First Meeting of the
Asia Regional Advisory Group on Aquatic Animal Health (AGM-1)

6th - 8th November 2002
NACA Headquarters, Bangkok, Thailand

Final Report

BACKGROUND

The first meeting of the Asia Regional Advisory Group on Aquatic Animal Health (AGM-1) was held at the NACA Headquarters, Bangkok, Thailand on 6th-8th November 2002.

OPENING SESSION

The meeting was formally opened with welcome remarks from P Bueno, NACA Director-General. After a brief self-introduction among the participants, S Chinabut, Advisory Group Chair, took over as Chairperson of the Meeting, with EM Bernoth as Vice-Chair. The participants adopted the agenda/programme (Annex A). The list of Advisory Group (AG) members and meeting participants is provided as Annex B.

SESSION 1: Recent activities and expected outputs from meeting

MJ Phillips made a short progress report on activities since the Provisional meeting of the Advisory Group, held in November 2001. Following this review, technical sessions were held on various topics of relevance to the AG Terms of Reference. The progress report, based on a draft prepared by MB Reantaso, is given as Annex C.

SESSION 2: Emerging disease problems and regional response

The Chair, S Chinabut, requested the AG to provide advice on addressing a number of emerging aquatic animal disease problems of potential significance for the region.

Finfish diseases

S Chinabut highlighted some concerns with emerging finfish diseases.

The recent outbreak of Spring Viraemia of Carp (SVC), reported for the first time in USA in July 2002 and the rapidly spreading mass mortality (suspected to be Koi Herpes Virus [KHV]) in koi and common carp in Indonesia re-emphasises the need for effective surveillance programmes in the region, for the implementation of workable quarantine and health certification measures, and for contingency plans to respond in a timely manner to disease emergencies.

The continued occurrence of Viral Nervous Necrosis (VNN) in marine groupers and red spot disease in grass carp was also highlighted.

The recent mass mortality of koi and common carp in Indonesia reconfirms the need to implement the recommendations arising from the Regional Programme on Aquatic Animal Health, and in particular, the need for member countries to develop and implement National Strategies on Aquatic Animal Health Management.

Whilst the AG commended the rapidity of the regional response to the Indonesia koi and common carp mortalities – coordinated by NACA with contributions from Australian Centre for International Agricultural Research (ACIAR) and Aquatic Animal Health Research Institute (AAHRI) and a follow up technical assistance project provided by FAO –, they agreed that the demonstrated *ad hoc* commitment by international organizations and laboratories cannot be taken for granted (nor is it financially feasible as a routine activity) and that member countries need to consider establishing national task forces to deal with disease emergencies rather than relying solely on external assistance. The AG recommended that the outbreak and emergency response should be analysed as a case study, as the experience would be useful to develop strategies to deal with future aquatic animal disease emergencies. The OIE Regional Office delegate stressed that cooperation with livestock authorities with experience in dealing with disease emergencies would also be useful for countries.

Because the diagnosis of KHV is only tentative at this stage, the outbreak is of sufficiently serious concern to the Region, that the AG suggested listing "mass mortality of Koi carp" as a disease reportable in the OIE/NACA Quarterly Aquatic Animal Disease (QAAD) reporting system (see also SESSION 3 below). The importance of a definitive aetiological diagnosis through further investigations was stressed.

Mollusc diseases

F Berthe briefly presented the mollusc disease situation in the region.

Of three cases of mollusc diseases notified to the OIE, one was in the region (Japan), and two were outside the region. In July 2002, the USA reported the first occurrence of *Mikrocytos mackini* in Pacific oysters, *Crassostrea gigas*, at a prevalence level of 4% without mortality. In October 2002, *Haplosporidium nelsoni* was reported for the first time in Canada at a prevalence of 48% and associated with mass mortality in American oysters, *Crassostrea virginica* (mortality rates of over 80% have been reported). These two cases highlight an expanded range of the infection (southwards on the Pacific coast of North America for *Mikrocytos mackini*, and further north on the Atlantic coast of North America for *Haplosporidium nelsoni*). These two cases have probably low significance for Asia at present but re-emphasise the need for development of surveillance programs, implementation of quarantine and health certification programmes, and for having contingency plans to respond to disease emergencies in molluscs as well as fish.

In the region, Japan notified the OIE in October 2001 of the detection of *Haplosporidium nelsoni* in Pacific oysters, *Crassostrea gigas*, at a prevalence of 2% without any record of mortality. Therefore, *Haplosporidium nelsoni* can no longer be considered "presumed exotic

to the region" and should be reclassified as "prevalent in some parts of the region" on the QAAD reporting form (see also SESSION 3 below).

Within the region, little attention is given to mollusc diseases (as apparent from the QAAD reports), and the impact of these diseases is probably underestimated. Expertise and facilities in the region devoted to mollusc diseases are limited, and there is only limited information available. However, cases such as the mass mortality of pearl oysters, *Pinctada fucata*[1], underline the importance of addressing mollusc diseases issues in the region.

Acting on the recommendations of the second workshop of the FAO/NACA/OIE Regional Program on Aquatic Animal Health Management, and particularly those regarding the shortage of information and knowledge about mollusc diseases in the region, FAO and NACA initiated a regional program on mollusc health management in 1999. The second workshop considered and recognised the need to establish basic expertise that will provide the foundation for countries to develop their own national program for mollusc health assessment and monitoring, risk analyses and control of epizootics. Phase I of the program consisted of a training course on basic mollusc health management and took place in Iloilo, Philippines, in 1999. The second phase, consisting of a training workshop, will be held in November, 2002 in conjunction with the "Diseases in Asian Aquaculture 5" meeting in the Gold Coast, Australia and will explore mollusc diseases in the region through evaluation of country specific survey results over the period 1999-2002.

Crustacean diseases

D Fegan and CV Mohan highlighted the concerns relating to several emerging crustacean disease issues in Asia. These included recent reports of Taura Syndrome Virus (TSV) spreading in the region, probably related to the continuous introduction of *P. vannamei,* concern over the possibility that pathogens of *P. vannamei* may be passed on to *P. monodon*, the probable transmission of Infectious Hypodermal and Haematopoietic Necrosis Virus (IHHNV) from *P. monodon* to *P. vannamei* and other potentially important emerging diseases of shrimp.

The AG expressed serious concern on the introduction of *Penaeus vannamei* by many countries in the region, despite those countries' adoption/endorsement of agreements and codes (e.g. the *Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals* and *The Beijing Consensus and Implementation Strategy;* and the *FAO Code of Conduct for Responsible Fisheries)*. The detection of Taura syndrome in Indonesia and other countries (none of which have yet been formally notified to the OIE) is thought to have resulted from such introductions. Irresponsible movement was partly thought to be the result of farmers' misunderstanding of the health status of "Specific Pathogen Free", or "High Health" shrimp. However, a lack of government oversight and control of the introduction of the species to many countries in the region demonstrated that there is still

[1] Mass mortalities of the pearl oyster, *Pinctada fucata martensii*, in western Japan, occurred in 1997 and following years. In 1997, 400 million pearl oysters, being 50% of Japanese stocks and worth US$300 million, died of the disease. In Mie Prefecture alone, the industry was worth US$200 million in 1994, but only produced US$20 million worth of pearls in 1999. The causative agent is reported as a small virus, although these findings are still controversial. Akoya oysters in Hainan Dao Island, China, were also reported suffering "severe mortalities" in the late 90s.

much to do to educate governments, aquaculturists and the public about the risks surrounding such introductions.

The AG recommended a study on Taura Syndrome Virus and *P. vannamei* introduction to Asia (evaluation of the impact particularly in terms of change in production patterns, socio-economic impacts, disease situation, alleged resistance to White Spot Syndrome Virus, introduction of TSV, institutional failures etc.). The study would be timely and help provide a valuable assessment of the current problems and practical ways forward to governments and the private sector in strengthening sanitary and phyto-sanitary (SPS) measures.

The AG noted the serious threat to trade and people's livelihoods of such uncontrolled movements and agreed that more effort needs to go into increasing awareness in both the private and public sectors for the need for effective SPS measures to protect a country's aquatic animal health status. Also, it is becoming increasingly likely that countries that fail to invest in such measures may face problems with export market access in future due to their lower health status compared to those markets.

The occurrence of TSV, while generally accepted as being increasingly widespread, is not being officially reported by all countries where it has been detected. There is therefore clearly a need to strengthen surveillance and the accuracy of the reports submitted by the National Coordinators. It was also suggested to include prevalence in reporting systems where these figures are available.

