



NETWORK OF AQUACULTURE CENTRES IN ASIA-PACIFIC

Eleventh Meeting of the Asia Regional Advisory Group on Aquatic Animal Health



REPORT OF THE MEETING

Maruay Garden Hotel, Bangkok, Thailand

21-23 November 2012

Prepared by the NACA Secretariat

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This report was prepared by the 11th Asia Regional Advisory Group (AG) on Aquatic Animal Health (AGM-11) that met at Maruay Garden Hotel, Bangkok, Thailand on the 21st to 23rd November 2012.

The Advisory Group was established by the Governing Council of the Network of Aquaculture Centres in Asia-Pacific (NACA) to provide advice to NACA members in the Asia-Pacific region on aquatic animal health management, through the following activities: (a) evaluate disease trends and emerging threats in the region; (b) identify developments with global aquatic animal disease issues and standards of importance to the region; (c) review and evaluate the Quarterly Aquatic Animal Disease reporting programme and assess the list of diseases of regional concern; (d) provide guidance and leadership on regional strategies to improving management of aquatic animal health including those under the framework of the Asia Regional Technical Guidelines; (e) monitor and evaluate progress on Technical Guidelines implementation; (f) facilitate coordination and communication of progress on regional aquatic animal health programmes; (g) advise in identification and designation of regional aquatic animal health resources, as Regional Resource Experts (RRE), Regional Resource Centres (RRC) and Regional Reference Laboratories (RRL); and (h) identify issues of relevance to the region that require depth review and propose appropriate actions needed. 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.

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ABBREVIATIONS AND ACRONYMS

AAH	Aquatic Animal Health
AAHSC	Aquatic Animal Health Standards Commission of the OIE
AAPQIS	Aquatic Animal Pathogen and Quarantine Information System (FAO)
ADG	Asia Diagnostic Guide
AG	Advisory Group
AGM	Advisory Group Meeting
AHPNS	Acute Hepatopancreatic Necrosis Syndrome
ANAAHC	ASEAN Network of Aquatic Animal Health Centres
ANQAP	Australian National Quality Assurance Program
APEC	Asia-Pacific Economic Cooperation
APIQTC	Animal and Plant Inspection and Quarantine Technology Center (China)
ASEM	Asian European Meeting
ASEAN	Association of South East Asian Nations
AVG	Abalone viral ganglioneuritis
AVM	Abalone viral mortality
BIMP-EAGA	Brunei, Indonesia, Malaysia, Philippines – East Asia Growth Area
BMP	Best management practices
BIOTEC	National Center for Genetic Engineering and Biotechnology (Thailand)
BOBLME	Bay of Bengal Large Marine Ecosystem
CA	Competent authority
CSIRO	Commonwealth Scientific and Industrial Research Organisation
COFI	Committee on Fisheries (FAO)
DAFF	Australian Government Department of Agriculture, Fisheries and Forestry
DoF	Department of Fisheries (Thailand)
EU	European Union
EUS	Epizootic ulcerative syndrome
FAO	Food and Agricultural Organization of the United Nations
GAP	Good aquaculture practices
GC	Governing Council of NACA
IAAHRI	Inland Aquatic Animal Health Research Institute (Thailand)
IHHN	Infectious hypodermal and haematopoietic necrosis
IMN	Infectious myonecrosis
IMNV	Infectious myonecrosis virus
KHV	Koi herpesvirus
LPT	Laboratory proficiency testing
LSNV	Laem Singh necrosis virus (in <i>P. monodon</i>)
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
OsHV	Ostreid herpesvirus
PCR	Polymerase chain reaction
QAAD	Quarterly Aquatic Animal Disease
RRC	Regional resource centre
RRE	Regional resource expert
RRL	Regional reference laboratory

RT-PCR	Reverse transcriptase PCR
SAARC	South Asian Association for Regional Cooperation
SEAFDEC	Southeast Asian Fisheries Development Center
SEAFDEC-AQD	Southeast Asian Fisheries Development Center Aquaculture Department
SPC	Secretariat of the Pacific Community
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)
TOR	Terms of Reference
TS	Taura syndrome
TSV	Taura syndrome virus
VHS	Viral Haemorrhagic Saepticemia
WAHIS	World Animal Health Information System
WAHID	World Animal Health Information Database
WFC	WorldFish Center
WSD	White spot disease
WSSV	White spot syndrome virus
WTD	White tail disease
WTO	World Trade Organization
YHV	Yellowhead virus



The 11th Asia Regional Advisory Group on Aquatic Animal Health.

(From Left to Right)

Front Row: Dr. Ambekar Eknath (NACA); Prof. Timothy Flegel (Centex, Thailand); Dr. Supranee Chinabut (Thailand); Dr. Kjersti Gravningen (PHARMAQ, Vietnam); Dr. Temduong Somsiri (IAAHRI, Thailand).

Middle row: Dr. Hnin Thidar Myint (OIE-Tokyo, Japan); Dr. CV Mohan (NACA); Dr. Weimin Miao (FAO-RAP, Thailand); Dr. Eduardo Leaña (NACA); Dr. Edgar Amar (SEAFDEC AQD, Philippines); Dr. Wensheng Lan (Shenzhen Entry-Exit Inspection Bureau, PR China).

Back Row: Dr. Jie Huang (OIE-AAHSC, China); Dr. Simona Forcella (OIE, France); Dr. Somkiat Kanchanakhan (IAAHRI, Thailand); Dr. Ingo Ernst (DAFF, Australia); Dr. Siow Foong Chang (MSD Animal Health, Singapore).

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OPENING SESSION

A brief introduction was given by Dr. Eduardo Leñaño, Coordinator of Aquatic Animal Health Programme of NACA, who served as the Technical Secretary for the Advisory Group (AG). Dr. Ambekar Eknath, Director General of NACA, gave the opening remarks and thanked the group for their continuous support to the flagship programme of NACA, the Asia Regional Aquatic Animal Health. NACA is currently undertaking every effort to keep all its programmes going, including AAH. Although not specified in the latest TOR of AG, Dr. Eknath advised the group that some mechanisms to secure funding for AAH Programme in the region should be pursued, and on how NACA should further strengthen its role in AAH management.

The group then proceeded in the selection of Chairperson and Vice Chairperson. Upon recommendation and approval of the group, Dr. Ingo Ernst was re-appointed as Chairperson of AG for the next two years. Dr. Somkiat Kanchanakhan was appointed as Vice Chairperson.

Dr. Ingo Ernst took over in presiding the AG meeting and the meeting agenda (Annex A) was adopted. List of participants is presented in Annex B.

SESSION 1: PROGRESS SINCE AGM-10

1.1. PROGRESS REPORT FROM NACA'S REGIONAL AQUATIC ANIMAL HEALTH PROGRAMME

Dr. Eduardo Leñaño presented the progress report of NACA's Regional Aquatic Animal Health Programme. Several major workshops on AAH in the region were organized by NACA in 2012 since the last AGM 10. The BOBLME-NACA Expert Group Workshop on Transboundary Aquatic Animal Health issues in the Bay of Bengal was held in January and provided recommendations on the actions to be taken in addressing transboundary impacts of aquatic animal movements and transfers. The workshop also produced a short chapter contribution on the Transboundary Diagnostic Analysis document of BOBLME and a final Workshop Report. A major project of DAFF in collaboration with SCIRO, ANQAP and NACA, on Laboratory Proficiency for aquatic animal disease diagnostic laboratories in the region, was initiated in July with a workshop hosted by NACA. 45 laboratories from 13 NACA-member countries participated in the programme. A list of 10 important aquatic animal diseases (9 of which are OIE listed) was decided during the workshop, and will be included in the four rounds of LPT in 2013-2014.

Concerning the current/emerging shrimp disease problem in the region, the Early Mortality Syndrome (EMS) or Acute Hepatopancreatic Necrosis Syndrome (AHPNS), NACA has released a disease advisory which was widely circulated among key individuals and institutes in the region. An emergency regional workshop was also organized by NACA with funding from DAFF in this regard (Asia-Pacific Emergency Consultation on Shrimp EMS/AHPNS). The workshop was attended by more than 80 participants including shrimp health experts from all over the world, representatives from NACA member countries, regional and international private companies, and from local universities. Workshop report, podcasts of all presentations, as well as disease card developed based on the outcomes of the workshop are available for free download at NACA website for wider circulation.

NACA continued to publish the paper-based QAAD Reports with full cooperation and participation of at least 15 member governments. A total of 56 reports were published to date. NACA was also invited and actively participated in some regional and international meetings/projects listed below:

- International Workshop on Fish Health Management (Iloilo City, Philippines). E. Leñaño participated as a plenary lecturer on Accelerating Awareness and Capacity Building in Asia-Pacific, and as a discussant on the workshop proper;
- FAO TCP on Emergency Assistance to Control of an Unknown Disease Affecting Shrimps (Vietnam). E. Leñaño is a TCDC Consultant on AAH responsible for the development of National Aquatic Animal Health Strategy for Vietnam;
- Expert Consultation on a National Disease Surveillance System for Aquatic Animal Diseases (India). CV Mohan was invited as Chief guest and presented "Aquatic Animal Health Surveillance: a Global Scenario". The workshop also recommended the initiation of a National Surveillance Programme with the active involvement of NACA;
- Workshop on Commodities and Quarantine Measures in BIMP-EAGA, 7th BIMP-EAGA CIQS Task Force Meeting, and The Quarantine and Human Health Operational Risk Management Training Programme – Train the Trainers Course (Indonesia). CV Mohan served as Fish Quarantine Expert;

- IIFET 2012 Tanzania: Visible Opportunities – The Economics of Sustainable Fisheries, Aquaculture and Seafood Trade (Tanzania). CV Mohan was invited as a plenary lecturer and presented “Costs and Benefits of Disease Management Interventions: A Case Study”.
- Asia Pacific Regional Training Seminar for OIE National Focal Points on Aquatic Animals (Bangkok). CV Mohan E. Leaño participated and presented “Background and Overview of Early Mortality Syndrome (EMS) in Shrimps.
- Global Outlook for Aquaculture Leadership (GOAL) 2012 (Bangkok). CV Mohan was invited as a member of the EMS Panel together with other international experts including Prof. Don Lightner (University of Arizona), Prof. Tim Flegel (Centex Shrimp) and Dr. Rohanna Subasinghe (FAO).

