleen and kidney necrosis virus (ISKNV)
- Bacteria
  - *Edwardsiella*
  - *Nocardia*
  - *Vibrio*
- Parasitic
  - *Cryptocaryon irritans*
  - *Benedenia*

- Members of the family Iridoviridae are the main viral pathogens that threaten most of cultured marine fish, such as flounder, turbot, grouper etc.
- Vibrosis is one of the most prevalent fish diseases.
- Edwardsiellosis was the serious bacterial diseases occurred in marine-cultured fish.
- Nocardiosis was found in marine-cultured fish, such as grouper, bass and large yellow croaker.
- White spot disease of cage-reared marine fish caused by *Cryptocaryon irritans*.
- Benedeniasis occurred in marine cage-cultured fish sometimes.
- WSSV is still the most virulent pathogen that is threatening the shrimp culturing industry.
- Cultured shrimp suffered from the red appendages disease caused by *Vibrio*.
- Swimming crab (*Portunus trituberculatus*) was affected by emulsification disease, the pathogen was supposed to be the parasitic dinoflagellate *Hematodinium* sp.
- Cultured scallop often suffered from diseases, associated with acute viral necrosis virus and *Vibrio*.
- Cultured abalone often suffered from impetigo, mainly caused by *Vibrio*.
- Sea cucumbers suffer from skin ulcerative syndrome. This disease is reported to be caused mainly by *Vibrio*, *Pseudoalteromonas* and *Aeromonas*.

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

3.6 SEAFDEC-AQD aquatic disease research updates relevant to the region

Dr. Lavilla-Pitogo summarized the regional work under the Fish Disease Trust Fund Programs of the Aquaculture Department of SEAFDEC. Most details are available in the 7th AG report. This Trust Fund project was on the Development of Fish Disease Inspection Methodologies for

Artificially-bred Seeds that was implemented from 2000-2004 and 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 covered Myanmar, Cambodia and the Philippines and included 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 hematopoeitic 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 involved 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 national team for them to continue.

Others research and surveillance studies that were 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, Philipppines)
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 Taukhid (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 = Supranee 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.

A new project from 2010 -2014 "On accelerating information dissemination and capacity building in fish health management in S E Asia" is now starting. The various past and on going training programs were summarized. All partners and other interested groups are encouraged to collaborate with and make use of the SEAFDEC AQD facilities.

Viet Nam has progressed considerably but other partners such as Lao, Cambodia & Myanmar are constrained due to funding constraints (e.g. hands on work on transboundary diseases will not be covered) but training will continue where possible including mentoring some of the recently trained staff in these countries.

Observations and Recommendations:

- The AG discussed the effectiveness of the e-learning approaches and how these approaches are now spreading more throughout the region.
- The AG recommended that it would be worthwhile to define the scope and explore the possibility for conducting a systematic economic study to identify the impact of aquatic animal diseases in the region
- The AG observed that outcomes from such economic studies could be used to increase awareness within farmers in the region

Session 4: Disease Reporting

4.1 QAAD list for the 2009 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 December 2009, a total of 45 reports had been published. Out of the 21 participating countries, 15 countries have been consistently submitting the report to the Quarterly reporting system. The download from the NACA exceeded 300 on a regular basis, and the latest issues reported 187 downloads in a month and a half period. 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. 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

QAAD reports received by the NACA secretariat in 2008 and 2009 (first two quarters).