The AG felt that there was a need for further studies on emerging pathogens and unidentified diseases and syndromes such as the Mourylian virus, loose shell syndrome, mid crop mortality and *Haplosporidium* infection in slow growing shrimp, all of which have the potential to become significant shrimp disease problems.

General points of note

The AG noted the considerable international effort and cooperation to produce and disseminate the *Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals*. Nevertheless, the problems experienced by the region emphasize the need for enhanced implementation of the *Guidelines* and to build capacity and awareness in the region to implement SPS measures to protect the health of aquatic animals.

The AG noted that although the *Technical Guidelines* considered only live aquatic animals, the Final Workshop in Beijing held in June 2001 encouraged countries to consider aquatic animal products as well.

The need to raise awareness of the increasing importance of aquatic animal health as a factor in trade in live aquatic animals and product was discussed. The AG noted that in the future, some importing countries may well require exporting countries to have aquatic animal health management systems in place.

The move towards product certification in general requires traceability of aquatic animal products, such as under the "fish to dish, or "farm to table" concepts (note was made of the Thai quality shrimp seal being developed in Thailand). Aquatic animal health certification might be built into such certification schemes. The AG suggested that countries consider

building disease contingency plans, disease surveillance programmes and other aquatic animal health management measures into such schemes, and to run some pilot projects to evaluate their effectiveness. The AG noted that working to address SPS measures on an export commodity can be used as an entry point to improve the capacity for health management within the country as a whole, with benefits for the small-scale sector, as well as raising awareness in both the public and private sectors. For example, recent problems caused by detection of drug residue levels in commodity shrimp product and the subsequent trade disruptions, resulted in an increased awareness of the issue at government level and substantial (and rapid) support for efforts to address the problem. Some sectors of the shrimp industry (processors and exporters) that were directly affected also played an important role in attempts to resolve the issue. These efforts, although a reaction to the problem, have had a major impact in reducing the abuse of antibiotics by producers over a relatively short period.

In future, there may be a need to develop specific and appropriate screening methods for detecting pathogens in aquatic animal product. Currently, most countries use the diagnostic or screening methods recommended in the OIE *Diagnostic Manual for Aquatic Animal* Diseases. However, most – if not all – of the methods outlined there have been developed for live aquatic animals. In this context, the AG re-emphasised the need for correct and proper use of PCR and other diagnostic techniques for testing.

The need to engage the private sector in the implementation of the *Technical Guidelines* and the development of SPS measures to protect the aquatic animal health status was emphasised. As an example, the AG noted that the entry of WSSV into the Philippines was believed to have been significantly delayed due to the implementation of a ban, driven by the private sector, on import of *Penaeus monodon*. Unfortunately, awareness of the "Technical Guidelines" and their relevance to aquatic animal health in the private sector was lacking. It was recommended that greater efforts be made to both educate and involve the private sector in the implementation of aquatic animal health management efforts based on the Guidelines.

Ownership of the *Technical Guidelines* needs to be seriously enhanced, for example by targeting provincial and local governments and the private sectors.

The AG noted that, given limited resources, targeted awareness building should be encouraged. National strategies should clearly identify specific actions to be taken, and address specific pressure points. It was also necessary to identify key messages that can be publicised in a simple and widely understood manner.

T. Fujita suggested further cooperation between NACA and OIE to undertake joint awareness raising programs. He recommended conducting workshops to let government and industry know about the cost-benefit of aquatic animal disease control. He also emphasised the importance of developing effective strategies for communication between veterinary and fisheries officers. He suggested having an aquatic theme at the next OIE Regional Commission meeting, an issue that was elaborated in Session 3 below.

The AG discussed the need for the region to effectively engage in the setting of international standards in aquatic animal health that are increasingly important for the region. It suggested closer dialogues between chief veterinary officers (CVOs) and fisheries experts to provide authoritative comments on draft documents circulated to CVOs by the OIE. The continued interaction between the AG and the OIE/FDC would also facilitate input from an Asian perspective.

SESSION 3: Asia regional aquatic animal disease reporting system

EM Bernoth introduced this session. She informed the AG that the current Quarterly Aquatic Animal Disease (QAAD) list needs to be revised in the light of changes to the international list of aquatic animal diseases notifiable to the OIE and the OIE list of other significant diseases. Subsequently, the AG discussed and agreed to make changes to the QAAD list to bring it into line with the changes to the OIE list and reflect the aquatic animal disease situation in the Region.

The AG was advised that new criteria for listing an aquatic animal disease by the OIE have been developed by the OIE Fish Diseases Commission (FDC) in consultation with the OIE Code Commission; those criteria are currently with OIE Member Countries for comment. She advised that the FDC does not intend to make significant changes to the OIE lists of aquatic animal diseases until the OIE International Committee endorses the new criteria. EM Bernoth will explore with the OIE whether the reports of the FDC meetings – which are circulated to OIE national delegates – may also be made available to the AG for information, prior to formal endorsement of those reports by the OIE International Committee and publication on the OIE Website.

Quarterly Aquatic Animal Disease (QAAD) list

EM Bernoth explained in detail the changes to the international list of aquatic animal diseases notifiable to the OIE and the OIE list of other significant diseases that were endorsed by the OIE international Committee in 2002. The AG agreed that where those changes are editorial, or where diseases have been added by the OIE, those changes ought to be incorporated into the QAAD form automatically. However, any suggested deletion of a disease by the OIE should be carefully considered, as the disease may still be of relevance in the region. Hence the AG decided to follow the OIE in removing Oyster Velar Virus Disease, but Baculoviral Midgut Gland Necrosis will remain listed on the QAAD form as a disease of regional relevance.

The meeting then discussed and took decisions on the following additional issues:

- *Oncorhynchus masou* virus disease (OMVD): Given that this disease is listed by the OIE as "notifiable", it must remain listed on the QAAD form, however, the group agreed that clarification is required on whether OMVD does in fact still occur in Japan - if not, it needs to be moved from the QAAD section on "Diseases prevalent in some parts of the region" to "Diseases presumed exotic to the region, but notifiable to the OIE"[2].

- Viral haemorrhagic septicaemia and MSX disease (*Haplosporidium nelsoni*) have both been reported in the region and need to be moved from the QAAD section "Diseases presumed exotic to the region, but notifiable to the OIE" to "Diseases prevalent in some parts of the region".

- The pattern of the recent epidemic in koi carp in Indonesia is consistent with that of an infectious disease, but there is as yet no definitive aetiological diagnosis. The group

[2] Clarification was later obtained that OMSV had been reported in Japan within the last wo years. Therefore it will remain on the QAAD list as a "Disease prevalent in some parts of the region".

decided to list "Koi mass mortality" under "Unknown diseases of serious nature" to assist in the collation of data. A short summary of the key epidemiological features of the incident will be circulated to National Coordinators (NCs) with the next call for QAAD reports. This fact sheet needs to contain: Background/reason for concern, (working) case definitions, outbreak investigation, and diagnostic test options.

- Akoya oyster disease: this disease is not currently considered by the OIE for international listing, amongst other issues, because its aetiology is not yet well described, but the disease is of concern in the region. The group decided to list this disease under "Unknown diseases of serious nature" to assist in the collation of data. Similarly, the mollusc pathogen *Marteilioides chungmuensis* is recommended for listing under section "Any other diseases of importance" of the QAAD form. A short summary of the key features will be provided following the second phase of mollusc training course in November 2002.

- Grouper iridoviral diseases: these are not currently considered by the OIE for international listing, but they are of concern in the region. The group decided to list these diseases under "Any other diseases of importance" to assist in the collection of occurrence data. A more detailed review is needed, however, and the APEC/FHS document[3] should be used as the basis for this review. Further actions are to be taken at AGM-2 in 2003, based on recommendations of the review.

- Epitheliocystis: the group noted the occurrence of this rickettsial disease in the region and decided to add it next to Piscrickettsiosis under "Any other diseases of importance" to assist in the collection of occurrence data.

- Mourilyan virus (shrimp): the group noted recent research data on the detection of this virus in shrimp but decided that listing would be premature; rather, the group will review information on this virus and its possible role as a disease agent at AGM-2 in 2003.

A disease/pathogen fact sheet providing a case definition and advising on diagnostic methods needs to be provided for each disease added to the QAAD form, unless it is already available in the OIE *Diagnostic Manual for Aquatic Animal Diseases* or the Asia Diagnostic Guide. NACA secretariat will be responsible for drafting these sheets with help of experts.