DISCUSSION

- The BOBLME workshop of transboundary aquatic animal health issues showed the importance of sub-regional mechanisms (just like in ASEAN) where member governments can work together on agreements pertaining to transboundary movement of aquatic animals, as well as the risks of disease introduction. The TDA document produced from the workshop will serve as a basis for the next phase of the BOBLME programme.
- The Laboratory Proficiency Testing organized by DAFF, ANQAP, CSIRO and NACA is a very good programme, but concerns on follow-up activities (e.g. accreditation of diagnostic laboratories) were raised. However, because of the limitations in the scope of the current programme, the LPT will just provide free testing procedures which are cost-prohibitive in most of diagnostic laboratories in the region. There is still a need to find some mechanisms to keep the programme going (to include more diagnostic laboratories) in the future.
- Since most of the diseases included in the LPT programme are OIE-listed, it was suggested to seek assistance from OIE reference laboratories. ANQAP is an accredited/certified LPT provider, therefore, diagnostic laboratories undertaking proficiency testing are assured of the quality of samples that are being sent to them for each testing rounds.
- The LPT programme will focus on the normal/routine diagnostic procedures of each of the participating laboratory to assess if their diagnostic procedures are accurate (or not) in detecting important aquatic animal pathogens, and this does not require ISO certification.
- Expected outcome of the LPT programme is the improvement in the performance of the aquatic animal diagnostic laboratories, whether they are using OIE or other standard protocols for molecular disease diagnosis.
- The current programme also offers opportunity for NACA to explore or further develop follow-up similar LPT programmes for other laboratories in each member country, which will be implemented as a regular service with the main focus on establishing confidence in undertaking PCR diagnostic methods for detection of important aquatic animal pathogens.
- Concerns on the differences in laboratory protocols (as compared to OIE standard techniques) among participating laboratories were raised as this might affect the decision-making process of one country to declare the presence of pathogens in the samples that were analysed. Considering that most of the participating laboratories in the LPT are responsible for issuance of health certificates, it is important to assess whether the techniques being used are sensitive or not.
- It was also suggested that all participating laboratories should be required to test all the 10 listed pathogens. Under the programme, however, some laboratories only have capacities for freshwater or marine pathogens, and the relevance of some of the listed diseases in some countries should also be considered.
- On the Expert Consultation for National Surveillance Programme in India, it was indicated that this was a national initiative and India only requested NACA’s support/technical assistance.
- On BIMP-EAGA, three of the four member countries are members of NACA where the fish health representatives are NACA’s National Coordinators or members of NACA’s Regional Aquatic Animal Health (AAH) Programme. This clearly shows continuity of their role in the AAH programme in the region.

RECOMMENDATIONS

- AG recommended that regional projects be developed with a view to long-term impacts rather than adhoc short-term projects. National governments should be encouraged to take ownership of the development of the projects to ensure they meet individual country needs, and at the same time to ensure sustained outcomes beyond project implementation.
- AG agreed that NACA could have an important role for this type of proactive program development. AG could support NACA’s effort on such programs.

1.2. 10 YEARS OF ASIA REGIONAL ADVISORY GROUP ON AQUATIC ANIMAL HEALTH

Dr. CV Mohan presented the major accomplishments of the AG for the completion of 10 years of existence in the region. The establishment of AG was an offshoot of an FAO TCP in the region on aquatic animal health management which was implemented by NACA in 1999-2001. The group was formally established in 2001 upon approval by NACA GC. The first provisional meeting of AG was held in November 2001 to develop TOR, set objectives, decide on team composition and agree on conduct of meetings. Since then, the group meets on annual basis. Presently, 10 AG meetings have been conducted and carried out yearly aquatic animal disease situation analysis, identification of emerging diseases, assessment of emerging diseases for QAAD listing, revision of QAAD list, review of the implementation of TG in the region and updates on OIE meetings, identification of RRCs, RRLs and RREs, and sending of reports to partner organizations (FAO, OIE, SEAFDEC, ASEAN).

Significant impacts of AG include its important contribution of standard setting bodies/processes based on the regional issues discussed and identified. It has also established strong collaboration with OIE (AAHSC), FAO and SEAFDEC, strong and efficient networking in the region, strong endorsement of NACA GC on the work/role played by AG in supporting AAH management in the region. Specific accomplishments include the following:

- QAAD listing of important aquatic animal diseases in the region which served as an early warning system especially for emerging diseases prior to listing in OIE;
- Identification of RRL for emerging diseases (e.g. for WTD) which eventually led to recognition by OIE (after listing) and identified as OIE Reference Laboratory/Expert;
- Two AG members is now serving on the OIE AAHSC (Drs. Jie Huang and Ingo Ernst); and members of OIE AAHSC have also served as members of AG (Drs. Eva Maria Bernoth, Frank Berthe and Barry Hill);
- Developed and published several disease cards for important aquatic animal diseases in the region;
- Played a significant role the listing and delisting of diseases in OIE list;

NACA has been facilitating AG mechanism for the past 10 years with full support from membership and associated organization which has paved way in its current self-sustaining status.

DISCUSSION

- The role of AG in the next five or 10 years might likely to change in response to emerging regional and global issues. As a regional body, AG has to identify fundable programs which should be fully endorsed by the group to secure funding from donor agencies.
- Volume trade issues has increased astronomically, thus more considerations should be put on these in regard to the risk of spreading transboundary aquatic animal diseases; this will lead to increased realization of the risk in the industry and put pressures on them in terms of transboundary movement requirements of the trading partners;
- AG congratulated NACA for a great job in listing and delisting of important diseases in the region for surveillance and reporting, as well as information sharing. However, looking at the future (next 10 years), farmers will be more interested on how to properly control/prevent these diseases. In Section 4 of the Aquatic Code (General Recommendations in Disease Prevention and Control), there is a need to update the generalized control and preventive measures as recommendations from OIE for controlling diseases are very limited.
- On cross-border control of fish seeds, health certification is usually ignored or traders are not aware of such regulations. This is very common in the region considering the lack of efficient border controls in the transport of live animals between countries. This also shows some gaps in the proper implementation of TG.
- Training and implementation of Aquatic Codes/TG should be country-based, but international atmosphere might also be important for some members in terms of learning/sharing of experiences in this regard.

RECOMMENDATIONS

- The AG noted that more emphasis on farm-based disease management (prevention and control) is urgently needed as farmers are facing many uncertainties (e.g. use of chemicals in disease prevention and control; lack of alternative strategies). AG recommended that NACA take the initiative in supporting the implementation of effective preventive and control measures (e.g. BMPs, GAPs; husbandry management, etc.) for important aquatic animal diseases as part of the overall aquatic animal health management in the region. NACA to take a lead in collating new preventive and control measures being developed in the region and disseminate these information to all member countries.
- On contingency planning and emergency preparedness, AG recommended that NACA put together a workshop of member countries to assess current capabilities, needs and opportunities to address AAH

management in the region. This will also provide information on how prepared individual member countries are in responding to disease emergencies.

- AG recognized that lack of project funds may result in lost opportunities. AG suggested that future planning for some AAH activities in the region should be presented to each member country (e.g. during GC meeting of NACA) and engage them in the overall development of the programs for future implementation. This would allow member governments to consider their resource contributions to the projects.

SESSION 2: OIE STANDARDS AND GLOBAL ISSUES

2.1. OUTCOMES OF RECOMMENDATIONS FROM OIE GENERAL SESSION AND THE AQUATIC ANIMAL HEALTH STANDARDS COMMISSION

Dr. Jie Huang reported on outcomes from the May 2012, 80th General Session (GS) of the OIE with relevance to aquatic animal health and Sept 2012 meeting of the Aquatic Animal Health Standards Commission of the OIE.

The GS adopted the name change of the disease “Infection with abalone herpes-like virus” to “Infection with abalone herpesvirus”. The proposal to list “Infection with ostreid herpesvirus (OsHV-1 and OsHV-1 μ var)” as an emerging disease was suggested not be adopted at the General Session, but be referred back to the Commission, as some Member Countries opposed the listing of OsHV-1 because this group included many non-pathogenic variants. The OIE 80th GS adopted 3 new *Aquatic Animal Health Code (Aquatic Code)* chapters: Communication (Chapter 3.2.); Monitoring of the quantities and usage patterns of antimicrobial agents used in aquatic animals (Chapter 6.4.); Development and harmonisation of national antimicrobial resistance surveillance and monitoring programmes for aquatic animals (Chapter 6.5.); Killing of farmed fish for disease control purposes (Chapter 7.4.), while the revisions in Glossary and 5 revised chapters, including Criteria for listing aquatic animal diseases (Chapter 1.2.); Import risk analysis (Chapter 2.2.); Welfare of farmed fish during transport (Chapter 7.2.); Welfare aspects of stunning and killing of farmed fish for human consumption (Chapter 7.3.); and Notification of Diseases and Epidemiological Information (Chapter 1.1.), were adopted. The revision in the articles Example article to be applied to all disease specific chapters under point 1 of Articles X.X.12. (amphibian and fish disease chapters) and X.X.11. (crustacean and mollusc disease chapters); Disinfection of salmonid eggs (Article 10.4.13., Article 10.5.13. and Article 10.9.13.); and Article 2.1.2. (Obligations of WTO Members) were also adopted. For the seventh edition of the *Manual of Diagnostic Tests for Aquatic Animals (Aquatic Manual)*, the 80th GS adopted 31 revised chapters. Revisions were made for the Chapter 2.3.6. Koi herpesvirus disease during the 80th GS. After finalising the Member Country Comments in this chapter, the seventh edition of the *Aquatic Manual* will be published. There is no new applications for Reference Centre status but are 2 changes of designated expert in OIE RL for VER in Italy and OIE RL for SVC in UK.

A new Aquatic Animal Health Standards Commission of the OIE was elected during the 80th GS. During its September 2012 meeting, the Commission made its work plan for the next 3 years TOR. On listing of aquatic animal diseases, the Commission proposed the OsHV-1 μ var to be listed as an emerging disease and reconsidered SPD for listing. The Commission reviewed the reassessment of listing of EUS by AHG and agreed with their conclusion that EUS should remain an OIE listed disease. The Commission agreed the recommendations made by AHG that EUS be renamed ‘infection with *Aphanomyces invadans*’. In relation to ISA, the Commission summarised that several approaches to address the different levels of risk presented by HPR0 and HPR-deleted ISAV. The Commission considered that Approach 2 would best manage the different levels of risk presented HPR-deleted and HPR0 ISAV and amended Chapter 10.5. to reflect Approach 2. The Commission agreed with the recommendations of the AHG that the definition for AAHP in the Glossary of the *Aquatic Code* should describe what the person is given the authority to undertake and that the CA is responsible for, considering the appropriate level of qualification/expertise relative to the defined task. As extensive comments were received in the Chapter 6.1 Control of hazards in aquatic animal feeds, the Commission recognised that the chapter required a fundamental review and this item has been included in its work plan. The proposed amendments in the *Aquatic Code* chapters, including Glossary; Notification of diseases and epidemiological information (Chapter 1.1.); Criteria for listing aquatic animal diseases (Chapter 1.2.); Diseases listed by the OIE (Chapter 1.3.); and Infectious salmon anaemia (Chapter 10.5.), were provided for Member Country comments. The Commission identified the chapters on EUS, ISA, and infection with OsHV-1 in the *Aquatic Manual* for update in the coming year. The Commission reconsidered the use of the criteria for listing aquatic animal species as susceptible and agreed that they should be included in the *Aquatic Code*. The Commission reviewed the report of an OIE mission to evaluate the performance of an OIE RL. The Commission members expressed the view that it is essential that all OIE RL operate within a functional quality system and recommended that the OIE conduct similar on-site visits of RL. The Commission was presented with the proposed new web-based annual report template for the OIE RCs which would

allow the automatic compilation of key quantitative information on OIE RCs. There are 3 latest proposal applications for the laboratory Twinning Project received, including U.S.A – China for IHN; U.S.A – Indonesia for crustacean / shrimp diseases; and Japan –Indonesia for KHV. The Commission recommended that more should be done to promote twinning for aquatic animal diseases and to identify priorities at the OIE regional meetings. An OIE AHG on Evaluation of AAHS held its first meeting in August 2012 to develop a stand-alone PVS Tool for the Evaluation of Performance of AAHS. The Commission endorsed the development of a stand-alone PVS Tool – Aquatic and again encouraged Member Countries to request OIE PVS evaluations of AAHS with a view to obtaining needed investments on the parts of governments and donors to strengthen governance of AAHS. The Commission was presented by Dr. M. Reantaso with a brief historical account of cooperation on AAH between OIE and FAO and informed with the most recent cooperation on the emergency investigation of a significant new shrimp disease and white spot disease of shrimp. In relation to the cooperation between OIE and FAO, the Commission was on the outcomes of a recent meeting between the OIE DG and the FAO DG Dr Jose Graziano da Silva that the OIE/FAO Vademecum be amended to include aquatic animals.