	2008/1	2008/2	2008/3	2008/4	2009/1	2009/2
Australia	√	√	√	√	√	√
Bangladesh	√	√		√	√ (2009/2)	√
Cambodia	√	√ (2008/3)	√			
Hong Kong SAR	√	√	√	√	√	√
India	√	√	√		√	√
Indonesia	√	√	√	√	√	√
Iran	√	√	√	√	√	√
Japan	√	√	√	√		√
Lao PDR	√(2008/3)	√ (2008/3)			√	√
Malaysia	√	√	√	√	√	√
Myanmar	√	√	√	√	√	√
Nepal		√		√	√	
Pakistan	√	√				
Philippines	√	√	√	√	√	√
Republic of Korea			√	√	√	
Singapore	√	√	√	√	√	√
Sri Lanka	√	√	√	√	√	√
Thailand	√	√	√	√	√	√
Vietnam		√	√	√	√	√
Total	16	18	15	15	16	15

Observations and Recommendations

- 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 recommended that NACA continue to collect and where possible improve quantitative data inputting.
- OIE noted that they also work from the same inputted data and it was agreed that there is a need to target non compliance concerns but to do so in a constructive manner.

4.2 Global online reporting system (WAHIS) of OIE and progress made with respect to establishing OIE WAHIS regional Core for aquatic animal disease

Dr Karim from OIE presented the global online animal health reporting system (WAHIS/OIE), which is available in 3 languages at http://www.oie.int/wahis/public.php?page=home. The highlights include:

- WAHIS Objectives: the Early warning system, monitoring system
- Status Reports: immediate, weekly, semi-annual, annual frequencies including notification of the outbreak status (epidemic or now ended).

- The notification rationale was explained including the early warning system (e.g. Avian influenza).
- WAHID (the database) details were reviewed including the web based data inputting, monitoring.
- Learning from recent crises (early 2009 to present): concerns related to sensitivities/consequences of data reporting in terms of possible trade implications.
- New system functions: occurrence codes, more flexible reporting (eg separation of submission of terrestrial from aquatic reports) to allow better management including options for countries to choose selected diseases to highlight particularly to enhance the early warning element around newly emerging diseases. As well coverage is moving to include wild as well as domestic animals starting from 2010 and the various details were outlined in the presentation.
- WAHIS Regional data/reporting via OIE/NACA WAHIS Regional Core was described and the need for regional cooperation highlighted.
- Use of the WAHIS was demonstrated to the group. All are urged to subscribe to OIE-Info and RSS feeds http://www.oie.int/wahis/public.php?page=home
- Capacity Building: OIE twinning process continues in which support is provided for reference laboratory staff to apply for an attachment at an OIE reference laboratory. See OIE website for pamphlet on twinning. This opportunity needs stronger dissemination to potentially interested candidates.

Observations and Recommendations

- The AG reaffirmed its support for setting up of a WAHIS Regional Core on Aquatic Animal Diseases.
- An implementation plan is being planned with NACA and OIE Asia Pacific in developing the outputs of the system on OIE/NACA regional core.
- AG recommended the quick implementation of OIE/NACA regional core by the concerned partners.
- The regional rationale was explained in terms of the value added of country data inputting and dealing with duplication concerns based on strengthened regional systems as part of a shared global system. Asia is the initial trial case and NACA emphasized their desire to take a leading role in this regard.
- 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.

Session 5: Review of QAAD Regional Reporting System

5.1 New OIE Disease list

Dr Hill reported on the list of diseases in the 2009 edition of the *Aquatic Code*. The process of development/maintenance of the "List" (as adopted each year) was described including the annual review process both in terms of emerging diseases suggested for listing and those proposed for delisting (i.e. those in doubt that they continue to meet the listing criteria). The work of the OIE disease listing ad hoc group in terms of disease review and delisting was outlined with examples. The criteria and explanatory notes for listing are available at www.oie.int/eng/normes/fcode/en_chapitre_1.1.2.htm. The procedure for amending the list of diseases was explained by Dr Hill. In summary:

- Any listed diseases in doubt are re-assessed against the listing criteria (adopted in 2003).
- Any new or emerging diseases proposed for listing are assessed against the listing criteria.
- Assessments are done by the Ad hoc Group on OIE List of Aquatic Animal Diseases (fish, molluscs and crustacean teams) and the conclusions considered by the AAHSC.

- Proposals for changes to the list are sent to Members with the October AAHSC meeting report for comment.
- In following March report, AAHSC proposes addition and de-listing of diseases for adoption at the next OIE General Session.