The revised QAAD form for 2003 is provided in Annex D. It was recommended that the revised QAAD will take effect during the first quarter reporting period for 2003 (January to March 2003).

<u>Follow-up from the 2001 meeting of the OIE Regional Commission for Asia, the Far East and Oceania</u>

The AG recalled the need to improve accuracy and consistency of aquatic animal disease reporting which had been brought to the attention of the OIE Regional Commission for Asia, the Far East and Oceania. Inconsistencies between some OIE Member Countries' QAAD reports and their annual reports to OIE Central Bureau had also been pointed out.

EM Bernoth informed the AG that the President of the OIE Regional Commission for Asia, the Far East and Oceania, G Murray, had accepted a suggestion by the OIE Fish Diseases

[3] www.enaca.org (publications)

Commission to present an aquatic topic at the next meeting of the OIE Regional Commission in November 2003 in New Caledonia, to generally raise awareness on aquatic issues with those delegates. The OIE Director General, B Vallat, had endorsed this approach.

The AG suggested to the OIE FDC participant the following topics to be taken up at the meeting of the OIE Regional Commission in November 2003:

- Veterinary training in aquatic animal health and improvement of aquatic animal reporting
- Accuracy of QAAD reporting; consistency between QAAD reports and annual reports to OIE; and
- Need for better cooperation between OIE national delegates and fisheries authorities (e.g. on disease emergency responses).

Improving the format, contents, usefulness and impact of the QAAD reports

The AG agreed that although there have been some improvement in the quality of disease reporting in Asia, the QAAD still required substantial work to accurately reflect the aquatic animal health situation in the Region. The AG suggested approaches to assist in achieving this goal:

- Where there are obvious inaccuracies, NACA should contact the NC and request clarification. The AG noted that inaccuracies seem more prevalent where more than one national authority is involved in contributing to the reports. In some cases, this may require a visit to those countries, to assist in improving the quality and accuracy of reports.
- The compiled booklets with the QAAD reports should make note of countries not submitting reports and the names of their NCs.
- The QAAD booklets could be made more useful and interesting by providing "editorials" on, for example, recent disease outbreaks; or diseases of renewed importance; and developing pictures of diseases, posters, and a resource kit to support reporting.

Other, more general steps could include:

- A future get-together of all NCs, to undertake a 3-year review of the reporting system. If this is not feasible as a meeting of NCs of all participating countries, then NCs' participation in sub-regional meetings should be facilitated, e.g. back-to-back with meetings associated with workshops in sub-regions, such as the Greater Mekong sub-region;
- Improving communication between NCs and the Chief Veterinary Officers/OIE national delegates, improving NC access to national experts, and generally promoting in-country networking on disease status;
- Ensuring that National Strategies recognise, support and incorporate disease reporting, and QAAD reporting in particular, as a high priority;

SESSION 4: Progress in implementation of the Regional Technical Guidelines

The AG discussed the implementation of the *Technical Guidelines*.

The AG noted the progress made on several issues, such as workshops and training exercises to support harmonisation procedures for quarantine (import risk analysis) and support capacity building for diagnosis (molluscs and marine finfish diseases). Several other projects within the framework of the implementation strategy agreed by regional countries in Beijing are at various planning stages (see Annex C).

The AG suggested progress reports on implementation of the *Technical Guidelines* should be prepared and circulated to AG members and National Coordinators (NCs) at regular intervals.

National Strategies

The AG was advised of recent experiences in development and implementation of National Strategies.

EM Bernoth (NC for Australia) reported that Australia's National Strategy – AQUAPLAN – had been developed directly after the first NACA/FAO/OIE Regional Workshop in 1998 but would have been developed in any case, due to national pressure, mainly from the private sector, to have such a strategy. AQUAPLAN had been developed as a joint industry/government exercise, had been endorsed by governments and key stakeholders of the private sector, and had been published in 1999. Most projects under AQUAPLAN's eight programs have been completed or have become on-going core duties for the Federal Government (e.g. QAAD reporting). Those projects that are not yet completed are mostly those where State and Territory governments have different priorities. The largest gaps to date are in the areas of resources and funding. Whilst State and Territory governments are now accepting to contribute directly (rather than only in kind) to the further implementation of AQUAPLAN, the private sector is still reluctant to make this commitment; hence the move to a genuine tri-partite funding is currently postponed to mid 2005.

EM Bernoth also informed the AG that a full review of AQUAPLAN has just been completed, and a brochure will be available shortly, in time for the January 2003 hand-over of the AQUAPLAN overseeing role from the interim Fish Health Management Committee to the core-funded Aquatic Animal Health Committee (AAHC), a 17-member committee. AAHC will have Commonwealth and full State and Territory government representation as well as delegates from the commercial wild capture fisheries, the recreational fishing sector, and the major aquaculture sectors including ornamental fish. On the basis of a previously endorsed business plan and a project gap analysis conducted by a wider group of stakeholders, AAHC will develop its operational plan following a risk-based approach. Compensation for government-ordered slaughter of animals (because of disease) and crop loss insurance will be high priority issues for AAHC. Eva-Maria Bernoth concluded that throughout AQUAPLAN's development and implementation, the leadership of a strong and dedicated driver had been absolutely critical.

CV Mohan reported the progress made in India with development of the National Strategy. The National Bureau for Fish Genetics and Resources (NFBGR) had organised a series of consultations involving fish health experts, industry representatives and policy makers to evolve consensus on development of the national strategy on aquatic animal health. As a result of this process, three documents (a strategic plan, quarantine guidelines and handbook on exotics and quarantine) have now been developed and submitted to the Ministry of Agriculture for adoption and implementation at the national level.

In Thailand, recent progress had been made in the development of the National Strategy that was considered as an increasingly important priority by government. The Department of Fisheries had assigned a committee – Aquatic Animal Health Committee (AAHC) - 2 years ago to coordinate the national strategy development. Thailand is aware that aquatic animal

health is becoming an increasingly important for trade issues, so the need for action on aquatic animal health management is recognised. The private sector is very active in Thailand and has been involved in efforts to standardise laboratory techniques in the country. Six hundred participants have engaged in National Strategy discussions during four meetings across the country, and the private sector is increasingly engaged and active.

Experience in Thailand suggests the need for veterinarians and fisheries biologists to work closely together. Funding support for aquatic animal health issues has been generated from government, and the private sector is increasingly involved, directly or indirectly, in development of strategies to ensure aquatic animal health. The work of the government is also well recognised by industry. For example, Thai government staff is frequently invited to participate in meetings and workshops of industry associations.

In Myanmar, a recent workshop had been held to develop the National Strategy, involving stakeholders from government and the private sector. Assistance is required to further develop the National Strategy particularly in developing a project proposal to seek funding support for its development and implementation.

In the Philippines, the National Strategy development had been organised and coordinated by the Bureau of Fisheries and Aquatic Resources (BFAR) in an effort to meet the needs of the shrimp industry. A National strategy workshop had been held in 2002, which had discussed various elements and responsibilities for implementation.

In Malaysia, a recent government initiated workshop, in close cooperation with the ornamental fish industry, had reviewed the *Technical Guidelines* and developed a national strategy for Malaysia.

The AG emphasised the need for further efforts to encourage the development and implementation of national health management strategies. The following points were noted:

- The National Strategy may be used as a funding base for seeking support. Funding should be sought from different stakeholders. Getting a higher "political profile" for the strategy may also help to strengthen implementation and the funding base.
- The National Strategy may help focus R&D on major problems under one umbrella programme.
- Translations of material should be considered for wider dissemination to government and private sector.
- Involvement of private sector in the process should be emphasised. In doing so, the special needs and constraints of the private sector should also be recognised (e.g. may have little time available for extended meetings and workshops) and ways devised to ensure participation.
- In development of the national strategy, it is important to explore in more detail who are the stakeholders. The term "private sector" is loosely defined (as "the part of the national economy not controlled directly by the government"?). Engage small-scale farmers where possible, where this sector makes an important contribution to production – not just larger farmers.
- Investigate the "Influence structure" that works within the private sector and be innovative in seeking ways to use this to implement better health management within a country. For example, processors and exporters have important influence over producers

and can be important allies in promoting awareness of aquatic animal health issues related to trade.
- Focus national strategies and health management measures on objectives and outcomes, and allow flexibility to achieve these, rather than being too prescriptive.
- Ensure that institutional responsibilities are well defined, such as diagnostic laboratories (in the government or private sector) for diagnosis of specific reportable diseases, when making the National Strategy.