Dr. Jie Huang informed the AG that the Commission proposed to hold the next meeting on 11-15 March 2013 and wishes that the OIE Member Countries in the Asia-Pacific region to be more active in participating in the development of the international aquatic animal health standards of the OIE by submitting their comments prior to 8 February 2013.

DISCUSSION

- On giving comments during the General Session (GS) meeting of OIE, many countries in the region do not send comments, hence a strong need to have an Asian group (just like the EU Group or African Group) to give block comments that will represent the issues/concerns in the region. It was noted, however, that there are steps to follow to make a block comment, and the OIE delegates should coordinate with each other which can be considered as the first step. Comments from individuals cannot be accommodated in the GS of OIE, as these should be submitted through the OIE delegates. Moreover, NACA's contact points (NCs/Focal Points) are not CVOs.
- Most Competent Authorities (CA) have no experience or lack knowledge with the OIE system on aquatic animal health. OIE has a strong objective to improve veterinary education by including aquatic animal diseases in the curriculum.
- The website being developed by OIE Regional Representation in Asia Pacific, Tokyo will include a page for delegates to post their comments regarding OIE standards. As OIE delegates of member countries usually send their comments a bit late, it is necessary to put deadlines for posting comments online.

RECOMMENDATIONS

- AG suggested that NACA member countries engage more closely in the development of OIE standards.
- AG recommended that NACA member countries cooperate in their responses to draft OIE standards by sharing comments particularly on issues of common interests.
- AG recommended that a forum or a meeting for CAs for AAH be planned and organized to improve their understanding on OIE AAH standards and their relevance for trade.
- AG suggested NACA to summarize proposed changes to OIE Standards to alert members of its significance to the region. This would be an annual action following each AGM.
- AG recommended that NACA AAH Coordinator facilitate efficient communication among OIE Aquatic Focal Points/NCs and OIE Delegates of each NACA member country.

2.2. UPDATES ON FAO INITIATIVES IN ASIA PACIFIC IN SUPPORT OF AQUATIC ANIMAL HEALTH

Dr. Weimin Miao presented on-going and pipeline programmes of FAO on AAH in the region. Supporting member countries in effectively counterattacking emergency aquaculture disease problems and improving aquatic animal health management is one of the core activities of FAO. The presentation provided an overview on FAO initiatives been carried out in support of aquatic animals health management related to aquaculture in Asia and Pacific region in Asia-Pacific in the last two years.

FAO FIRA and RAP implemented a number of Technical Cooperation Program (TCP)/TCP Facility (TCPF) project in supporting the member countries and regional body in coping with emergency and transboundary aquatic animal diseases in aquaculture, which include the emergency TCP/VIE/3304 (E), which assist the government of Vietnam in investigating EMS/AHPNS disease in shrimp culture and developing the preventive and control measures, and FAO TCPF/RAS/3306 "Support to Regional Training for capacity building in laboratory diagnosis and surveillance programmes for IMNV in ASEAN member countries". FAO is making efforts to address the transboundary shrimp

IMNV disease through developing a TCP project for Indonesia and an Interregional TCP project involving Brazil, China, Ecuador, India, Mexico, Thailand, Venezuela and Vietnam.

FAO has carried out various country and regional activities and normative work for supporting the member countries in developing aquatic animal health management capacity, which include FAO/AAHRI Expert Workshop “Prudent and responsible use of veterinary medicines in aquatic food production”, supporting capacity building on risk analysis (Pacific region) in Federated States of Micronesia and Tonga, FAO/SPC Regional biosecurity workshop (Nadi, October 2012), development of FAO CCRF Technical Guidelines on biosecurity/aquatic animal health, Updating of Diagnostic Guide to Aquatic Animal Diseases. BOBLME GEF project (implemented by FAO) supported NACA in conducting “Expert Group Workshop on Transboundary Aquatic Animal Health issues in the Bay of Bengal.

FAO is also working on response to recent requests from a number of member countries related to aquatic animal health issue, including request from Iranian government for assistance in coping with its carp mortality problem, request from Malaysian government for strengthening its capacity in biosecurity governance and request from 6 Central Asia countries for organizing a Regional Introductory Training Workshop on Aquatic Animal Health Management.

FAO is also strengthening its cooperation with OIE. FAO Director General and Assistant Director General (Fisheries and Aquaculture Department) held meeting with OIE Director General respectively in 2012, which highlighted the need for strengthened cooperation on aquaculture and AAH and lasting strategy to be found for effective collaboration between the two agencies. The joint FAO/OIE working group on Aquatic Animal Health are jointly develop coherent programme on Aquatic Animal Health.

DISCUSSION

- Aquaculture assessment tools include planning, management capacities, risk assessment, health and certification.
- On FAO TCP on emergency assistance to control an unknown shrimp disease in Vietnam, there are a lot of research studies being undertaken for the identification of possible biological agent that might be involved in the disease.
- The inter-regional TCP on Strengthening biosecurity governance and capacities for dealing with the serious shrimp Infectious Myonecrosis virus (IMNV) disease, which will involve countries each in South America and in Asia, is a bit ambitious (?).

RECOMMENDATIONS

- AG congratulated FAO for continuously developing capacity building projects on AAH in the region and the constructive partnership with other agencies such as OIE and NACA.
- AG recognized the importance of pipeline FAO projects in the region, and encouraged all member countries to support the development of these important projects.

SESSION 3: REVIEW OF REGIONAL DISEASE STATUS

3.1. UPDATE ON TOP DISEASE THREATS FOR SHRIMPS CULTURED IN ASIA

Prof. Tim Flegel presented updates on top disease threats on cultured shrimps (mainly *P. monodon* and *P. vannamei*) in the region, which is dependent on the cultivated species and the country of culture. For shrimps in general, top threats include WSD is still the top threat followed by AHPNS, YHV type I and two new hepatopancreatic parasites. For *P. vannamei* alone, IMNV is the top threat. Since WSD and YHV has been in the region for a long time, the presentation focussed mainly on the emerging diseases.

AHPNS is currently affecting four countries in the region (China, Vietnam, Malaysia and Thailand) and caused significant production losses in both *P. monodon* and *P. vannamei*. The main causative agent is still not identified, but its apparent spread suggested an infectious etiology. AHPNS is definitely not caused by IMNV nor by microsporidian parasites (as previously speculated). A case definition of the disease has been developed by Prof. D. Lightner and a disease card was developed by NACA to serve as a field guide for proper identification of the disease. These information are available for free download at NACA website (www.enaca.org). Currently, research works are focussed on the identification of the main causative agent which include biotic (bacteria, viruses, fungi) and abiotic (toxins) agents. For bacteria, shotgun sequencing approach is being used to assess if un-culturable type may be

involved. So far, results revealed no new or unique bacteria which is clearly linked to AHPNS. No clear results were also obtained for viruses and possible involvement of phages.

Investigations on the different cases of AHPNS also led to observation and identification of microsporidian parasites associated with some sample specimens collected. *Enterocytozoon hepatopenaei* was identified to be sometimes associated with white faeces syndrome (Tourtrip et al., 2009. J.Invertebr. Pathol. 102:21-29) and was also found in AHPNS/EMS shrimps. A new gregarine-like parasite was found together with *E. hepatopenaei* where un-segmented trophozoites were found in HP tubule lumens which were easily degraded by fixatives, thus can be seen more easily in fresh squash mounts. Associated fibrous lattices formed in the interstitial spaces of the HP were also observed which might be a multiplication (meront) stage of the parasite.

For specific diseases affecting *P. vannamei*, aside from IMNV, Abdominal segment deformity syndrome (ASDS) associated with 5 kb retrovirus-like element was also reported. It is found present in the shrimp genome, thus it is probably a genetic disease. Presently, a commercial PCR method is available for detection. For *P. monodon*, MSGS with LSNV as a component cause is still affecting cultured shrimps only in Thailand.

DISCUSSION

- On the gregarine-like parasites associated with shrimp samples with AHPNS, the parasite doesn't show any cytoplasmic contents. They are definitely transparent and appear to be not associated with any symptoms, signs or pathology. Preliminary findings warrant further investigations on its identification and effects on the shrimp hosts.
- On feeding practices on SPF shrimps in Vietnam where shrimps were fed with wild hermit crab eggs (for higher larval production) while broodstock were fed live polychaetes, this practice will result in higher risk of pathogen introduction into the SPF stocks.

RECOMMENDATIONS

- AG recommended that an evidence-based scientific approach be maintained in AHPNS investigations. Those involved should avoid jumping to conclusions on what causes AHPNS until significant results are obtained from the different research studies on the identification of the primary pathogen/agent. They should always be referred to the published reports and disease card prepared by NACA as a result of the emergency regional consultation held in this regard.
- AG strongly recommended that biosecurity control measures in SPF broodstock be strictly followed, and discourage the use of live feeds of unknown health status.

3.2. ASSESSMENT OF AHPNS FOR LISTING (IN QAAD REPORTING, ASIA-PACIFIC)

Dr. Eduardo Leña presented a case assessment for listing of AHPNS in QAAD Reporting for Asia-Pacific. The assessment was based on the listing criteria of OIE which include Consequences, Spread and Diagnosis. AHPNS satisfied one of the criteria for Consequences by causing significant losses among shrimp farms in Vietnam, China and Malaysia which were affected by the disease, thus it can be considered for listing. For Spread, AHPNS did not satisfy the criteria for infectious aetiology, as the main causative agent has not yet been identified. It, however, satisfied the criteria for international spread and several countries may be declared free of the disease. As such, AHPNS did not fully met the criteria for Spread, but due to its importance in the region, AHPNS can still be considered for listing in QAAD under the non-OIE list of diseases. For Diagnosis, AHPNS satisfied the criterion for repeatable and robust means of detection through histopathological diagnostics (based on the case definition that was established for the disease).