Following changes were approved for OIE list of diseases for 2009

- Some crustacean diseases were now found not to meet the listing criteria.
- Led to delisting of 4 crustacean diseases.
- One new disease of crustaceans added.
- Abalone viral mortality.

Crustacean diseases de-listed:

- Tetrahedral baculovirosis (*Baculovirus penaei*)
- Spherical baculovirosis (*Penaeus monodon*-type baculovirus)
- Hepatopancreatic parvovirus disease (was listed as under study)
- Mourilyan virus disease (was listed as under study)

Crustacean disease added to list:

- Milky haemolymph disease of spiny lobster (*Panulirus* spp.) (under study)

Mollusc diseases:

- Sabellid Worm *Terebrasabella heterouncinata* proposed listing withdrawn.
- Abalone Viral Mortality complex (AVM) renamed as 'Infection with Abalone herpes-like virus'

Fish diseases:

- No change

Amphibian diseases:

- No change

Aquatic animal diseases listed by OIE (2009) are:

Diseases of fish (9)

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 (7)

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. Infection with abalone herpes-like virus

Diseases of crustaceans (9)

1. Taura syndrome
2. White spot disease
3. Yellowhead disease
4. Infectious hypodermal and haematopoietic necrosis

5. Crayfish plague (*Aphanomyces astaci*)
6. Infectious myonecrosis
7. White tail disease
8. Necrotising hepatopancreatitis (listing of this disease is under study)
9. Milky haemolymph disease of spiny lobsters (*Panulirus* spp.) **(**listing of this disease is under study**)**

Diseases of Amphibians (2)
1. Infection with ranavirus
2. Infection with *Bachtrachochytrium dendrobatidis*

Observations and Recommendations

- Timing and reporting of listing/delisting processes were reviewed by the AG and some points for OIE to clarify on their website for the future were noted. At present, there are no new diseases proposed for listing or delisting but there are concerns about some emerging crustacean diseases.
- Some difficulties in getting replies from the designated OIE expert and materials from certain reference laboratories were noted. In most cases, there are only small amounts of samples requested and supply is usually at no charge but this may depend on the laboratory concerned (it is open to reference laboratories to charge for their services).
- If any OIE reference laboratory is not completely fulfilling/respecting its mandate and duties, any country affected should inform OIE headquarters who will inform the National Delegate of the laboratory's country and may review the appointment.
- The coming 2nd Global Conference of OIE Reference Laboratories and Collaborating Centers, June 21-23 2010, in Paris (see OIE website www.oie.int under conference) was noted for all.
- The AG took note of the OIE listed diseases for 2009. The AG recommended that the OIE list for 2009 should be considered while revising the QAAD list for 2010.

5.2 New QAAD list for 2010

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 from the beginning (2nd AGM) 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. OIE delisted diseases should be assessed by the AG and then decisions taken on a case by case basis.

Revisions to the QAAD disease list 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. Diseases considered important for the region are listed in QAAD to encourage surveillance and stimulate reporting. It was decided at the 6th AGM in 2007, 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. 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

The AG considered the revisions required to the regional QAAD list for 2010. The following revisions to the QAAD list were approved by the AG. The revised list effective for reporting in 2010 is provided in Annex C.

Observations and Recommendations:

- Considering the delisting of Tetrahedral baculovirosis (*Baculovirus penaei*), Spherical baculovirosis (*Penaeus monodon*-type baculovirus), Hepatopancreatic parvovirus disease (was listed as under study), Mourilyan virus disease (was listed as under study) by the OIE, the AG, following assessment, decided to delist them for QAAD reporting for 2010
- Considering the listing of Necrotising hepatopancreatitis and Milky haemolymph disease of spiny lobsters (*Panulirus* spp.*)* as under study by the OIE and taking into account the regional importance of these two diseases, the AG decided to keep them under non-OIE listed diseases for the time being.
- Considering the renaming of abalone viral mortality as Infection with abalone herpes-like virus by the OIE, the AG decided to rename the disease in QAAD list.
- No emerging fish, mollusk and crustacean disease was proposed for listing in the QAAD for 2010

5.3 Way forward with regional QAAD reporting-open discussion

There was a considerable discussion/clarification on the listing/delisting process for OIE and non OIE listed diseases (in Annex C). As suggested by the AG, listing/delisting process adopted by the NACA AG is provided below.