The AG suggested that it would be useful to bring NCs together in a workshop in the near future to exchange experiences, and further review progress. Such a meeting may also help stimulate and strengthen the activities and sense of ownership of the process. However, the AG considered that support for attendance should be contingent on progress in implementing national strategy and reporting. There is also a need for more communication between NACA and the NCs to gather information on where they perceive the major difficulties lie.

Aquatic animal surveillance and zoning

The AG was briefed on the recent FAO/DFO/OIE Expert Consultation on "Aquatic animal surveillance and zoning systems". S Chinabut considered the Expert Consultation very useful in helping to develop guidance on development and implementation of surveillance and zoning, important elements within the *Technical Guidelines* and National Strategies. The emphasis of the Consultation on use of passive surveillance systems, that may be particularly relevant to developing countries, was appreciated.

The AG urged that FAO provide further support to the Asian region in implementation of the recommendations of the Expert Consultation, particularly the need for training within the region to support implementation of surveillance systems.

The AG took note of the recently published ACIAR "Surveillance Toolbox for Aquatic Animal Diseases" that was also considered extremely useful to the region. It recommended approaching ACIAR to support training and awareness building to help build capacity in the use of the toolbox. The importance of developing capacity in outbreak investigations was also noted.

The AG discussed the practical implementation of surveillance programmes and was briefed of recent experiences in developing a surveillance program in Madagascar. This experience emphasised the importance of public and private partnership, and that passive surveillance can be very effective under the right circumstances. It is interesting to note that, once again, the process had been driven in Madagascar by trade concerns. The AG suggested further exchange of experience in development of surveillance programs.

The AG noted that skills and documentation on emergency response, and contingency planning to deal with serious disease outbreaks are major gaps that should be addressed in future aquatic animal health workshops and other activities.

Import risk analysis

The AG noted that the ongoing APEC-supported project "Capacity and Awareness Building in Import Risk Analysis for Live Aquatic Animals" had helped provide training, and would provide in 2003 a useful manual that would support the region in IRA.

SF Smith informed of a request from the Pacific for exchange of experience in IRA for importation of oysters. He noted the opportunities for cooperation between Asia and the Pacific to share experience in IRA and SPS measures.

Revision of the Technical Guidelines

The AG discussed the need and process for revision of *Technical Guidelines* and supporting documents. No revision of the *Technical Guidelines* was suggested at the present time. Rather a 3-year review of implementation should be prepared and presented to the next AG meeting. Based on this review, further consideration would be given of the need for revision.

There was a need for addition of material to the Asia Diagnostic Guide (ADG) to take account of changes to the reporting list (see SESSION 3 above). The AG suggested making supplements to ensure coverage of new diseases on the regional reporting list, or other changes as required. The supplements should be printed when suitable, but changes should be made and more frequently made widely available as PDF files on the NACA web site. The changes should be circulated also on CD ROM.

The QAAD reports prepared by NACA should be developed further with additional information on issues of relevance to aquatic animal health within the Asia-Pacific, also taking into note the issues raised under the reporting section above (see SESSION 3).

Information systems and reporting

The AG suggested that the reporting of disease emergencies should continue to be encouraged. Such reporting would include official emergency reports to OIE and NACA, but it should be expanded to a more informal, early warning/information system. The AG suggested to develop an email list, appropriately moderated to ensure quality of contribution, to support countries in sharing information on disease outbreaks and emerging problems. The information should also be used to improve QAAD reports. The National Coordinators should be actively engaged in this system.

The meeting was advised of the current upgrading of AAPQIS, being carried out by FAO, and it was suggested to link the news list within AAPQIS. Further linking with the OIE *International Database on Aquatic Animal Diseases*, operated by Center for Environment, Fisheries and Aquaculture Science (CEFAS), was also encouraged.

The AG noted that care must be taken to differentiate between OIE and non-OIE data within the information systems, and to give special attention to potential problems over false reporting.

The AG considered that an annual progress report "Aquatic animal health in the Asia-Pacific region", based on a review of implementation of the *Technical Guidelines*, would be useful and could form a valuable basis for discussions at AG meetings.

Where NCs may have difficulties in accessing information on aquatic animal health, for reporting and other purposes, the AG suggested identifying people willing to act as a "focal point" specifically for disease reporting to the NC. Vietnam had implemented such a measure,

which had significantly improved the quality and coverage of QAAD reports from that country.

Information on CVOs and NC changes should be made available on NACA and AAPQIS web sites. The AG suggested to prepare an inventory of CVOs, NCs and NACA GC members involved, and to make such information available on the NACA web site.

SESSION 5: Regional aquatic animal health resource centers

C Mohan gave a brief introduction - followed by discussion - on Regional Resource Centers.

A cohesive networking among regional resource centers in aquatic animal health was identified as a requirement in the region to provide diagnostic support and to build capacity for implementation of the *Technical Guidelines*. Resource centers within the region would provide national agencies with assistance in the diagnosis of key regional diseases on the QAAD list, provide more generalised support, and act as contact centers for advice and capacity building in close cooperation with FAO and OIE.

Three resource levels were identified in the discussion as follows: specialist advisors, reference laboratory and resource centers.

A list of resource experts is already given in the *Asia Diagnostic Guide to Aquatic Animal Diseases*, but it needs to be fine-tuned in terms of specific areas of expertise and a clear commitment by those experts willing to take on the role of specialist advisors. Experts' contacts should be available on the AAPQIS web site. The AG agreed on the following TOR for specialist advisors:

- Answer technical questions related to their field of expertise
- Assist network in development of diagnostic manuals and supporting documents
- Provide diagnostic assistance as far as possible disease emergencies
- Provide an annual summary of developments in your field of expertise

The second resource level identified should consist of reference laboratories for specific diseases. Regional Reference Laboratories for OIE listed diseases and other diseases of significance for the region should play a central role to provide diagnostic support and to build diagnostic capacity in the region. These laboratories should not duplicate OIE systems already in place and; where an OIE reference laboratory exists (regardless of its location), a very convincing case would need to be made in order to support the establishment of a separate Regional Reference Laboratory. There are already several OIE Reference laboratories in the region (for EHN, OMVD, VER, EUS, RSBIVD, and crustacean pathogens – see http://www.oie.int/fdc/eng/Diseases/en_reflabslist.htm). For diseases of regional concern, not listed by the OIE but included in the QAAD list, Regional Reference Laboratories could usefully be established. Criteria and procedures for designation of Regional Reference Laboratories should be consistent with those used by the OIE:

- To function as centres of expertise and standardisation for designated diseases or topics;

- To store and distribute biological reference products and any other reagents used in the diagnosis and control of the designated diseases or topics;
- To develop new procedures for diagnosis and control of the designated diseases or topics;
- To gather, process, analyse and disseminate epizootiological data relevant to their speciality;
- To place expert consultants at the disposal of NACA; and
- To provide an annual report of activities to the NACA secretariat.

It was recommended to suggest candidate laboratories for Koi Herpes virus infection of carp, Iridoviroses of groupers, and *Marteiloides chungmuensis* infection of oysters.

Regional Resource Centers for Aquatic Animal Health are the third level of resource identified as a need for the region. Those Centers will not be specific for a single disease. Basic criteria for recognition as a Regional Resource Center are:

- At least 5 years experience in diagnosing and studying aquatic animal disease(s)/pathogen(s),
- Presence of more than one diagnostician (scientist, biologist or technician) with competence in aquatic animal disease(s),
- Ability to accept and process diagnostic samples,
- Ability to provide confirmatory diagnosis (or re-direct to a Reference Laboratory, as appropriate) to the submitter within 3-4 weeks (or in the shortest period of time required for confirmatory diagnosis),
- Easy access to standard rapid communications avenues (telephone, fax, e-mail),
- Capability and willingness to organise, contribute and host - when possible - training and retraining on a regular basis in diagnosis (at all levels) of disease(s)/pathogen(s) for experts in the region.

Their terms of reference are proposed as follows:

- Provision of scientific and technical training for personnel from the region;
- Provision of diagnostic testing facilities to countries who are members of the regional aquatic animal health initiative and their personnel,
- Organisation of scientific meetings, training courses and retraining workshops on behalf of NACA,
- Publication and dissemination of any information in their sphere of competence which may be useful to NACA, AG and countries in the region,
- Communication of an annual report of activities to the NACA secretariat.