DISCUSSION

- The case definition of AHPNS is already established, which means that it has a valid diagnostic method (histopathology), thus it has met the criterion no. 8 on Diagnosis.
- Criterion 4 is definitely not met. For criterion 6, based on the progress report on EMS, infectious aetiology is a possibility, which is strongly correlated with Criterion 5.
- On Criterion 6, spread should be differentiated from occurrence. It seems that international spread is not well-established, but spread within the country (in case of Vietnam) is evident which suggested that the main pathogen involved might be infectious in nature. Satisfying this criterion would also help in preventing further spread of the disease in other countries, as precautionary measures and active disease surveillance will be initiated once the disease is included in QAAD list.

- Looking back at the previous QAAD listing criteria (e.g. Milky haemolymph disease of spiny lobster), it was not actually bound with the stringent OIE listing criteria, but relies mostly on its importance in the region and on established case definition and disease card.
- Given the consequences (production losses) caused by AHPNS, there will be no any negative consequences of it being listed in QAAD. Purpose of the listing is solely to gain more information of the disease in the region.
- It appears that there's more benefit in listing AHPNS in QAAD than not listing it.

RECOMMENDATIONS

- AG agrees that AHPNS be listed in QAAD list under the Non-OIE listed diseases for the purpose of gathering further information on the disease in terms of occurrence/outbreaks in other countries in the region.
- AG recommends that NACA make a follow-up with Prof. Don Lightner on the provision of more photographs showing different presentations of AHPNS to support diagnosis. These photos should be added as appendix in the AHPNS Disease Card. The Disease Card could be used as a guide for proper diagnosis and reporting of AHPNS.

3.3. UPDATES ON EMERGING THREATS ON FINFISH WITH FOCUS ON CATFISH

Dr. Kjersti Gravningen presented current disease concerns for finfishes in the region, focussing on major diseases of catfish (*Pangasionodon hypophthalmus*), the main aquaculture species in Vietnam. The main cause of production losses for catfish was due to bacterial infections caused by *Edwardsiella ictaluri* and *Aeromonas hydrophila*. These two important pathogens can cause 30-50% mortality among cultured catfish. Immersion challenge using *Aeromonas* spp. resulted in mortalities as high as 70-90%. Antibiotic sensitivities of *E. ictaluri* and *A. hydrophila* strains showed that *E. ictaluri* strains were more resistant to most antibiotics tested than *A. hydrophila* strains.

Other important diseases among cultured finfishes in the region include infections caused by *Streptococcus agalactiae* (freshwater), *Tenacibaculum marinum*, *Nocardia*, VNN and Iridovirus (marine). These diseases are still causing significant mortalities on different stages of fish culture.

DISCUSSION

- On pale gills cases, there was similar case observed in Cambodia in the past where affected fish showed pale gills but with no pathogen involved. The condition was attributed to poor water quality. The case in Vietnam might be different as water quality seemed to be good.
- Vaccine for streptococcus was already launched, but the problem is the existence of different serotypes of *Streptococcus agalactiae* causing infections in tilapia across the region. This situation definitely affects the efficacy of the vaccine. Presently, vaccines for *S. agalactiae* serotypes present in the region are available.
- There are also many constraints in the overall process of registering vaccines for use in aquaculture. One way to resolve this is to simplify the system.

RECOMMENDATIONS

- AG recognized that the lack of harmonisation on the regulatory frameworks for registering vaccines is significant barrier to their availability in the region.
- AG suggested that NACA should find ways to encourage national authorities to support the use of vaccines in preventing aquatic animal diseases in the region. One option is to make a strong case about this issue and present it to the GC members of NACA.

3.4. SCALE-DROP SYNDROME: STATUS AND UPDATES

Dr. Siow Foong Chang presented an update on scale drop disease. The information provided was based on publications describing the disease by Dr Susan Kueh and Dr Leong Tak Seng. In the recent publication by Dr Kueh in 2012, the disease was described as a systemic vasculitis with pathology in multiple organs, including the skin, liver, kidney, and gastro-intestinal tract. Another publication by Dr Leong in 1994 described a similar condition with clinical signs suggestive of scale drop disease, indicating that this disease may have been around for a much longer time.

As yet, the aetiological agent is unknown, but quite possibly viral in origin. It was recommended that a disease card be developed for this disease in order to facilitate information collection by NACA member countries.

DISCUSSION

- Viral isolation did not get positive result in different cell culture.
- It is also not easy to get information from farmers, for example in the same farming area, some will say they have observed the disease while others will say they did not.
- There was a case in Rayong province where heavy *Benedenia* infection in seabass was observed causing scale loss. Affected fishes were just transferred to freshwater, parasites were eliminated and the disease stopped.
- There is still no diagnostic test available to date for Scale-drop syndrome.
- One suggestion is to get samples of affected fish showing mesophilic intrusion (or if frozen samples are available), do the viral separation protocols, extract nucleic acids and sequence them.

RECOMMENDATIONS

- AG recommended that NACA work with concerned experts to develop information sheet of the disease (case definition, disease card, etc.) to support the surveillance effort in the region.

3.5. UPDATES ON OTHER DISEASES (MOLLUSCS AND AMPHIBIANS)

Dr. Somkiat Kanchanakhan presented current disease threats among amphibian, mainly frogs. The main disease problem is still the infection caused by Ranavirus, which has been reported to cross-infect soft-shelled turtles and finfishes (goldfish, dwarf gourami, guppy, and marble goby). The Ranavirus infecting frogs, turtles and finfishes has similar major capsid protein gene sequences. Cell culture assays revealed that cell lines from fish, soft-shelled turtle and Siamese crocodile support Ranavirus propagation. Among frogs, Ranavirus infection was previously reported in Thailand, but similar infection was observed from cultured frogs in Cambodia. The most recent occurrence was observed in cultured frogs in Pathalung province in Southern Thailand in 2011, this was after the last report in Nakonpanom province (Northeastern Thailand) way back in 2006.

Overall, very limited reports for amphibian diseases are available in Asia as less research activities are being undertaken in this regard, compared to North America, Australia and Europe.

DISCUSSION

- Ranavirus started from frogs and transmitted to fish and not the other way around.
- There are no further reports of Ranavirus infection in fish, and so with turtles (aside from the reported case of infection in soft-shelled turtle in China).

RECOMMENDATIONS

- Considering the limited surveillance for mollusc and amphibian diseases in the region, AG recommended that capacity building for diagnosis and surveillance of these diseases be developed in the region.
- On the possible transmission of Ranavirus between amphibians and fish/reptiles, AG suggested that disease surveillance should have increased attention on this particular virus to monitor its spread or cross-infectivity characteristics.

SESSION 4: REPORTS ON AQUATIC ANIMAL HEALTH PROGRAMMES FROM PARTNER AGENCIES

4.1. AUSTRALIA'S NATIONAL AQUATIC ANIMAL HEALTH PROGRAMMES

Dr Ingo Ernst presented a report on aquatic animal health programs in Australia and some regional activities.

The Second Australasian Scientific Conference on Aquatic Animal Health is to be held in Cairns in July 2013. The First Australasian Conference on Aquatic Animal Health was held in 2011 and was a great success, with more than 120 participants and 72 presentations. The 2013 conference will include keynote addresses from Prof Hugh Ferguson (Head of the Department of Pathobiology, Director of the Marine Medicine programme, Professor of Pathology, School of Veterinary Medicine, St George's University, Grenada, West Indies), and Prof Don Lightner (Aquaculture Pathology Laboratory, Department of Veterinary Science and Microbiology, University of Arizona, OIE Reference

Laboratory for Crustacean Diseases). The conference will include sessions on viral, bacterial, fungal and parasitic infections of finfish, molluscs and crustaceans; and covering pathology, immunology and vaccines, and diagnostics.

Containment of ostreid herpes virus-1 micro variant (OsHV-1 μ var) to two estuaries in New South Wales continues to be successful. OsHV-1 μ var was confirmed from a single estuary in NSW on 6 January 2011 following high mortalities of farmed Pacific oysters. An immediate notification was made to the OIE on 7 January 2011. The virus was also found in wild Pacific oysters in an adjacent estuary where no oysters are farmed. A national survey found no evidence of OsHV-1 μ var from any Pacific oyster growing regions in Australia outside of the two estuaries where OsHV-1 had been confirmed — over 4300 oysters were sampled from 23 growing regions. A range of emergency preparedness activities have been undertaken with close collaboration between governments and the Australian oyster industry. A national desktop exercise is being undertaken in Adelaide, South Australia in late November 2012. The exercise will provide training for industry and government personnel on emergency response arrangements for industry and governments and aims to strengthen national aquatic animal disease response capabilities.

The 4th edition of the *“Aquatic Animal Diseases Significant to Australia: Identification Field Guide”* was published in 2012 and is freely available on the website of the Australian Government Department of Agriculture, Fisheries and Forestry (DAFF) (www.daff.gov.au/aquaticanimalhealth/resources). The field guide aims to assist recognition of diseases significant to aquaculture and fisheries in Australia. It is an important tool for maintaining awareness of significant aquatic animal diseases and to support Australia’s general surveillance system for aquatic animal diseases. The 4th edition incorporates new and updated information and now covers 48 aquatic animal diseases of finfish, crustaceans, molluscs and amphibians that are included on Australia’s National List of Reportable Diseases of Aquatic Animals. The guide includes diseases that are listed by the OIE and also those included in the Asia-Pacific QAAD reporting program.

The Australian Government has funded a regional proficiency testing program for aquatic animal disease diagnostic laboratories. The first project activity was completed in July 2012 when a workshop of 45 participating laboratories from 13 NACA member countries was held. The workshop aimed to discuss operation of the proficiency testing program and to agree on the 10 priority diseases to be included in the 4 rounds of testing that will be held over 2013 to 2014. The project is being implemented with the cooperation of DAFF, NACA and the CSIRO Australian Animal Health Laboratory. The first round of testing will take place in May 2013.

DISCUSSION

- OsHV-1 and OsHV-1 μ var can be differentiated by sequencing. However, testing and surveillance are only for OsHV-1. Prior to molecular techniques for detecting OsHV-1, occurrence of herpesvirus was already observed thru electron microscopy method. Most probably, some of these might be OsHV-1 cases. Recently, the virus has not been detected but mortalities are still observed among population of oysters.
- In Australia, there exists a network of laboratories that provide services to handle big cases of disease outbreaks in terms of building capabilities among regional laboratories.
- The simulation exercises undertaken under the AAH program was directed to herpesvirus only, on containment of the disease (prevention of further spread).