AGM-5 (2006) had strongly endorsed the need for developing a set of listing criteria for the QAAD system, for those diseases that are not already listed by the OIE in the *Aquatic Code* but are of regional significance. A background paper had been prepared following AGM-5 and circulated to governments and RREs, requesting their input regarding criteria for listing diseases. Inputs were received from 8 RREs. The majority were of the view that OIE listing criteria could be broadly used to identify diseases not just of global but also of regional significance. However, the emphasis is encouraging the collation of epidemiological information on regional, non OIE-listed diseases that have the potential to cause serious economic losses and spread across countries. Following decisions were taken at AGM 6 (2007) concerning listing of diseases for QAAD.

- Concerning the identification of criteria for the regional listing of diseases, the AG agreed that 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.
- The AG reviewed all the expert inputs received and, after much deliberations, 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 suggested that due considerations may be given to the need for collating epidemiological information for an emerging disease while listing a disease.
- The AG also suggested that development of a robust "reporting case" definition will form the basis for considering a disease for listing in the QAAD.
- The AG was of the view 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.*

The QAAD list does not have any legal ramifications. The fact that a disease is listed in QAAD 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. On the point of how QAAD list relates to the regulations among member governments, nothing concrete can be said. However, it is important to mention that many countries use the QAAD list as a guide while revising their national list of reportable diseases (e.g. Australia). Some countries tend to adopt the QAAD list as the national list with minor modifications, for the purpose of collating national disease information.

The AG suggested to review the frequency of reporting, and consider the possibilities for moving to monthly instead of quarterly to improve timeliness of data. It was also pointed out that collation of QAAD reports is possible only through constant follow up and persuasion of national coordinators/aquatic focal points. Attempting to gather data on a monthly basis from participating countries would not be easy and the level of compliance would reduce significantly. The AG was informed that with the setting up of proposed online WAHIS regional core, this issue of frequency of reporting would be addressed.

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 situations[4].

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

6.1 Initiatives and programs of NACA in support of implementation of elements contained in the 'Asia Regional Technical Guidelines

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) was informed to the AG. Activities implemented in 2008 and 2009 (projects, workshops, training programmes, technical missions) have contributed to progress the implementation of the various elements contained in the TG. 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. The updated progress matrix is as follows:

Elements in the Technical Guidelines	Progress Made (Number of Countries)		
	Good	Moderate	Low
Disease diagnosis	10	6	5
Health certification and quarantine measures	10	5	6
Disease zoning	3	3	15
Disease surveillance and reporting	8	8	5
Contingency planning	3	7	11
Import risk analysis	4	4	13
National strategies and policy frameworks	11	4	6

[4] see Chapter 1.2.1 of the *Aquatic Code*

Observations and Recommendations:

- 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 produce 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)

- See agenda item 2.2 for more details as this session continued that work.

6.3 Implementation of national aquatic animal health strategies in Australia: lessons of relevance for NACA member countries

Dr Ingo Ernst provided a presentation on the topic. National strategic plans for aquatic animal health can be used to provide a coordinated national approach to improving arrangements for managing aquatic animal health. Through national strategic plans, systems and programs can be built, finite resources can be used to greatest effect and particular deficiencies in existing arrangements for managing aquatic animal health can be addressed.