Regional Resource Centers and Regional Reference Laboratories are also encouraged to coordinate scientific and technical studies in collaboration with other laboratories or organisations. They will have a role in standardisation and harmonisation of diagnostic procedures. Harmonisation was regarded here as operation of diagnostic laboratories under

accepted standards for quality assurance and ring testing of laboratories for designated disease diagnostic procedures.

Proposed mechanisms for application and designation of both Regional Resource Centers and Regional Reference Laboratories should be consistent with those used by FAO and OIE.

Applications should comprise the following information:

- Names of the head of the laboratory or centre and the person responsible for the tasks of the Reference Laboratory or Regional Resource Centre,
- Statutes, activities and field of competence of the laboratory or centre,
- Description of the manpower likely to be dedicated, full-time or partially, to the committed missions,
- List of publications and works relevant to the missions for which the laboratory or centre is designated.
- Notification to comply with the obligations, functions and duties of Reference Laboratories or Regional Resource Centers.

During its meetings, the AG will consider the need for Regional Resource Centers for Aquatic Animal Health and the possibility of calling for or inviting centers and specialised laboratories to apply. A call for application, including definition of duties and deadlines for application, will be published in reports of AG meetings as needed and forwarded by the NACA secretariat to the OIE and NACA National Delegates and laboratories or centers renowned for their activity and capacity in the relevant field of knowledge and competence.

Applications are to be submitted to the NACA secretariat with a description of facilities, equipment and staff, field of interest, and a short but relevant statement of the technical aptitudes, practical experience and motivations regarding the diseases specifically targeted, as stated above.

Applications will be forwarded by the NACA secretariat to the AG and analysed during its following meeting for opinion. The final decision will be taken by the NACA secretariat, which will contact the selected laboratories and exchange agreements.

Designation should be reviewed after 4 years of operation. A termination of the agreement may result from a request by the Regional Reference Laboratory or Regional Resource Centre itself or from a recommendation by the AG to NACA, based on serious and repeated underperformance of the Regional Reference Laboratory or Regional Resource Centre.

The AG suggested that funding mechanisms will be identified when and where necessary to support training activities. When possible, Regional Reference Laboratory or Regional Resource Centre should be able to absorb costs or apply cost-recovery for their activities e.g. for mailing, analysis or bench fees.

SESSION 6: Aquatic Animal Disease Emergency Responses

The need for capacity to address emergency aquatic animal disease outbreaks is identified in the *Technical Guidelines*. Recent events, such as the koi mass mortality in Indonesia (see SESSION 2), have re-emphasised the need for further guidance and capacity within the region to address disease emergencies.

The AG suggested the use of training workshops, preparation of contingency plans and simulation exercises to develop national capacity. Experience in Australia has shown the great value of conducting disease simulation exercises.

The AG recommended a regional workshop be held on the development of aquatic animal disease emergency management and response plans and the planning and conduct of simulation exercises within the region to help develop experience and capacity. The AG suggested using one of the less complex Australian simulation exercises as an example of what may be organised for another country in the region.

While capacity starts to develop, regional and international agencies should retain flexibility to respond to serious disease emergencies.

SESSION 7: Regional and International Cooperation

The AG noted the excellent cooperation with regional and international organisations on development and implementation of the *Technical Guidelines*.

The AG suggested further cooperation with Association of South East Asian Nations (ASEAN) and development of joint projects. Surveillance and emergency response were two priority areas where there might be cooperation with ASEAN to raise funds to support the programme.

FAO assured of continued support and assistance towards better aquatic animal health management in Asia, and future collaboration with NACA and other regional agencies in this important field.

The possibility to approach the EU for technical assistance should also be explored, particularly given potential future changes in EU aquatic animal health legislation and possible implications for trade in aquatic animals and their products. The EU also provides a good example of collaboration between researchers and farmers association that might be of interest to the Asian region.

It was also suggested to build further cooperation with World Aquaculture Society (WAS), Fish Health Section (FHS) and the Global Aquaculture Alliance (GAA). One interesting suggestion was to consider a “cross-agency” focus on one key issue– e.g. surveillance – for a period of time. A coordinated effort to focus laterally (e.g. in various magazines and newsletters, targeting different constituencies) on one issue at a time might help raise awareness broadly within the aquaculture community, including public and private sectors, on key aquatic animal health management measures.

The OIE Regional Representation in Tokyo informed that it was important to continue and further develop cooperation in the collation and dissemination of disease status information. Where possible, OIE would like to collaborate in other areas. The APEC/NACA/OIE workshops on IRA had been a good example, and such cooperation should be strengthened in the future. Two areas of particular interest to OIE were disease surveillance and risk analysis.

The need to build cooperation between veterinary and fisheries authorities was emphasised strongly. The Regional Commission meeting in New Caledonia in November 2003 will provide one opportunity, and the AG will provide input to an in-session paper. However, further opportunities should be sought to promote cooperation. The AG suggested sending the report of the AG meeting to NCs and CVOs, highlighting the main recommendations of the meeting in the accompanying letter.

Private sector cooperation

The AG discussed cooperation with the private sector. It was agreed that private sector involvement in disease control should be used as an avenue both for fund raising to support research programs and information collection as well as to create awareness of diseases and the potential economical effects of disease outbreaks on the industry

Currently, the private sector is a largely unutilised group for fund raising and data collection. Information dissemination can be greatly enhanced through the involvement of local farmer associations, feed producers, processing companies, trading companies, aquatic animal health companies and diagnostic companies.

The private sector is increasingly aware of the potential risks of emerging diseases for trade. For example, processors, exporters and importers have been a strong driving force, lobbying governments and working with them to find ways to resolve several issues related to the export market such as drug residues and the presence of viable WSSV in frozen shrimp products. Local farmer associations, feed producers, suppliers and businesses depending upon them are also affected, both directly and indirectly, and should be involved in the development of disease surveillance and awareness programs.

The AG noted the problems that different languages and language skills pose for effective information collation and dissemination between governments and producers. The private sector may be able to play a role in alleviating such problems and it is recommended that the NCs contact and liase with private sector operators to create awareness and improve information gathering.

A suggested bulletin or electronic newsletter, possibly linked to AAPQIS should be made widely available to generate awareness.

In a number of countries, private diagnostic laboratories are the main source for disease diagnosis. These represent an under-utilised source of information and can play an important role in disease surveillance. However, it was noted that, as for government laboratories, harmonisation and the use of accepted standards of quality assurance will be required. There are also legitimate concerns over client confidentiality that would need to be explicitly addressed.

The private sector should also be considered as a source of experts, as well as for potential assistance in provision of case studies. The private sector would have a key role to play in simulation exercises for outbreaks and contingency planning.

SESSION 8: FUTURE ACTIONS

Other issues for consideration

The AG reviewed and amended the Terms of Reference (TOR) of the Advisory Group. It was decided that participation and membership to the Advisory Group should follow the rules initially in place and given in the report of the provisional meeting in 2001. The revised TORs are attached in Annex E.

The AG requested the NACA Secretariat to ensure regular communications between the AG members throughout the next year.

The date of the next meeting was set for November 2003. The final date will be advised in nearly 2003.

SESSION 9: PRESENTATION OF MEETING REPORT AND CLOSING

The draft report was adopted and the meeting closed.

List of Appendices

Annex A. Meeting Agenda/Programme
Annex B. Meeting Participants
Annex C. Progress Report to the Advisory Group
Annex D. Revised QAAD Reporting Form
Annex E. Revised Terms of Reference of the Advisory Group

Annex A: Advisory Group Meeting Program

Wednesday, 6th November

0900-1200h: Morning Session

Opening Session

- Welcome Remarks (Pedro Bueno)
- Introduction/comments of participants
- Review and adoption of agenda/program

Chair: Supranee Chinabut
Vice-chair: Eva-Maria Bernoth

SESSION 1: Recent activities and expected outputs from meeting

Short progress report, objectives and expected outputs from meeting (Michael Phillips)

SESSION 2: Emerging disease problems and regional response

Short introductory remarks followed by discussion on:

- *Freshwater fish diseases:* Spring viraemia of carp in US: first time reported in the US in July 2002; implication to Asia. Threat of Koi herpes virus and possibility of listing KHV in the OIE list and included in the Asia-Pacific QAAD (Supranee Chinabut)
- *Mollusc diseases*: *Haplosporidium nelsoni* in Canada: first time reported in Canada in October 2002; implication to Asia. Ongoing mollusc health surveys/Brisbane. (Franck Berthe)
- *Shrimp diseases:* Threat of Taura Syndrome with the continuous introduction of *P. vannamei* to the region (evaluation of the impact particularly in terms of change in production patterns, economy, disease situation, alleged resistance to WSSV, introduction of TSV, etc.). Other emerging viruses of shrimp (bunya virus?) (Dan Fegan, C. Mohan)