RECOMMENDATION

- AG recognized the support of DAFF Australia in several important AAH activities in the region (e.g. LPT, EMS emergency consultation, etc).

4.2. SEAFDEC AQD FISH HEALTH ACTIVITIES: PROGRESS AND UPDATES

Dr. Edgar Amar presented highlights of Fish Health Section (FHS) activities of SEAFDEC AQD, under the thematic area “Healthy and Wholesome Aquaculture”. The programs under this theme are being undertaken with the following objectives:

- Investigate the efficacy of probiotics and rationalize the need and application of diagnostics that will ensure biosecurity within culture systems and keep out exotic pathogens, especially transboundary pathogens;
- Promote the wider use of conventional diagnostic as well as new methods especially for newly reported, emerging diseases;
- Find effective alternative safe drugs/chemicals (including natural products) to manage aquaculture diseases in lieu of the harmful chemicals and drugs which have been discouraged or banned for use due to quality and safety issues;
- Develop marker-assisted breeding programs to address disease issues;

- Re-educate stakeholders and develop the capability of fish health specialists on fish disease diagnosis using gross clinical examination and bacteriology, mycology, parasitology, and histopathology techniques;
- Enhance the stakeholders and fish health specialists' understanding and interpretation of molecular diagnostic techniques and to develop healthy broodstocks through pathogen exclusion;
- Promote group implementation of BMP/GAP and certification of small-scale farmers in the region and incorporate FAO Technical guidelines to aquaculture certification into national aquaculture certification schemes and development of regional standards as well as promotion of global standard for responsible supply certification system.

Major program activities include development of probiotics/application and mode of action of polyhydroxybutyrate in larval rearing of *P. monodon*, epidemiology and other aetiologies of EMS, polychaetes as carriers of viral pathogens, surveillance on freshwater prawn diseases and on zoonotic bacteria and parasites, antimicrobial screening and withdrawal period for antibiotics, and screening and development of immunostimulants and vaccines. Accelerating information dissemination and capacity building on AAH management in the region, are also the main thrusts of the program activities. FHS has successfully undertaken projects for dissemination of technology and information to stakeholders in rural communities for effective disease control, as well as innovative research to guarantee food safety and sustainable production. For capacity building activities, online, on-site and hands-on training courses of Fish Health Management were undertaken, specific training courses upon request were also offered, and internship programs for undergraduate students and special science high school teachers. FHS also offers diagnostic services and reports disease occurrences to OIE Aquatic Focal Points.

DISCUSSION

- On surveillance of WSV in polychaetes, they do not exhibit any disease signs but usually carries the virus. SEAFDEC AQD tried to discourage the practice of using polychaetes as live feed to shrimp broodstock, but it was hard to control the farmers themselves. Recent samplings however showed that no samples are positive for WSV. Polychaetes were usually collected from the wild.
- On disinfection of collected wild polychaetes, some used surface disinfectants but not other treatments to eliminate pathogens that might be carried by the organism.
- On disease diagnostic services, SEAFDEC AQD should take advantage of the shrimp samples submitted by private clients for detection of viral pathogens. As clients only request for specific virus(es), the diagnostic services can still assess the presence of other viruses in the submitted sample, to assess the prevalence of those in farmed shrimps. At present, SEAFDEC AQD are keeping those samples for further diagnostic analyses.
- On the outcomes of capacity building through on-site training, concerns on its sustainability in the future (after the program ended) was raised. The capacity building activity has already identified focal points who can work closely with SEAFDEC on surveillance activities of some pathogens (mainly freshwater parasites).
- Lack of laboratory equipment is the main constraint for this capacity building activity. It was noted that in the past, similar capacity building activities were implemented in these countries (Myanmar, Cambodia, Lao PDR) but their capacity for disease diagnostics did not improve. At present, only Myanmar is showing some progress from the recent capacity building programmes that have been implemented.
- Focus of future activities should be on negotiating with the national government to extend support for capacity building of key diagnostic laboratories in terms of provision of sufficient laboratory equipment.
- Countries like Cambodia and Lao PDR may be used by other countries for trading of aquatic animals (transboundary movement) where cross-border control and health certification are lacking. This will result or create more disease problems in the future.

RECOMMENDATIONS

- AG recognized that extensive work programs of SEAFDEC, NACA and other regional institution to support AAH programs in the region.
- AG noted that some countries have participated in capacity building activities but had not committed resources internally to sustain the program. The capabilities in these countries for managing AAH have not improved substantially despite the importance of AAH resources in their countries.

4.3. ACTIVITIES OF IAAHRI ON AQUATIC ANIMAL HEALTH

Dr. Temduong Somsiri presented 2011-2012 activities of IAAHRI which is under the umbrella of the Department of Fisheries (DoF), Thailand. The Institute is responsible to undertake research on aquatic animal health and disease

control, disease surveillance and monitoring programme, monitoring drugs and chemicals used for aquatic animals, diagnostic services for aquatic animal diseases, farm sanitation and AAH assurance for exportation and importation, issuance of live AAH certificates, provide academic services and disseminate knowledge and information. During 2011-2012, DoF assigned IAAHRI and CAAHRI (Coastal AAHRI) for aquatic animal disease control activities under the Animal Epidemic Act. In response to this, both Institutes have set up surveillance and monitoring programmes including contingency plans and diagnostic services following the OIE manual. For disease surveillance and monitoring programs, several laws and regulations are being followed and implemented including GAPs. List of diseases included in the program include all OIE-listed diseases. Through this programme, Thailand has successfully declared freedom from some of the important aquatic animal diseases including Epizootic haematopoietic necrosis, Infectious haematopoietic necrosis, Infectious salmon anaemia, Viral haemorrhagic septicaemia, Infection with *Gyrodactylus salaris*, Spring viraemia of carp, Epizootic ulcerative syndrome, Infectious myonecrosis, and molluscan diseases listed in OIE.

IAAHRI also approves permits for farm establishments to export aquatic animals from Thailand, including marine, freshwater and ornamental species. The Institute also summarizes data of both active and passive surveillance and submits the aquatic animal disease reports to DoF, OIE and NACA. Consultancy works on AAH is also being offered to local farmers. Currently, IAAHRI is an OIE Reference Laboratory for EUS, ISO/IEC 17025 certified for Streptococcosis, and has established plans to extend the scope of accreditation to the cell cultures and PCR techniques. A total of 7,274 health certificates have been issued in 2011, and as of October 2012, 6,500 certificates have been issued.

IAAHRI also collaborates with other national institutes in undertaking AAH programmes in Thailand. These include collaboration with Kasetsart University on shrimp diseases, Maejo University on parasites of freshwater fishes, and National Bureau of Agriculture Commodity and Food Standard (ACFS) on good practices for aquatic animal disease control in aquaculture establishments.

DISCUSSION

- EUS free status of Thailand was based on both passive and active surveillance. During cool season (December to February), samplings were done from the wild and aquaculture farms.
- Surveillance for salmon disease is mainly for the imported salmon as Thailand has two farming sites for salmon in the cold areas of the northern provinces.
- On the proposal for twinning program on EUS (in Zambia), there is no progress so far on the funding application to OIE. Twinning program is really a good opportunity to obtain resources for building capabilities/capacities in less developed countries in the region.
- Canada has also requested for trout disease surveillance on whirling disease. Program for disease surveillance of this particular disease was already sent to Canada for approval.
- For import quarantine, the length of holding time for live aquatic animals depend on the what disease is being screened. Usually, holding period can last up to 45 days before the animals are cleared for release.

RECOMMENDATIONS

- AG suggested that IAAHRI to make a follow-up on the twinning program proposal in Zambia for EUS. Currently, there's only one twinning program that is on-going for aquatic animal disease.
- AG encourages countries to consider the OIE's twinning program as a mechanism for enhancing aquatic animal disease diagnostic capabilities.
- AG also recommended that for countries with less developed aquatic animal health diagnostic laboratories, considerations should be given to the use of livestock health laboratories to undertake works on aquatic animal health and to increase their disease diagnostic capacities.
- AG recommended NACA to set-up communication strategy for sharing experiences on AAH services among NACA member countries and other countries in the world (e.g. Thailand, Australia, Malaysia, Vietnam, Canada).

4.4. AQUATIC ANIMAL INSPECTION AND QUARANTINE LABORATORY, SHENZHEN ENTRY-EXIT INSPECTION BUREAU, P.R. CHINA

Dr. Wensheng Lan presented an overview of aquaculture in China and the current status of AAH management. China is the biggest producer of global food fish supply. Aquaculture is the fastest growing food-production sector to meet the demand of a growing population. However, food aquaculture cannot increase at the higher speed, because of limitations of suitable resources. The traditional aquaculture systems must be transferred to new operating systems to

reach the goals as following: (1) To grow more animals than capture; (2) To grow valuable animals and to maximize profitability. (3) To set up efficient health management and to assure long-term sustainability. In China, the losses of aquaculture are mainly caused by pollution and disease. Diseases are primary constraint to the growth of many aquaculture species and are now responsible for severely impeding both economic and socio-economic development. In order to get complete and detailed epidemiology analyses of aquatic animal diseases and to take prompt preventing and controlling measures, Department of Agriculture of PRC start to enforce a disease surveillance program. Disease surveillance program has provided a realistic regional picture of the emergence and potential for spread of aquatic diseases in the past decade. Governance becomes increasingly important in aquaculture development as it affects its sustainability, especially as aquaculture expands in an environment of deteriorating ecosystems, consumer concerns over food safety and the environmental pollution, and internationalisation of regulations due to import requirements. Many laws and regulations have been promulgated by the government of China from 1991. Laboratory facilities, diagnostic expertise, control protocols and therapeutic strategies have been improved in order to better handle disease outbreaks in China. Aquaculture is still the increasing sector in China economy.

DISCUSSION

- Drop in export quantity of aquaculture products of China is interesting, indicating the change from export to domestic consumption.
- MOA supervises the surveillance system on aquatic animals, while Disease Prevention Center/Site in the province supervises local surveillance as well as collection of samples. The surveillance is mainly operated by extension system (local/provincial fisheries stations) especially for sample collection and reporting. It is a regular government activity and there are two levels of national surveillance program: monthly (all the counties are involved); surveillance for specific disease (e.g WSD).
- The Policy of Animal Health is a national policy which covers both terrestrial and aquatic animal. For aquatic animal disease control, the government designate its Fisheries Bureau to undertake prevention and control programs. CA at present is still under the Veterinary Bureau, thus further delineation of responsibilities in dealing with AAH should be pursued.
- Some provincial level laboratories are already ISO certified.
- The decrease in morbidity data in 2011 can be attributed to some preventive measures employed. For example in shrimp aquaculture, polyculture system (shrimps cultured with finfishes) has contributed significantly in the decrease in disease outbreaks. Detailed study has been undertaken in China in this regard, and was proven effective in preventing disease outbreaks (particularly WSD) in shrimps. No concrete data is available on the prevention of AHPNS through polyculture system.

