



15th meeting of the Asia Regional Advisory Group on Aquatic Animal Health



The advisory group was established in 2001 to provide advice to member governments on aquatic animal health management. The activities of the group include evaluating disease trends and emerging threats in the region; identifying developments in global aquatic animal disease issues and standards of importance to the region; reviewing the regional aquatic animal disease reporting system and to provide guidance on strategies to improve aquatic animal health. The group is the linchpin of a regional network of experts, research centres and reference laboratories.

The 15th meeting was held from 21-23 November 2016, in Bangkok, Thailand. Members of the group include invited aquatic animal disease experts, representatives of the World Organisation for Animal Health (OIE) and the Food and Agriculture Organization of the United Nations (FAO) and collaborating centres such as the SEAFDEC Aquaculture Department. Dr Melba Reantaso (FAO) was selected as the incoming chair, relieving Dr Kjersti Gravningen (Aquafuture, Norway) who had served as Chair from 2014-2015. Highlights of discussions are summarised below.

Over the past year NACA had completed a project on development of a Code of Practice for the Trans-boundary Movement of Aquatic Organisms in the Lower Mekong Basin, for the Mekong River Commission. The code was developed in consultation with the fisheries line agencies of MRC member countries, with additional input via national surveys and a regional consultation workshop. The final draft of the code is available for download from the NACA website at: <http://enaca.org/?id=38>.

FAO had initiated and progressed some technical cooperation projects on aquatic animal health. These included:

- Development of preventative aquatic animal health protection plan and enhancing emergency response capacities to shrimp disease outbreaks in Indonesia (new).
- Strengthening aquaculture biosecurity capacity of Malaysia's Department of Fisheries (new).
- Strengthening biosecurity capacity of Palau (new).

- Development of a national strategy for aquatic animal health, in the Federated States of Micronesia (new).
- Acute hepatopancreatic necrosis disease (ongoing), involving India, Iran, Philippines and Sri Lanka.
- Infectious myonecrosis virus (ongoing), involving China, Indonesia and Thailand.

FAO had also initiated several donor funded projects including on aquaculture certification (funded by the EU), antimicrobial resistance (funded by USAID) and on preparation of the Fiji National Aquatic Biosecurity and Aquatic Animal Health Strategy (funded by JICA).

The Aquaculture Department of the Southeast Asian Fisheries Development Center (SEAFDEC AQD) had conducted twelve in-house studies in 2016. These were aimed to i) investigate the efficacy of probiotics and rationalise use of diagnostics, ii) to promote the wider use of conventional and new diagnostic methodologies, iii) find safe and effective alternatives to use of drugs and chemicals in aquaculture and iv)

to increase the capacity of fish health specialists in fish disease diagnosis using gross clinical examination, bacteriology, mycology, parasitology and histopathology techniques.

The newly formed Aquatic Animal Health Research and Development Division of the Thai Department of Fisheries had been established from 1 October 2016 from the former Inland Aquatic Animal Health Research Institute and Coastal Aquatic Animal Health Research Institute. The new division would assume responsibility for approval of fish farm standards for the import and export of live aquatic animals, surveillance and monitoring programmes for OIE-listed diseases in wild and farmed populations, issuance of health certificates and provision of diagnostic services for farmers.

A special session was held on addressing the use of anti-microbial substances in aquaculture and the development of anti-microbial resistance. This is an issue of global concern for both human and animal health, and it had been addressed by a resolution at FAO's Thirty-ninth Conference in June 2015. FAO had developed an Action Plan on Antimicrobial Resistance, which would address awareness, develop-

ment of capacity for surveillance and monitoring of resistance, governance related to prudent use of antimicrobial substances in food and agriculture and promote good practices. The plan would support the World Health Organization-led Global Action Plan on Antimicrobial Resistance, highlighting the necessity of adopting a "One Health" approach involving cooperation between human and veterinary health authorities, the food and agriculture sectors and consumers.

A regional project funded by USAID and coordinated by FAO had been commissioned Addressing Antimicrobial Usage in Asia's Livestock, Aquaculture and Crop Production Systems. The project aimed to promote a more prudent use of antimicrobial substances in livestock industries and the crop production sector to minimise the development and spread of resistance. The project will document antimicrobial usage and resistance in livestock industries including aquaculture, improve awareness of impacts and best practices, establish a platform for the promotion of antimicrobial stewardship in Asia and strengthen capacity in surveillance and monitoring.