1330-1700h: Afternoon Session

SESSION 2: Continued

SESSION 3: Asia regional aquatic animal disease reporting system

Introduction followed by discussion on the following topics (Eva-Maria Bernoth)

- Review and revision of disease reports, lists, reporting form, instructions
- Incorporation on list of new diseases of potential significance
- Follow up to OIE Regional Commission Recommendations
- Quarterly and annual reports – improving formats and content/usefulness/impact of reports, incorporation into regional databases (AAPQIS)

Thursday, 7th November

0900-1200h: Morning Session

SESSION 4: Progress in implementation of the Regional Technical Guidelines

Introductory briefing on progress in implementation of the 'Asia Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals' (Michael Phillips) followed by discussion:

- National strategies and regional actions (request short briefing on status of national strategies – Thailand, Australia, India).
- Need for a process for revision of Technical Guidelines and supporting documents
- Aquatic animal surveillance and zoning systems – Rome consultation. How to start in the region?
- Preparing and outline of an annual progress report "Aquatic animal health in the Asia-Pacific region"

SESSION 5: Regional aquatic animal health resource centers

Introduction on resource centers (C.V. Mohan) followed by discussion

- Practical operation and issues - AAHRI-OIE Reference Centre for EUS (Supranee Chinabut)
- Regional resource centers for aquatic animal health – review criteria/TOR, need for fresh survey of Level I, II, III laboratories?
- Role in standardisation, harmonization of diagnostic procedures
- Need for listing of regional health experts?

1330-1700h: Afternoon Session

SESSION 6: Aquatic Animal Disease Emergency Responses

Introduction (Supranee Chinabut) followed by discussion session:

- Discussion on mechanism for emergency assistance/contingency plan (regional level) for future disease emergencies (similar to what has been done for the suspected KHV outbreak in Indonesia). What needs to be done to better prepare for and support emergency outbreaks?
- Development of a 'model' contingency plan?

SESSION 7: Regional and International Cooperation

Discussion session:

- Can more be done to promoting effective cooperation with regional and international organizations?
- Private, public sector cooperation.
- Promoting better cooperation between veterinary and fisheries authorities (e.g. New Caledonia meeting? other opportunities?)

- Cooperation with the OIE/FDC (Teruhide Fujita/Eva Maria-Bernoth)

SESSION 8: FUTURE ACTIONS

- Other issues for consideration
- Participation/membership
- Date of next meeting

Friday, 8th November

0900-1200h: Morning Session

Free session, report preparation

1330-1700h: Afternoon Session

SESSION 9: PRESENTATION OF MEETING REPORT AND CLOSING

Annex B: List of Participants

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Annex C. Progress Report to the Advisory Group

The following is an annotated progress report on the Regional Program on Aquatic Animal Health Management, used as reference information during AGM-1.

A. Report of the Provisional Meeting of the Asia Regional Advisory Group on Aquatic Animal Health (AG)

The Provisional Meeting of the AG was convened on 7-9 November 2001, at the NACA Headquarters in Bangkok, Thailand. This Meeting finalized the Terms of Reference of the AG, composition, planned schedule of activities of the AG. The complete report was circulated in an e-mail dated November 17, 2001.

B. Composition of the AG

The composition of the AG was finalized. The final composition of the AG is listed below:

Chair - Supranee Chinabut
Vice-Chair - Eva-Maria Bernoth
Members:
Jiang Yulin
Celia Lavilla-Pitogo
Dan Fegan
Luc Grisez
Eva-Maria Bernoth – representing OIE FDC
Teruhide Fujita – representing OIE-Tokyo
Rohana Subasinghe – representing FAO
Technical Secretary - NACA Aquatic Animal Health Specialist

C. Completion of the FAO TCP/RAS 6714 and 9605 "Assistance for the Responsible Movement of Live Aquatic Animals"

This Regional TCP project became the basis for the regional programme on aquatic animal health was completed in November 2001. The Project Terminal Statement was prepared by NACA and FAO and distributed to participating governments. The Project is eligible for FAO's Edouard Saouma Award for the biennium 2000-2001.

D. Asia Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals

ASEAN/SEAFDEC

Support to the implementation of the 'Technical Guidelines' was re-emphasized during the ASEAN-SEAFDEC Millenium Conference "Fish for People" held in Bangkok, Thailand on

19-24 November 2001, and included as one of the major recommendations and action plans under Session 3.4 – Healthy and Wholesome Aquaculture.

APEC MRCWG Project "Study on Introduced Marine Pest Management", November 2001, Hobart, Tasmania, Australia

The Asia Pacific Economic Cooperation (APEC) Marine Resources Conservation Working Group (APEC MRCWG) during a meeting held in Hobart, Australia, in November 2001, recommended closer consideration of instruments, guidelines and processes (including the 'Technical Guidelines') relevant to introduction of marine pests. The Technical Guidelines was presented by Philippine National Coordinator, Dr. Joselito Somga.

Asia Regional Workshop on the Prevention and Management of Invasive Alien Species: Forging Cooperation throughout South and Southeast Asia Regional Meeting, August 12-14, 2002, Bangkok, Thailand

Information about the 'Technical Guidelines' and other relevant health information was provided to a regional meeting held in Bangkok, Thailand in August 2002, organized by the co-hosted by the Royal Thai Government (represented by the Office of Environmental Policy and Planning (OEPP) and Thailand Biodiversity Center (TBC), National Science and Technology Development Agency (NSTDA), Ministry of Science, Technology and Environment) in collaboration with the Government of the United States of America (USG), and the Global Invasive Species Programme (GISP). The participants to this regional meeting include representatives from Afghanistan, Bangladesh, Bhutan, Brunei Darussalam, India, Indonesia, Laos, Malaysia, Maldives, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, and Vietnam, ASEAN Regional Center for Biodiversity Conservation (ARCBC), CAB International (CABI), International Plant Protection Convention (IPPC) Secretariat, Food and Agriculture Organization (FAO), IUCN-World Conservation Union, South Asian Cooperative Environment Programme (SACEP), and Japan National Institute for Environmental Studies

There are potential opportunities to cooperate on long term program of action that will incorporate the implementation of the 'Technical Guidelines'.

The next meeting GISP/USG workshop is planned for Hawaii, with participants from the island states with the U.S., Australia and New Zealand from APEC members.

SEAFDEC/OIE Seminar/Workshop on Disease Control in Fish and Shrimp Aquaculture in Southeast Asia – Diagnosis and Husbandry Techniques, 4-6 December 2001, Iloilo City, Philippines

MB Reantaso presented details of the development and implementation of the 'Technical Guidelines'

APEC FWG 01/2002 "Capacity and Awareness on Import Risk Analysis for Aquatic Animals

NACA was awarded the above project by APEC, that supports the development of capacity and awareness on import risk analysis. Two regional workshops have been held under this project, Bangkok in April 2002 and Mazatlan, Mexico in August 2002. The outcome from the project will be a manual on IRA, and a network of people with experience in IRA to assist in

future analyses. The project is in line with the Regional Technical Guidelines and the recommendations in the Beijing implementation strategy (see details below).

Expert Consultation on Surveillance and Zoning for Responsible Movement of Live Aquatic Animals.

FAO held an Expert Consultation in Rome, Italy, 14-18 October 2002. The objective of the consultation was to develop guidelines for establishing and managing surveillance and zoning for reducing the risk of trans-boundary spread of aquatic animal diseases, thereby underpinning sustainable trade and production. The guidance provided by this meeting and the recommendations are relevant to the Asian region and provide valuable support in implementation of the "Technical Guidelines".

E. Asia-Pacific Quarterly Aquatic Animal Disease Reporting (QAAD)

There were 3 three quarterly issues published (QAAD 2001/4, 2002/1, 2002/2) since the Provisional Meeting of the AGM last November 2001. An annual report (2001) was published by OIE-Tokyo.

As recommended by the AG, the QAAD was revised and updated in November 2001 and beginning the first quarter reporting period for 2002, an updated list of diseases based on 4th edition of OIE International Code for Aquatic Animals (OIE, 2001) was reported, with an additional column to reflect the levels of diagnosis (*i.e.*, Level I, II or III – see Table 1 for explanatory notes) for the disease reports. The deadline for submission of reports has also been extended (2.5 months from end of each reporting period).