RECOMMENDATION

- AG thanked China's contribution to the AGM recognizing them as important aquaculture producer in the region. AG welcomes China to share their experiences in the overall aquatic animal health management in the country.

SESSION 5: DISEASE REPORTING

5.1. QAAD REPORTING – NACA AND OIE REGIONAL REPRESENTATION FOR ASIA AND THE PACIFIC, TOKYO

Drs. Eduardo Leñaño and Hnin Thidar Myint presented progress in QAAD Reporting in Asia-Pacific, as well as some activities of OIE Representation in the Asia-Pacific. For NACA's QAAD, a total of 56 reports have been published to date. Currently, 15 countries on average (out of 21 member governments) are active in submitting quarterly reports. As in the previous years, most countries are using level III diagnosis for detection of important aquatic animal pathogens. Diseases reported by 2 or more countries (3rd quarter of 2011 – 2nd quarter of 2012) include Infection with KHV, RSID, GIV, VNN, Enteric septicaemia of catfish (for finfishes), WSD, IHNN, MSGS, YHD and TSV (for shrimps), Infection with *Perkinsus olseni* (for molluscs), and Infection with Ranavirus (for amphibians). Other diseases (both listed and non-listed in QAAD) reported include the following:

- EUS, Epizootic haematopoietic necrosis and Infection with *Batrachochytrium dendrobatidis* (Australia)
- Infectious haematopoietic necrosis (Japan)
- Cyprinid herpesvirus 2 (CyHV-2, GFHNV), MrNV, and Hepatopancreatic parvovirus disease (Malaysia)

- Systemic iridoviral disease in mullet and milkfish, Seabass iridovirus disease, and Iridoviral disease in ornamental fish (Singapore)
- IMN (Indonesia)
- Monodon Baculovirus diseases (Sri Lanka)
- AHPNS (Vietnam)

For OIE Regional Representation for Asia and the Pacific, QAAD Reports and Regional Aquatic Animal Disease Yearbook 2011 have been published and distributed in due course. For QAAD, 18-19 country reports were received from the 3rd quarter of 2011 to 2nd quarter of 2012. Major reported diseases include WSD (10 countries), VNN (8 countries), IHNN (6 countries) and Infection with KHV (4 countries). New aquatic animal health regulations implemented in some member countries include:

- **Australia:** Changes were made to Australia's National List of Reportable Diseases of Aquatic Animals (National List) in October 2011. Three diseases were added to the National List: necrotising hepatopancreatitis; ostreid herpesvirus-1 μ variant (OsHV-1 μ var); and ISKNV (infectious spleen and kidney necrosis virus)-like viruses of finfish.
- **Chinese Taipei:** "Quarantine Requirements for the Importation of live Fish and Their Gametes and Fertilized Eggs" and "Quarantine Requirements for the Importation of Live Crustaceans and Molluscs" have been promulgated on 16 February 2011 by Council of Agriculture and came to effect on 1 September 2011.
- **Malaysia:** Fisheries Regulations (Fish Disease Control Compliance For Exports and Imports) 2012: Effective date 26 March 2012.

DISCUSSION

- The non-OIE diseases in the Asia Pacific QAAD list were reviewed to assess each of the disease against the existing listing criteria. Below are the comments for each of the disease:
 - Grouper iridoviral disease: seek advise and clarify the classification of the viruses (iridovirus, megalocytivirus, ranavirus), gather (in a special meeting) key researchers working on iridovirus to discuss and resolve this issue; will there be one listing under "Iridoviral infection"; Ranavirus should exclude ISKNV (OIE)
 - Viral encephalopathy and retinopathy: still an important disease in hatchery operations of marine finfish species; an emerging issue in larger fish (e.g. seabass and groupers); are there genotypes that are not widespread in the region?
 - Enteric septicaemia of catfish: there are catfish-culturing countries in the region which are still free from the disease; Edwardsiella can be transmitted to ornamental;
 - Infection with *Marteilioides chungmuensis*: no recent report in QAAD; not widespread.
 - Akoya oyster disease: prepare a case for delisting in QAAD (for the next AGM)
 - Acute viral necrosis (in scallops): causative virus is closely related to OsHV-1 (which is considered for listing in OIE); prepare disease card.
 - Monodon slow growth syndrome: associated with LSNV; limited report (3 countries so far); still important among countries culturing *P. monodon*.
 - Milky haemolymph disease of spiny lobster: re-assess listing using OIE criteria.

RECOMMENDATIONS

- After re-examining the list of non-OIE diseases, AG recommended to keep all diseases in the list, but three of the diseases has to be further assessed as indicated in the succeeding recommendations.
- AG recommended to re-examine the Grouper iridovirus grouping considering the various iridoviral infections reported in other finfish species.
- AG recommended that an assessment against the listing criteria be prepared for Akoya oyster disease and Milky haemolymph disease of spiny lobsters.

5.2. NEW OIE DISEASE LIST

Dr. Jie Huang reported the new update on the OIE list of aquatic animal diseases. The only adoption in the OIE aquatic animal disease list during the 80th GS is the name change of the disease "infection with abalone herpes-like virus" to "infection with abalone herpesvirus". Four changes were made to the OIE aquatic animal disease list for Member Country comments during the September 2012 meeting of the Aquatic Animal Health Standards Commission, which include "infection with salmon pancreas disease virus" as a listed disease, "infection with ostreid herpesvirus 1 μ var (OsHV-1 μ var)" as an emerging disease, "epizootic ulcerative syndrome" to be renamed as "infection with *Aphanomyces invadans* (epizootic ulcerative syndrome)", "infectious salmon anaemia" to be renamed as "infectious salmon anaemia (infection with HPR-deleted or HPRO infectious salmon anaemia virus)".

RECOMMENDATION

- The only change in the current OIE list is the name change for “Infection with abalone herpes-like virus” to “Infection with abalone herpesvirus”.

5.3. REVISIONS TO THE QAAD LIST

Revisions to the QAAD list are carried out annually by the AG. Such revisions consider the changes made to the OIE list plus diseases of regional concern and other emerging diseases. The AG deliberated on this in detail and made the following recommendations. The list of diseases for QAAD reporting for 2013 is presented in Annex C.

RECOMMENDATIONS

- AG recommended to adopt the changes in the OIE list for the QAAD list:
 - The name “Infection with abalone herpes-like virus” be changed to “Infection with abalone herpesvirus”.
- Infection with *Xenohaliotis californiensis* which was listed under “Diseases Exotic to the Region” will be transferred to the main area of disease reporting for Molluscs. The disease was reported to be occurring in Japan since the first quarter of 2011.
- AHPNS will be listed under the non-OIE listed diseases for Crustaceans.
- Two new reporting codes (approved by OIE) will be included in the 2013 QAAD form as follows:
 - +?() Confirmed infection/infestation limited to one or more zones of the country, but no clinical disease
 - ? () Presence of the disease suspected but not confirmed in a zone

5.4. PROGRESS IN THE IMPLEMENTATION OF OIE/NACA WAHIS REGIONAL CORE

Dr. Simona Forcella (OIE, France) gave a lecture on the “Status and updates on OIE-NACA WAHIS Regional Core”. At the end of August 2012 the second version of WAHIS has been launched with the development of a new component OIE/NACA Regional Core, designed to collect monthly information, from concerned countries from the Network of Aquaculture Centres in Asia and Pacific Region (NACA) and OIE Members, on OIE Listed aquatic animal diseases as well as on other diseases of regional interest. The design and development of OIE/NACA Regional Core was done at the same time of the development of the second version of WAHIS. The system has been tested by the OIE Animal Health Information Department (AHID) and finalized.

She presented the new online notification application using some screen shots and then she connected to an online test-version of the application and went through all the pages that OIE Focal Points for aquatic diseases will use to process data on aquatic OIE listed diseases and non-OIE listed disease of interest to the region.

Among the new functionalities of the second version of WAHIS two new occurrence codes were introduced that can be also used to update the QUAAD and that are already integrated in the OIE/NACA Regional Core:

- +?() Confirmed infection/infestation limited to one or more zones of the country, but no clinical disease
- ? () Presence of the disease suspected but not confirmed in a zone

The system will be launched and the concerned countries officially informed. OIE will help countries to implement the new notification system and in its use. While starting collecting data with the new application, work should start on the development of the OIE/NACA Regional Core Interfaces including an access for OIE/NACA administrators on non-OIE listed diseases for validation, extraction of data as well as for documents production (such as graphs, publications, etc.). Large communications by the two organisations on this initiative of harmonization and integration between regional information system (OIE/NACA Core) and the Worldwide Animal Health Information System, WAHIS are meant to improve aquatic animal health management in the region.

DISCUSSION

- Administrator will have access on putting notes for each of the disease; this can be made available for viewing among NCs/Focal Points.
- Non-OIE listed diseases, validation is up to NACA or OIE-Tokyo, as this will not be forwarded to main WAHIS
- Draft as well as final reports can be printed
- The regional core is only an informative/reporting system for focal points (and NCs) and authorized administrators.

- Once the data is transferred to OIE central database, focal points/NCs will no longer have access for OIE listed diseases.
- Output for the interface is still for discussion (depending what is needed by NACA, OIE Tokyo)
- Transition period: some countries can still continue to submit paper-based report. Data from such reports can still be processed in WAHIS. Administrators will also have the option to key in paper-based reports submitted by some member countries into the Regional Core WAHIS.

RECOMMENDATIONS

- AG recommended that training on the use of the Regional Core should be focussed on NACA NCs/OIE Aquatic Focal Points.
- AG noted that further development of the OIE-NACA Regional Core interface is required and that OIE, NACA and OIE-Tokyo will cooperate to complete this project which is scheduled to be launched in January 2013 at the earliest.

SESSION 6. IMPLEMENTATION OF FAO/NACA TG ON RESPONSIBLE MOVEMENT OF LIVE AQUATIC ANIMALS; OTHER MATTERS

6.1. DISCUSSION ON THE DEVELOPMENT OF TOOLS FOR ASSESSMENT OF TG IMPLEMENTATION IN THE REGION; IMPLEMENTATION OF TOOLS IN 2013; AND REPORTING BACK FOR 2013 AGM

Currently, the implementation of the Asia Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals (TG) in most NACA member countries lacks proper assessment to identify gaps and issues, resulting in the less-efficient national strategies for AAH management. The TG was developed in collaboration with FAO, OIE, regional and international experts. These guiding principles were adopted as a regional strategy by 21 governments in the Asia-Pacific region in 2000, through NACA's Regional Aquatic Animal Health Programme. The TG identified six major elements which need to be in place and operating effectively in trading countries, if the risk of international disease spread within the region is to be reduced:

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

While progress has been made there are only few member governments with well-established preparedness and response measures in place especially for disease zoning, contingency planning and import risk analysis (see Table below).