Australia has had two national strategic plans for aquatic animal health. The first National Strategic Plan for Aquatic Animal Health, AQUAPLAN 1998-2003, was developed in the wake of major pilchard mortalities in 1995. Following this event, the need for a cross-border approach to aquatic animal health, in particular for disease response, was formally acknowledged and the Australian Government recognised that such a national approach should be jointly developed by governments and industry. AQUAPLAN 1998-2003, was broadly aimed at maximising the opportunities for, and profitability of, Australian aquaculture and fisheries. Where appropriate, it modified the framework that already existed for terrestrial animal health to also accommodate aquatic animal health.

Australia's second National Strategic Plan for Aquatic Animal Health, AQUAPLAN 2005-2010, was developed to address specific priority areas, based on a performance review of its predecessor. AQUAPLAN 2005-2010 is due for completion in June 2010.

Some experiences from the development and implementation of Australia's two national strategic plans include:

- harmonizing with terrestrial arrangements builds on proven and familiar arrangements, draws on existing resources and promotes consistency
- clarifying the responsibilities of agencies is important to ensure roles are understood
- the best results will be achieved with dedicated resources
- leadership through the responsible authority (e.g. veterinary authority) is important to ensure momentum is maintained.

Based on the Australia experience, the AG considered a number of issues of relevance for developing, implementing and reviewing national strategic plans.

It was noted that there have been a number of projects in the region that have supported the development of national strategic plans. The ASEAN-Australia Development Cooperation Program (AADCP) Regional Partnerships Scheme project, *Strengthening Aquatic Animal Health Capacity and Biosecurity in ASEAN 370-021* was carried out from 2005 to 2007 and included technical missions to Cambodia, Lao PDR, Myanmar and Vietnam. The missions addressed the development of national strategic plans in these countries and formulated proposed steps for their development. The AG discussed the progress of development of national strategic plans in these and other NACA member countries and the types of support that could be usefully provided to members countries.

Observations and recommendations:

- The AG agreed that national strategic plans have great utility for improving aquatic animal health management arrangements within individual NACA members countries.
- The AG recommended that NACA assess the progress of member countries in developing national plans and, where plans have not been developed, determine the types of support that those countries believe would assist them. NACA should report its findings to the AG.
- The AG took note of the earlier ASEAN project, the lessons learned in the region around strategic plans, roles of focal points, seeking additional resources to meet the needs here in the region and follow up to the earlier ASEAN project. For more effective project development it was recommended to assess the impact of previous investment (AADCP) and obtain feedbacks and recommended that NACA should coordinate the gathering of feedback on the previous project and pursue its recommendations.

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

Dr Somkiat Kanchanakhan updated the group on the work of ASEAN Network of Aquatic Animal Health Centres (ANAAHC) by the ASEAN, its purpose, objectives and plan of work. ANAAHC serves as the focal point for ASEAN and facilitates building up of diagnostic and health certification capabilities in ASEAN Member Countries critical for exporting live aquatic animals. The ANAAHC provides training for ASEAN scientists on key diseases of concern to ASEAN. The DOF Thailand provides suitably qualified staff, existing capacity and necessary infrastructure of the Inland Aquatic Animal Health Research Institute (AAHRI) for the operation of ANAAHC. Funding is being sought.

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 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.

Session 7: Revision of the Technical Guidelines[5], Manual of Procedures[6] and Asia Diagnostic Guide (ADG) for Aquatic Animal Diseases[7], 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.

[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.

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 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.

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 soon. The revised Diagnostic Guide will now have a global scope. 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.

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

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

The AG was informed of the progress made in the operation of the three tier regional resource base on aquatic animal health. 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 was informed that NACA RRL established for non-OIE listed diseases of regional significance will cease to function as a RRL, if that disease gets subsequently listed by the OIE. The NACA RRL will subsequently become a NACA RRC. This has happened in the case of KHVD and WTD. In the case of WTD, the NACA RRL was recognized as the OIE reference laboratory.

The meeting was informed that the laboratory lead by Prof Donald Lightner has been recognized as the OIE referral lab for IMN.