An *'In-session Paper'* "Inconsistency of OIE Data on Diseases of Fish, Molluscs and Crustaceans, that are Notifiable to the OIE" was jointly prepared by EM Bernoth and MB Reantaso for the Regional Commission Meeting of the OIE Regional Commission for Asia, Far East and the Oceania held in Nepal from 26-30 November 2001. It was presented by Dr. Gardner Murray, Australia's Chief Veterinary Officer and President of the Commission. The paper raised important issues regarding QAAD. As a result, the Meeting made the following recommendations: (a) quarterly reports submitted to the OIE Regional Office in Tokyo should be consistent with annual submissions to OIE Central Bureau; (b) OIE reporting should be done accurately; (c) and that OIE National delegates should cooperate and consult more closely with their national fisheries authorities especially in those countries where jurisdictional responsibility for aquatic animals does not, or not exclusively, lie with veterinary authorities.

F. National Strategies on Aquatic Animal Health Management

National workshops were carried with support from NACA to assist in the development of the National Strategy for the following countries:

Nepal: December 2001
Philippines: February 2002
Myanmar: April 2002
Indonesia: June 2002

Assistance is required to assist in project proposal development to secure funds for implementation of the National Strategies in each country.

There are also official requests for support from the following countries: Malaysia, Pakistan, Sri Lanka.

The importance of countries having national aquatic animal health strategies is becoming increasingly evident, particularly in relation to trade in aquatic animals.

G. APEC FWG 01/2002 "Capacity and Awareness Building on Import Risk Analysis for Aquatic Animals"

Workshops

The First Training/Workshop was completed in April 2002 in Bangkok, Thailand. Sixteen APEC economies (*i.e.* Australia, Canada, China, Hong Kong China, Chinese Taipei, Indonesia, Japan, Korea RO, Malaysia, Mexico, New Zealand, Philippines, Singapore, Thailand, United States of America and Vietnam) participated in this activity, with an additional representation from 7 Asian governments (*i.e.* Bangladesh, Cambodia, India, Myanmar, Nepal, Pakistan and Sri Lanka) and representatives from regional/international organizations such as the Network of Aquaculture Centres in Asia-Pacific (NACA), Office International des Epizooties (OIE) Regional Representation for Asia-Pacific, Mekong River Commission (MRC), Secretariat of the Pacific Community (SPC), DANIDA/SUMA and Bangladesh GEF Project.

The Second Training Workshop was completed in August 2002 in Mazatlan, Mexico, participated by representatives from Australia, Belize, Brasil, Canada, Chile, Costa Rica, Columbia, Cuba, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Peru, Thailand, Venezuela, USA and FAO, NACA, OIE, OIRSA.

The Project Report containing technical presentations and working group recommendations for both workshops and a Manual on IRA for Aquatic Animal Health is in preparation.

H. Emergency Response: Assistance to Indonesia on a Serious Disease Outbreak of Koi and Common Carp

Background

In June 2002, Indonesia was faced with a serious disease outbreak among koi and common carp populations. In view of the epizootic nature of the disease and potential spread to neighbouring Asian countries, the current economic impact (losses estimated in November 2002 at 50 Billion Indonesian rupiah and the disease is still spreading), the potential threat to the production of this important food fish group (common carp), the potential trade implications of these high value species (koi carp) as well as other carp and non-carp exports (*e.g.* ornamental fish) and in response to an official request from the Government of Indonesia (letter dated 20 June 2002 from Dr. Fatuchri Sukadi, Director General of Aquaculture, Ministry of Marine Affairs and Fisheries), an Emergency Disease Control Task Force on a Serious Disease of Koi and Common Carps in Indonesia, subsequently referred to as 'Task

Force', was organized by NACA in cooperation with ACIAR and AAHRI. FAO and the OIE Regional Representation for Asia-Pacific also expressed willingness to support the Task Force work.

Preliminary investigations conducted by Indonesian fish health officers with technical assistance from NACA, in June 2002, revealed that the disease may possibly be of viral origin based on the pattern of spread of mortality, specificity to koi and common carps and clinical signs which were characteristics of the outbreaks of koi herpes virus reported in 1999 in mid-Atlantic USA and in 1998 and 1999 in Israel ((Hedrick *et al.* 2000). Clinical signs from the current Indonesian outbreaks were characterized by bleeding and severe necrosis of the gills, and superficial hemorrhages on the body surface. The affected populations, which were limited to koi and common carps, were also suffering from non-specific secondary infection of bacterial, parasitic and fungal origin. Internally, the kidney and liver consistently showed abnormal conditions and extensive abdominal adhesions. The disease was reportedly first observed in April 2002 affecting East Java and has since spread to West and Central Java and continuing until present. Almost all koi and common carp producing farms in Java Island are affected. A definitive diagnosis of the causative agent/s and determination of other possible contributing risk factors are required at the first instance.

The Task Force traveled to Indonesia in July 2002 to undertake epidemiological observations, collect samples for laboratory examination and investigate the disease outbreak.

Participating Institutions

The International Task Force was composed of Angus Cameron of AusVet (Australia), Somkiat Kanchanakhan of AAHRI (Thailand) and Melba B. Reantaso of NACA.

Participating scientists and institutions include: Barney Smith of ACIAR, Supranee Chinabut of AAHRI, Gary Nash of Centex Thailand, Hugh Ferguson of Stirling University, Ronald Hedrick of UC Davis, InterVet Norbio Singapore, Indonesia and Netherlands (Luc Grisez, Zilong Tan, Ellen Ho and her team), and Institute Pertanian Bogor (Indonesia).

Findings:
Based on the field investigations and laboratory examination conducted by the Task Force, it can be concluded that the current disease outbreak affecting koi and common carp in Indonesia involves an infectious agent. A viral agent, suspected to be KHV, is strongly associated with the outbreak (based on epidemiological observations) and PCR tests. This is a strong presumptive diagnosis. It cannot be confirmed because of the absence of KHV pathology, failed viral isolation and as *in-situ* hybridization, the confirmatory diagnostic test for KHV (Prof. Barry Hill, CEFAS, pers. comm.) was not performed. Other factors may also be well involved such as parasites, bacteria (based on pathology report) and other environmental factors. Based on available epidemiological data, the disease was clearly introduced to Indonesia through fish importation and spread into other areas through fish movements.

The Government of Indonesia has been advised to temporarily restrict the movement of koi and common carp and a Ministerial Circular took effect in July 2002. An intensive information dissemination was also undertaken to raise awareness and inform the public sector about relevant information including risks to human health available at that time. The

Government of Indonesia was also advised to report the matter to OIE and a report was sent to OIE on 26 June 2002.

Follow-up work:
A list of recommended follow-up actions are included in the Summary Report of the Task Force. ACIAR and FAO (through a TCP project) have expressed willingness to interest in further follow up support.

General comments
This disease emergency has caused significant social and economic impact in Indonesia, and is still ongoing. It has also revealed a considerable lack of capacity in dealing with such emergencies, including timely organization of outbreak investigations. While the task force was promptly dispatched, an early and concerted action at national level might have reduced economic impacts considerably. It is likely that new and emerging disease will continue to threaten the regions aquaculture, and trade, and timely to explore how capacity can be improved to deal with such emergencies.

I. Informations Systems

AAPQIS-Asia is currently being restructured by a multimedia specialist based in Bangkok. All the diseases listed in the Asia Diagnostic Guide has been entered into the database and additional pathogen sheets have been added. The restructured AAPQIS will be ready for internet upload early next year. AAPQIS-Latin America (with Centro de Investigacion Alimentacion y Desarrollo (CIAD) and AAPQIS-Africa (with ICLARM).

CABI is interested to include an aquatic animal health component, particularly scientific information that will provide support to risk analysis in a proposed Aquaculture Compendium. A meeting was recently held at AIT in Bangkok to discuss future plans and an agreement in principal was reached to include AAPQIS, the Regional Diagnostic Manual and guidelines documents in the Compendium.

ACIAR's Tacklebox – Survey Toolbox for Aquatic Animal Diseases (by Angus Cameron) has recently been printed and is available for aquatic animal health specialists in the region. This new manual for disease surveillance is targeted specifically at aquatic animals and based on the ACIAR Monograph 54: Survey Toolbox for Livestock Diseases– A practical manual and software package for active surveillance in developing countries. It includes additional introduction to basic epidemiology for aquatic animal health, as well as basic guidelines for general management interventions to address common aquatic animal problems. The development of the manual involved a workshop that was held in Bangkok in 29 May-2 June 2001. Follow-up work to introduce the toolbox, pilot testing and possible regional adoption of the surveillance methods described in the manual through a regional workshop is being pursued.