Progress made by 21 member governments on the major components listed in the Asia Regional Technical Guidelines and on national strategies and policy frameworks.

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

In lieu of this, the AG decided to develop an Assessment Tool will assist in the identification of some gaps/issues in the implementation of the TG among NACA member governments, based on the 6 elements listed above. Some of these gaps/issues are presented in Annex E.

DISCUSSION

- There should be better understanding on capacities and capabilities of the member countries in the implementation of the TGs, which was recognized across the region as a framework.
- At individual country level, it is important to determine up to what extent that the implementation of TG can be assessed, which could be used for developing program/projects in the country.
- There is a possibility to adopt a PVS-like tool, but it should not be a massive assessment; should be brief. Results of the assessment can be used as a basis of formulating a regional framework on AAH in the region, and further evaluating the relevance of TG in the present day context.
- Lacking in the components of TG are the Laws and Regulations regarding AAH (e.g. prevention and control of diseases).

RECOMMENDATIONS

- The AG recommended that I. Ernst and C.V. Mohan will formulate a technical approach (questionnaires) for assessment of TG implementation in the region. Target respondents will be the NCs.
- The first draft of the questionnaires will be circulated to AG members for comments/suggestions/amendments in March 2013.
- Once the set of questionnaires is finalized, it will be sent to NCs, results analysed and will be presented in the next AGM.

6.2. DATE OF NEXT MEETING

The next AGM (AGM 12) will be held in Bangkok, Thailand in November 2013.

SESSION 7: PRESENTATION OF MEETING REPORT AND CLOSING

The list of AG Recommendations was revised and adopted, and the meeting closed. Summary of Action Plans based on the recommendations is presented in Annex D.

ANNEX A: MEETING AGENDA

11TH MEETING OF ASIA REGIONAL ADVISORY GROUP ON AQUATIC ANIMAL HEALTH (AGM 11) 21-23 NOVEMBER 2012 MARUAY GARDEN HOTEL, BANGKOK, THAILAND

Day 1 (21 November, Wednesday)

09:00 – 12:00

Opening Session

- Welcome address: **Dr. Eduardo Leñaño**, Coordinator, Aquatic Animal Health Programme, NACA
- Opening remarks: **Dr. Ambekar E. Eknath**, Director General, NACA
- Election of Chair and Vice Chair

(AG Chairman, will take over)

Session 1. Progress Reports

- Progress since AGM 10 (**Dr. Eduardo Leñaño**, NACA)
- 10 years of Asia Regional Advisory Group on Aquatic Animal Health (**Dr. CV Mohan**, NACA)

DISCUSSIONS AND RECOMMENDATIONS

Session 2. OIE Standards and Global Issues

- Outcomes of recommendations from OIE General Session and the Aquatic Animal Health Standards Commission (**Dr. Jie Huang**, AAHSC, OIE)
- Updates on FAO initiatives in Asia-Pacific in support of aquatic animal health (**Dr. Weimin Miao**, FAO; or representative from **FAO Headquarters**)

DISCUSSIONS AND RECOMMENDATIONS

Group Photo

Lunch (12:00-13:30)

13:30 – 17:00

Session 3. Review of Regional Disease Status

- AHPNS and other emerging threats on crustaceans (**Dr. Tim Flegel**, Mahidol University)
- Updates on Regional Initiatives on AHPNS (**Dr. CV Mohan**, R&D Manager, NACA)
- Assessment of AHPNS for Listing (in QAAD Asia-Pacific) (**Dr. Eduardo Leñaño**, NACA)
- Updates and emerging threats on finfishes with focus on catfish (**Dr. Kjersti Gravningen**, PHARMAQ)
- Scale-Drop Syndrome: status and updates (**Dr. Siow Foong Chang**, MSD Animal Health)
- Updates on other diseases (molluscs and amphibians) (**Dr. Somkiat Kanchanakhon**, IAAHRI)

DISCUSSIONS AND RECOMMENDATIONS

19:00

Welcome Dinner (hosted by NACA)

Day 2 (22 November, Thursday)

09:00 – 12:00

Session 4. Reports on Aquatic Animal Health Programmes from Partner Agencies

- DAFF Australia (**Dr. Ingo Ernst**, DAFF)
- Fish Health Section, SEAFDEC Aquaculture Department, Philippines (**Dr. Edgar Amar**, SEAFDEC AQD)
- Aquatic Animal Health Research Institute, Thailand (**Dr. Temduong Somsiri**, IAAHRI)
- Animal and Plant Inspection and Quarantine Technology Center, China (**Dr. Wensheng Lan**, APIQTC; in lieu of **Dr. Liu Hong**)

DISCUSSIONS AND RECOMMENDATIONS

Lunch (12:00-14:00)

14:00 – 17:00

Session 5. Disease Reporting

- QAAD Reporting: 2012 List and status of reporting (**Dr. Eduardo Leaña**, NACA and **Dr. Hnin Thidar Myint**, OIE Tokyo)
- New OIE Disease List and revisions to the QAAD List for 2013 (**Dr. Jie Huang**, AAHSC, OIE)
- Status and updates on OIE-NACA WAHIS Regional Core: Pilot-testing, Training of Aquatic Focal Points and National Coordinators, Launching and Full Implementation (**Dr. Simona Forcella**, OIE-France)

DISCUSSIONS AND RECOMMENDATIONS

Session 6. Implementation of FAO/NACA TG on Responsible Movement of Live Aquatic Animals

- Discussions on the Development of Tools for Assessment of TG Implementation in the Region; Implementation of tools in 2013; and Reporting back for 2013 AGM (background material and template to be developed by Secretariat) (**Dr. Ingo Ernst**, DAFF Australia; **Dr. CV Mohan**, NACA)
- Other projects related to aquatic animal health in the region

Day 3 (23 November, Friday)

09:00-12:00

Session 7. Closing

- Other important matters
- Presentation and Adoption of Report and Recommendations

Lunch (12:00-13:00)

Afternoon

Free

Annex B: List of Participants

I. Advisory Group Members
World Organisation for Animal Health (OIE)
<p>Dr. Jie Huang Virologist – Senior Researcher Head, Maricultural Disease Control and Molecular Pathology Laboratory Yellow Sea Fisheries Research Institute Chinese Academy of Fishery Sciences 106 Nanjing Road, Qingdao, SD 266071, PR China aqudis@public.qd.sd.cn; huangjie@ysfri.ac.cn</p>
<p>Dr. Simona Forcella Chargee de Mission OIE, 12 Rue de Prony, Paris 75017, France s.forcella@oie.int</p>
Food and Agriculture Organization of the United Nations (FAO)-RAP
<p>Dr. Weimin Miao Aquaculture Officer FAO Regional Office for Asia and the Pacific Maliwan Mansion, 39 Phra Atit Road Bangkok 10200, Thailand weimin.miao@fao.org</p>
OIE Regional Representation for Asia and the Pacific, Tokyo, Japan
<p>Dr. Hnin Thidar Myint OIE Regional Representation for Asia and the Pacific Food Science Building 5F The University of Tokyo 1-1-1 Yayoi, Bunkyo-ku, Tokyo 113-8657, Japan hnin.thidar@oie.int</p>
DAFF, Australia
<p>Dr. Ingo Ernst Manager, Aquatic Animal Health Unit Office of the Chief Veterinary Officer Department of Agriculture, Fisheries and Forestry GPO Box 858 Canberra ACT 2601, Australia ingo.ernst@daff.gov.au</p>
Shenzhen Exit & Entry Inspection and Quarantine Bureau, AQSIQ, PR China
<p>Dr. Wensheng Lan The Laboratory of Aquatic Animal Diseases, Shenzhen Exit & Entry Inspection and Quarantine Bureau, AQSIQ Room 908, 1011 Fuqiang Road Futuan, Shenzhen, The People’s Republic of China lanwshao@yahoo.com.cn</p>
Thailand
<p>Prof. Timothy Flegel Centex Shrimp, 4th Floor Chalermprakiat Building Faculty of Science, Mahidol University Rama 6 Road, Bangkok 10400, Thailand sctwf@mahidol.ac.th</p>

<p>Dr. Supranee Chinabut Bangkok, Thailand supraneecb@yahoo.com</p>
<p>Dr. Somkiat Kanchanakhan Inland Aquatic Animal Health Research Institute Department of Fisheries, Kasetsart University Campus Ladyao, Jatujak, Bangkok 10900, Thailand kanchanakhan@yahoo.com</p>
<p>SEAFDEC AQD, Philippines</p>
<p>Dr. Edgar Amar Head, Fish Health Section SEAFDEC Aquaculture Department Tigbauan, Iloilo, Philippines eamar@seafdec.org.ph</p>
<p>Private Sector</p>
<p>Dr. Kjersti Gravningen Director, PHARMAQ Asia PHARMAQ, Ltd. VN Ho Chi Minh City, Vietnam Kjersti.gravningen@pharmaq.no</p>
<p>II. Co-opted Members</p>
<p>Dr. Temduong Somsiri Director, Inland Aquatic Animal Health Institute Department of Fisheries, Kasetsart University Campus Ladyao, Jatujak, Bangkok 10900, Thailand tsi_f@yahoo.com</p>
<p>Dr. Siow Foong Chang MSD Animal Health 1 Perahu Road, Singapore 718847 siow.foong.chang@merck.com</p>
<p>IV. NACA Secretariat</p>
<p>Dr. Eduardo M. Leño (Technical Secretary of AG) Coordinator, Aquatic Animal Health Programme eduardo@enaca.org</p>
<p>Dr. C.V. Mohan Manager, Research and Development mohan@enaca.org</p>
<p>Mr. Simon Wilkinson Coordinator, Information and Communication simon@enaca.org</p>
<p>Dr. Ambekar E. Eknath Director General ambekar.eknath@enaca.org</p>

Annex C: List of Diseases in the Asia-Pacific

Quarterly Aquatic Animal Disease Report (Beginning January 2013)

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. Infection with abalone herpesvirus	3. Acute viral necrosis (in scallops)
4. Infection with <i>Xenohaliotis californiensis</i>	
1.3 CRUSTACEAN DISEASES	
OIE-listed diseases	Non OIE-listed diseases
1. Taura syndrome	1. Monodon slow growth syndrome
2. White spot disease	2. Mikly haemolymph disease of spiny lobster (<i>Panulirus</i> spp.)
3. Yellowhead disease	3. Acute hepatopancreatic necrosis syndrome (AHPNS)
4. Infectious hypodermal and haematopoietic necrosis	
5. Infectious myonecrosis	
6. White tail disease (MrNV)	
7. Necrotising hepatopancreatitis	
1.4 AMPHIBIAN DISEASES	
OIE-listed diseases	Non OIE-listed diseases
1. Infection with Ranavirus	
2. Infection with <i>Batrachochytrium 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. Infection with <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>	
2.3 Crustaceans	
OIE-listed diseases	Non OIE-listed diseases
1. Crayfish plague (<i>Aphanomyces astaci</i>)	