The meeting reviewed in detail the status of aquatic animal disease in the region. Issues included:

- Developments in acute hepatopancreatic necrosis disease (AHPND) and hepatopancreatic microsporidiosis (HPM) of shrimp, caused by *Enterocytozoon hepatopenaei*.
- Reports of tilapia lake virus (now confirmed – Ed.) in Thailand and *Streptococcus* outbreaks affecting tilapia.
- A detailed analysis of amphibian and molluscan diseases in the region, including the impact of chytrid fungus, which had recently been found could be hosted by crayfish (*Procambarus* spp.) which could transmit the pathogen to amphibians.

For full details of the technical sessions please download the report of the meeting is available from the NACA website at: <http://enaca.org/?id=619>.

Consultation on responsible production and use of feed

FAO, NACA and the Thai Department of Fisheries convened a Regional Consultation Responsible Production and Use of Feed and Feed Ingredients for Sustainable Growth of Aquaculture in Asia-Pacific in Bangkok, 7-9 March 2017.

The objective of the consultation was to review the current status of aquaculture feed production and use, demand and supply, sourcing of ingredients, government policies and institutional support, ongoing progress and development gaps. The consultation also aimed to put forward regional strategies and a plan of action to promote responsible utilisation of feed and feed ingredients through sharing of available knowledge, technological innovations and scaling up successful practices and further research and technology development.

Aquaculture has been one of the fastest growing food production sectors over the last thirty years, globally, with annual production increasing an average of 8 percent per year. Currently, Asian aquaculture supplies some 60 percent of global food fish needs while contributing significantly to the livelihoods for rural and urban populations. As the industry has intensified it has become increasingly dependent on the use of artificial feeds (as opposed to natural productivity) to increase yield. As a result, the proportion of aquaculture production dependent on artificial feeding has increased by 97.9 percent over the last ten years alone.

The rapid growth of "fed" production systems has resulted in a drastic increase in demand for commercial feeds. As a result, the aquaculture feed industry has also grown rapidly in the past two decades, with total production of industrial compound feed increasing

from 7.6 million tonnes in 1995 to 40.2 million tonnes in 2010. The increased use of feed has greatly contributed to production efficiency and quality of products, and enabled farmers to better meet market requirements.

On the other hand, rapid increase in use of feed in aquaculture has also caused a number of issues which may threaten the sustainable growth of the industry. The major issues include the following:

- Increased feed cost has caused significant reduction of profit margin in production of many important aquaculture commodities. Feed cost often accounts for 70 percent for commodities that entirely depend on artificial feed. This problem is largely caused by high cost of feed that is often non-locally produced and utilised with poor efficiency. This problem has been exacerbated by the steady decline in the market price

of aquaculture products, which are in predicted to remain in decline until 2020.

- Asian feed production has become overly dependent on externally sourced feed ingredients, and this has resulted in significant problem in supply and costs.
- In order to sustain capture fisheries and maintain marine ecosystem functions and services, there has been increasing effort to combat IUU fishing globally. It is believed considerable proportion of products from IUU fishing is used for aquaculture purpose in the region. Responsible

sourcing of feed ingredients free from IUU fishing is likely to become a certification requirement in international trade of aquaculture products.

The main issues discussed in the consultation were:

- Development and use of alternatives of fishmeal and other high cost feed ingredients in aquaculture.
- Traceability of aquaculture products in relation to feed and feed ingredients.

- Promote cost-effective aquaculture feed made of locally available feed ingredients.

- Innovation in aquaculture farming and feeding practices for reduced feed costs and environment impacts at farm level.

Audio recordings of the technical presentations made at the workshop are in preparation, and will shortly be available for download or online access from the NACA website, www.enaca.org. The technical proceedings are in preparation and will be published in coming months.

Giant Prawn 2017

The fourth major international event on giant freshwater prawns (*Macrobrachium* spp.) was organised by the Asian Institute of Technology from 20-24 March 2007. The conference was co-hosted by the Thai Department of Fisheries and the Can Tho University, Vietnam. NACA was a sponsor of the event.

Speakers included Peter Mather (Australia), Md Ayaz Hasan Chisty (Bangladesh), Fatima Ferdouse Razeghpanah (Bangladesh), Patricia Moraes Valenti (Brazil), Wagner Cotroni Valenti (Brazil), Yang Guoliang (China), Zhang Tai-Zhuo (China), C. Mohanakumaran Nair (India), Endhay Kusnendar (Indonesia), Amir Sagi (Israel), Assaf Shechter (Hong Kong), Ilan Karplus (Israel), Mohd Fariduddin Othman (Malaysia), Nyan Taw and Soe Tun (Myanmar), Timothy Pickering (Pacific Islands), Nikolina Kovatcheva (Russia), Rohana Subasinghe (Sri Lanka), Philip T. Cheng (Taiwan, tbc), Amararatne Yakupitiyage (Thailand), Donghuo Jiang (Thailand), Rapeepun Vanichviriyakit (Thailand), Uthiarat Na-Nakorn (Thailand), Natthapong Wannapat (Thailand), Nitikorn Piwpong (Thailand), William Daniels (USA), James Tidwell (USA), Nguyen Thanh Vu (Vietnam), Patrick Sorgeloos (Belgium) and Tran Ngoc Hai (Vietnam).