The AG was informed that no application/expression of interest was received during the period under review for RRE and RRC

Observations and Recommendations

- The AG recommended that NACA revise and update the list of RRE, RRC and RRL in their website.

Session 9: Any other business

9.1 Any other business

Selection of AG chair was considered but the decision was postponed due to the absence of the Secretary of the AG and some other AG members during this session. The AG suggested that NACA should make a short list of potential names and circulate it amongst AG members via email before the meeting to facilitate selection of AG Chair.

9.2 Date of next meeting

The meeting date for AGM-9 was suggested for November 2010. The NACA Secretariat will advise the final date in suitably advance of this planned meeting.

Session 10: Presentation of meeting report and closing

The draft report was adopted and the meeting closed.

Annex A: Meeting Agenda

Wednesday, 2nd December 2009: 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-7 and expected outputs from AGM-8 – *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 2009) and the Aquatic Animal Health Standards Commission meeting (October 2009) - *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 Supranee Chinabut* followed by discussions

Wednesday 2nd December 2009: Afternoon Session 1330-1730

3.4 Status of amphibian diseases in the region – *short presentation by Dr Somkiat Kanchanakhan* followed by discussions

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

3.6 SEAFDEC-AQD aquatic disease research updates relevant to the region– short presentation by *Dr Celia Lavilla-Pitogo*

Tuesday 3rd December 2009: Morning session 0900-1200h

Session 4: Disease Reporting

4.1 QAAD list for 2009 and status of regional reporting – *presentation by CV Mohan*

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

5.2 Review of diseases listed in QAAD 2009, preparation of QAAD list for 2010, 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*

5.3 way forwards with regional QAAD reporting – *open discussion*

Tuesday, 3rd December 2009: Afternoon session 1330-1730h

Session 6: Review and evaluate implementation of the Technical Guidelines

6.1 Initiatives and programs of NACA in support of implementation of elements contained in the Technical Guidelines – short presentation by Dr CV Mohan.

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 Implementation of national aquatic animal health stratagies in Australia. Key lessons relevance to NACA member countries – *Short presentation by Ingo Ernst followed by discussions*

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

Session 7: Revision of the Technical Guidelines[8]

7.1 Revision of Technical Guidelines - Discussion

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

[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

Session 9: Any other business

It was recommended that this group need to take a more comprehensive approach to followup and meeting the agreed actions of the AG.

10.1 Any other business

10.2 Review of the AG Terms of Reference

10.3 Date of next meeting

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

Session 10: 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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Annex C: List of Diseases in the Asia-Pacific

Quarterly Aquatic Animal Disease Report (Beginning 2010)

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. Koi herpesvirus disease	
1.2 MOLLUSC DISEASES	
OIE-listed diseases	**Non OIE-listed diseases**
1. Infection with *Bonamia exitiosa*	1. Infection with *Marteilioides chungmuensis*
2. Infection with *Perkinsus olseni*	2. Akoya oyster disease
3. Infection with abalone herpes-like virus	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 haemolymph disease of spiny lobster (*Panulirus* spp)
3. Yellowhead disease	3. Necrotising hepatopancreatitis
4. Infectious hypodermal and haematopoietic necrosis	
5. Infectious myonecrosis	
6. White tail disease	
1.4 AMPHIBIAN DISEASES	
OIE-listed diseases	**Non OIE-listed diseases**
1. Infection with Ranavirus	
2. Infection with *Bachtracochytrium dendrobatidis*)	
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 (*Gyrodactylus salaris*)	
2.2 Molluscs	
OIE-listed diseases	**Non OIE-listed diseases**
1. Infection with *Bonamia ostreae*	
2. Infection with *Marteilia refringens*	
3. Infection with *Perkinsus marinus*	
4. Infection with *Xenohaliotis californiensis*	
2.3 Crustaceans	
OIE-listed diseases	**Non OIE-listed diseases**
1. Crayfish plague (*Aphanomyces astaci*)	