Annex D: AG Action Plan (for 2013)

(Based on the list of recommendations from all sessions)

Issue(s)	Actions needed
1) Contingency Planning and Emergency Preparedness in the Region	<ul style="list-style-type: none"> • NACA to put together a workshop of member countries to assess current capabilities, needs and opportunities to address AAH management in the region; • Gather information on how prepared individual member countries are in responding to disease emergencies
2) Project funds for AAH programmes in the region	<ul style="list-style-type: none"> • Future planning for some important AAH activities in the region should be presented to each member country (e.g. during GC Meeting of NACA) and engage them in the overall development of the programmes for future implementation.
3) OIE Standards	<ul style="list-style-type: none"> • NACA to summarize proposed changes to alert members of its significance to the region. This will be an annual action following each AGM • NACA AAH Coordinator to facilitate efficient communication among OIE Aquatic Focal Points/NCs and OIE delegates of each member country.
4) AHPNS in cultured shrimps	<ul style="list-style-type: none"> • Evidence-based scientific approach should be maintained in AHPNS investigations. • AHPNS to be listed in QAAD list under the non-OIE listed diseases for the purpose of gathering further information on the disease in term of occurrence/outbreaks in other countries in the region. • Follow-up with Prof. Don Lightner on the provision of more photographs showing different presentation of AHPNS to support diagnosis; photos are to be added as appendix in the AHPNS Disease Card
5) Scale-drop Syndrome	<ul style="list-style-type: none"> • NACA and AG to work on concerned experts to develop information sheet of the disease including case definition, disease card, etc. This is to support the surveillance effort in the region.
6) Mollusc and Amphibian diseases	<ul style="list-style-type: none"> • Capacity building for diagnosis and surveillance of important diseases of molluscs and amphibians.
7) Twinning programmes on AAH	<ul style="list-style-type: none"> • IAAHRI to make a follow-up on the twinning programme proposal in Zambia for EUS. • Encourage countries to consider OIE's twinning programme

	<p>as a mechanism for enhancing aquatic animal disease diagnostic capabilities.</p> <ul style="list-style-type: none"> • NACA to set-up communication strategy for sharing experiences on AAH services among NACA member countries and other countries in the world (e.g. Canada)
8) QAAD List of Diseases	<ul style="list-style-type: none"> • Re-examine the Grouper iridovirus grouping considering the various iridoviral infections reported in other finfish species. • Prepare an assessment on the listing criteria for Akoya oyster disease and Milky haemolymph disease of spiny lobster. • The name “Infection with abalone herpes-like virus” to be changed to “Infection with abalone herpesvirus” in accordance with OIE list. • Infection with <i>Xenohaliotis californiensis</i> to be transferred to the main area of disease reporting for molluscs. • AHPNS to be included in the list under the non-OIE listed diseases. • Two new reporting codes (approved by OIE) to be included in the 2013 QAAD form.
9) OIE-NACA WAHIS Regional Core	<ul style="list-style-type: none"> • Training of Aquatic Focal Points/NCs on the use of the Regional Core for disease reporting in the region. • OIE, NAC and OIE-Tokyo to work together on the further development of the Regional Core interface, and in the launching of the system. •
10) Assessment tool for TG implementation in the region	<ul style="list-style-type: none"> • Drs. I. Ernst and CV Mohan to formulate a technical approach (questionnaires) for assessment of TG implementation in the region. Target respondents will be the NCs. • First draft of the questionnaires to be circulated to AG members in March 2013, for comments and suggestions. • Results of the assessment will be presented in the next AGM.

ANNEX E: ASIA REGIONAL TECHNICAL GUIDELINES – STATUS OVERVIEW (ADOPTED FROM AGM 9 REPORT)

Element of technical guidelines	Progress / status	Gaps / opportunities
<p>1. Disease reporting</p> <p><i>An understanding of the basic aquatic animal health situation is a pre-requisite for prioritising activities, developing national policy and identifying pathogens of national importance.</i></p>	<ul style="list-style-type: none"> • Regional QAAD reporting system established – participation has increased • The QAAD list has incorporated emerging diseases that were later listed by the OIE • Many countries have established national lists for reporting purposes with appropriate supporting legislation 	<ul style="list-style-type: none"> • Participation could improve further – some countries report irregularly • The proposed regional core utilising the OIE’s WAHID will streamline reporting and may improve participation • The exact status of individual countries with regard to adoption of national lists and supporting legislation is not know
<p>2. Disease diagnosis</p> <p><i>Diagnosis requires various levels of data, starting with farm- or site-level observations and progressing in technical complexity to electron microscopy, immunological and nucleic acid assays and other biomolecular methods. This means all levels of expertise, including that of the farmer and extension officer working at the pond side, make essential contributions to rapid and accurate disease diagnosis.</i></p> <p><i>Effective diagnostic capability underpins a range of programs including early detection for emergency response and substantiating disease status through surveillance and reporting.</i></p>	<ul style="list-style-type: none"> • Diagnostic capabilities have improved in many countries • NACA disease cards have been developed and maintained for emerging diseases • The Asia regional diagnostic manual has been developed • An Asia regional diagnostic field guide has been developed • OIE reference laboratories • Regional reference laboratories – where no OIE reference laboratory exists • Regional Resource Experts are available to provide specialist advice • Ad hoc laboratory proficiency testing programs have been run 	<ul style="list-style-type: none"> • OIE twinning programs are a means to assist laboratories to develop capabilities • The exact status of diagnostic capability in individual countries is not certain • There is limited or no access to ongoing laboratory proficiency testing programs • Some areas of specialist diagnostic expertise are lacking • Network approaches are a means draw on available diagnostic expertise
<p>3. Health certification and Quarantine measures</p> <p><i>The purpose of applying quarantine measures and health certification is to facilitate transboundary trade in aquatic animals and their products, while minimising the risk of spreading infectious diseases</i></p>	<ul style="list-style-type: none"> • Strong progress has been made, particularly for high risk importations (e.g. importation o broodstock and seed stock) • Training has been provided through regional initiatives (e.g. AADCP project) • Commercial implications for trade have driven improved certification practices 	<ul style="list-style-type: none"> • The importance of supporting aquatic animal health attestations through sound aquatic animal health programs continues to be underestimated, with possible ramifications for trade • Some inappropriate or illegal activities continue and threaten to spread trans-boundary

	<ul style="list-style-type: none"> • Harmonisation with OIE model certificates has occurred 	diseases
<p>4. Disease zoning and compartmentalisation</p> <p><i>Zoning (and compartmentalization) allows for part of a nation's territory to be identified as free of a particular disease, rather than having to demonstrate that the entire country is free. This is particularly helpful to facilitate trade in circumstances where eradication of a disease is not feasible. Zoning is also an effective tool to restrict the spread of important pathogens and aid in their eradication.</i></p>	<ul style="list-style-type: none"> • Is an emerging need to meet requirements of importing countries • To facilitate trade, some countries are working toward having compartments and zones recognised 	<ul style="list-style-type: none"> • Where common health status can be identified restrictions on trade can be reduced • Training opportunities would be beneficial • Learn from the experience of terrestrial animal industries (e.g. poultry)
<p>5. Disease surveillance and reporting</p> <p><i>Necessary to produce meaningful reports on a country's disease status by providing evidence to substantiate claims of absence of a particular disease and thereby support import risk analysis, justify import health certification requirements, and enable export health certification</i></p>	<ul style="list-style-type: none"> • Regional Resource Experts are available to provide specialist advice • Training has been provided through a number of initiatives (e.g. AADCP project) • Many published resources are available, including those of the OIE (publications and the OIE centre for aquatic animal epidemiology) • Collation of surveillance information has improved through participation in international reporting 	<ul style="list-style-type: none"> • Remains a reliance on passive surveillance. Active surveillance may be beneficial but cost is often a barrier. • Methodologies to undertake effective but low-cost active surveillance would be of assistance • Epidemiological expertise is often limited • There is a need to increase surveillance of wildlife to support health status
<p>6. Contingency planning</p> <p><i>Important to provide a rapid and planned response for containment of a disease outbreak—thereby limiting the impact, scale and costs of the outbreak</i></p>	<ul style="list-style-type: none"> • Important provides a rapid and planned response for containment of a disease outbreak Some countries have advanced contingency planning with appropriate supporting legislation • Some countries have tested contingency plans through simulation exercises • Resources are available (e.g. Australia's AQUAVETPLAN, FAO guidelines, OIE links to resources) 	<ul style="list-style-type: none"> • The exact status of contingency planning in individual countries is not certain • Training in emergency management frameworks may be useful • Support for developing contingency plans might usefully be directed at particular disease threats e.g. IMN
<p>7. Import risk analysis</p>	<ul style="list-style-type: none"> • Numerous resources and case studies published 	<ul style="list-style-type: none"> • There is a need to build awareness of the concepts

<p><i>The movement of live aquatic animals involves a degree of disease risk to the importing country. Import risk analysis (IRA) is the process by which hazards associated with the movement of a particular commodity are identified and mitigative options are assessed. The results of these analyses are communicated to the authorities responsible for approving or rejecting the import.</i></p>	<ul style="list-style-type: none"> • The approach has been applied, particularly for some circumstances e.g. import of live <i>P. vannamei</i> • However risk analysis is not always applied, or is not applied appropriately • Regional training has been provided (e.g. AADCP project) • 	<ul style="list-style-type: none"> • Training can be abstract and disengaging - should aim at trainees learning on scenarios relevant to their circumstances • This is a high priority generic need that is suited to development of a central training program
<p>8. National strategies</p> <p><i>The implementation of these Technical Guidelines in an effective manner requires an appropriate national administrative and legal framework, as well as sufficient expertise, manpower and infrastructure.</i></p>	<ul style="list-style-type: none"> • Many countries have developed national strategies • Detailed assistance has been provided to some countries (e.g. AADCP project) 	<ul style="list-style-type: none"> • The exact status of national strategies in individual countries is not certain • The OIE's PVS tool provides a means of assessing the progress of individual countries
<p>9. Regional capacity building</p> <p><i>Regional-level capacity building in support of the implementation of the Technical Guidelines</i></p>	<ul style="list-style-type: none"> • Regional level programs are a cost-effective means to support capacity building in the region • Organisational structures are in place to coordinate activities and communicate progress (e.g. NACA, AG) • Numerous projects have been implemented to support capacity building across a range of disciplines (e.g. those supported by/through FAO, OIE, SEAFDEC, AADCP etc.) • Many organisations have an ongoing interest in investing in aquatic animal health capacity building in the region 	<ul style="list-style-type: none"> • While many projects have been implemented, they are sometimes ad hoc in nature and ongoing impact may not be measured • Better coordination might be achieved by better documentation of progress and remaining gaps • There may be strategic benefit in implementing major projects that address multiple capabilities