J. Fifth Symposium on Diseases in Asian Aquaculture (DAAV), 24 November – 5 December 2002, Brisbane, Australia

Three satellite workshops are being planned in conjunction with DAAV as follows that are relevant to the regional programme:

Epidemiology
This is a two day workshop to be jointly conducted by AusVet and AFFA (Australia) and CEFAS (UK) on epidemiological aspects of biosecurity at the zone, regional and international level with the objective of gaining a better understanding of epidemiological principles for surveillance, zoning and import risk analysis in aquatic animal health.

EUS Workshop
A two hour workshop on EUS will be conducted to achieve some agreement on 'What is EUS'. Invited experts include Dick Callinan (Australia), Indrani Karunasagar and CV Mohan (India), Kishio Hatai (Japan) and Vicki Blazer (US), who will each present their case definition with supporting evidence, followed by questions and answers from the audience. The workshop will be moderated by MB Reantaso and Chris Baldock. The workshop will hopefully will conclude with an agreed case definition.

Molluscan Health Phase II
Phase II is part of a three tiered program (Phase I completed in 1999, and Phase III to be planned for 2003). NACA and FAO are co-organising Phase II with the University of Queensland, Australia and in cooperation with other organizations/institutes from Australia (*e.g.*, Western Australia Fisheries, Queensland Museum, Animal Biosecurity, Tasmania Primary Industry), Canada (Department of Fisheries and Oceans), France (IFREMER), New Zealand (Ministry of Agriculture, Forestry and Fisheries), and the USA (Maryland Department of Natural Resources) and the Office International des Epizooties (OIE) who are providing expert assistance.

K. Publications

Bondad-Reantaso, M.G., McGladdery, S.E., East, I. and Subasinghe, R.P. (eds). 2001. Asia Diagnostic Guide to Aquatic Animal Diseases. *FAO Fisheries Technical Paper* No. 402, Supplement 2. Rome, FAO. 2001. 240 p.

CD-Rom on Health Management for the Responsible Movement of Live Aquatic Animals in Asia.

Arthur, J.R.; Phillips, M.J.; Subasinghe, R.P.; Reantaso, M.B.; MacRae, I.H. (eds.) Primary Aquatic Animal Health Care in Rural, Small-scale, Aquaculture Development. FAO Fisheries Technical Paper. No. 406. Rome, FAO. 2002. 382 p.

L. Important Issues for Discussion during AGM-1

Some important issues for discussion during AGM-1

Asia regional aquatic animal disease reporting system
- Review and revision of disease reports, lists, reporting form, instructions
- Follow up to OIE Regional Commission Recommendations
- Quarterly and annual reports – formats and content

Emerging trans-boundary disease problems

- Spring viremia of carp in US: first time reported in the US in July 2002; implication to Asia
- *Haplosporidium nelsoni* in Canada: first time reported in Canada in October 2002; implication to Asia
- Threat of Koi herpes virus and possibility of listing KHV in the OIE list and included in the Asia-Pacific QAAD
- Threat of Taura Syndrome with the continuous introduction of *P. vannamei* to the region (evaluation of the impact particularly in terms of change in production patterns, economy, disease situation, alleged resistance to WSSV, introduction of TSV, etc.).
- TSV has recently been confirmed in Indonesia by the OIE Reference Laboratory for shrimp diseases.
- *P. vannamei* has reportedly been imported to China, Philippines, Myanmar, India, Thailand, Vietnam, others?. What can we learn from this?
- Emerging diseases of shrimp (bunya virus)

Progress in implementation of the Technical Guidelines

- National strategies and regional actions
- Revision of Technical Guidelines and supporting documents

Regional diagnostic centers

- Regional resource centers for aquatic animal health – review criteria and TOR, fresh survey of Level I, II, III laboratories

Cooperation between veterinary and fisheries authorities (eg New Caledonia meeting?, others)

Aquatic animal disease emergency responses

- Mechanism for emergency assistance/contingency plan (regional level) for future disease emergencies (similar to what has been done for the suspected KHV outbreak in Indonesia)

Annex D. QUARTERLY AQUATIC ANIMAL DISEASE REPORT

Country: _____ **Period: From_____ to _____ 2003**

Item	Disease status [a/] [month]	[month]	[month]	Level of Diagnosis	Epidemiological Comment - Numbers
Diseases prevalent in some parts of the region Finfish diseases					
1. Epizootic haematopoietic necrosis*					
2. Infectious haematopoietic necrosis*					
3. *Oncorhynchus masou* virus disease*					
4. Viral haemorrhagic septicaemia*					
5. Infectious pancreatic necrosis					
6. Viral encephalopathy and retinopathy					
7. Epizootic ulcerative syndrome (EUS)					
8. Bacterial kidney disease					
9. Red sea bream iridoviral disease					
Mollusc diseases					
1. Bonamiosis (*B. exitiosus, B. ostreae, M. roughleyi*)*					
2. Marteiliosis (*Marteilia refringens, M. sydneyi*)*					
3. Mikrocytosis (*Mikrocytos mackini)**					
4. Perkinsosis (*Perkinsus marinus, P. olseni/atlanticus*[4])*					
5. MSX disease (*Haplosporidium nelsoni*)*					
Crustacean diseases					
1. Yellowhead disease (YH virus; gill-associated virus)*					
2. White spot disease*					
3. Taura Syndrome*					
4. Infectious hypodermal and haematopoietic necrosis					
5. Spawner-isolated mortality virus disease					
Diseases presumed exotic to the region, but notifiable to the OIE					
Finfish diseases					
1. Spring viraemia of carp*					
Any other diseases of importance [b/]					
Unknown diseases of serious nature					
1. Koi mass mortality					
2. Akoya oyster disease					

b/ In particular, these include the following diseases:
Finfish: Channel catfish virus disease; Infectious salmon anaemia; Piscirickettsiosis; Epitheliocystis; Gyrodactylosis (*Gyrodactylus salaris*); Enteric septicaemia of catfish; White sturgeon iridoviral disease; Grouper iridoviral disease
Molluscs: Withering syndrome of abalones (*Candidatus* Xenohaliotis californiensis); SSO disease (*Haplosporidium costale*); Marteilioides infection (*Marteilioides chungmuensis*);
Crustaceans: Tetrahedral baculovirosis (*Baculovirus penaei*); Crayfish plague (*Aphanomyces astaci*); Necrotising hepatopancreatitis; Baculoviral midgut gland necrosis

* OIE notifiable diseases

a/ Please use the following symbols:

+	Disease reported or known to be present
+?	Serological evidence and/or isolation of causative agent but no clinical diseases
?	Suspected by reporting officer but presence not confirmed
+( )	Occurrence limited to certain zones
***	No information available
0000	Never reported
-	Not reported (but disease is known to occur)
(year)	Year of last occurrence

Prepared by:

Name: _____

Position: _____

Signature: _____ Date: _____

Endorsed by (OIE delegate): _____

Name: _____

Signature: _____ Date: _____

[4] Although *Perkinsus olseni* and *P. altanticus* are now considered conspecific, they may have different host species in different regions, and countries are encouraged to provide epidemiological comments where either of these agents occur.

Annex E: Terms of Reference of the Advisory Group

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

- Review and evaluate quarterly regional aquatic animal disease reporting;
- Evaluate progress made on implementation of the *Technical Guidelines*;
- Advise in identification and designation of regional aquatic animal health resources, as specialist advisers, Regional Reference Laboratories and Resource Centres;
- Revision of the *Technical Guidelines*, *Manual of Procedures*[5] and *Asia Diagnostic Guide for Aquatic Animal Diseases*[6] as required;
- Develop procedures for advising on dealing with aquatic animal health emergencies;
- Review the TOR as and when required.

[5] FAO/NACA. 2001. Manual of Procedures for the Implementation of the Asia Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals. *FAO Fisheries Technical Paper*, No. 402, Suppl. 1. FAO, Rome. 2001. 106 p.
[6] Bondad-Reantaso, MG, McGladdery SE, East, I and Subasinghe, RP. (Eds.). Asia Diagnostic Guide to Aquatic Animal Diseases. *FAO Fisheries Technical Paper*, No. 402, Suppl. 2. FAO, Rome. 2001. 236 p.