The conference was preceded by an optional three-day intensive Workshop on Advances in Prawn Hatchery Management. A special session on gender issues was included.

The conference, organised by Salin Krishna (AIT) and Michael New, built on a series of highly successful events that trace back to the very beginnings of the industry. The first conference, Giant Prawn 1980 brought together all those involved in freshwater prawn research and farming for the first time and set many priorities for future research and development. A comprehensive volume of proceedings that summarised the latest research on *Macrobrachium* at that time was published by Elsevier.

In 2003 the second major *Macrobrachium* conference (Freshwater Prawn 2003) was organised by C. Mohanakumaran Nair at the College of Fisheries, Kerala Agricultural University, Kochi, the southern Indian city in the State of Kerala. Michael New presented the keynote address in this Conference. This meeting was attended by nearly 500 delegates from all over the world and was a major boost for freshwater prawn farming development in India. Selected papers from this conference were published as a special edition of the international journal, *Aquaculture Research*. Full proceedings of the meeting were also published by Allied Publishers, New Delhi, India.

In 2011 Michael collaborated with Kerala Agricultural University in India and the World Aquaculture Society to organise the Giant Prawn 2011, the second conference in the series, which was also held in Kochi. This event was held in conjunction with Asian Pacific Aquaculture 2011, the annual conference of the World Aquaculture

Society - Asia Pacific Chapter. Selected papers from this conference were also published as a special volume of the *Journal Aquaculture Research*.

The technical sessions of Giant Prawn 2017 were excellent, wide-ranging and thoroughly enjoyed by all; it is evident that *Macrobrachium* farming has come a long way since its humble beginnings and has now reached a considerable level of sophistication. Unfortunately Michael New could not attend the event due to unforeseen circumstances at the last minute, but we are assured he was in there in spirit!

Selected papers presented at GIANT PRAWN 2017 will be published in a special edition of the *Journal of the World Aquaculture Society*. The proceedings of the conference will also be published in due course.

New NACA website preview

As foreshadowed, a new NACA website has been in development for some time and it's finally just about ready to put into production. Most of the content from the old site has been transferred across, subject indexed and in most cases edited or re-written from scratch. For the moment, you can preview the new site at <http://www.enaca.org/tuskfish/>.

Keeping up to date is far easier on the new site as it has been restructured into a single newsfeed. "Sections" have been done away with and all content, regardless of type, now appears on the home page. You need look no further to see what has been going on.

All content has also been subject indexed. By selecting a tag from a drop down list on the home page you can filter out all content on the site that relevant to a particular subject –

everything that we have ever published. If you have specific needs, an improved search engine is also available.

Content has also been organised into collections. If you access a single magazine article, for example, you will also be offered a reference to the full issue. If you access the full magazine you will also be offered a reference to the collection of all magazines, and so on. In this way you will be guided towards related content, if you want it.

The new site offers improved visibility into the network with direct links to our work programmes, participating research centres, the Technical Advisory Committee and representatives of member governments. In the coming months, we will also launch a database of scientific expertise available in the network.

The site is also mobile friendly, and will adjust itself to display easily on any device you care to use whether it be a phone, tablet, lap top or desktop display.

The website has been developed using a purpose-built content management system called Tuskfish, developed in house. Tuskfish has been specifically designed to be lightweight, easily maintained and robust. Use of external libraries has been avoided as far as possible and it does not require a separate database server, making use of SQLite. We have some work to do to polish the system for use by others, but in the coming months a public release will be issued along with a manual, to assist others who may find it useful for developing their own sites.

Reducing health risks from anti-microbial resistance in aquaculture



Participants in the workshop held at Nitte University, Mangalore, India, 10-12 April 2017.

The development of resistant strains of disease-causing microorganisms is an important health issue of global concern. When microbes such as bacteria, fungi, parasites, and viruses become resistant to antimicrobial substances, the diseases they may cause become more difficult or impossible to treat. Resistance is developed by the indiscriminate use of antimicrobials and places human health at risk.

The discovery of antibiotics revolutionised medicine, creating a belief that a 'magic bullet' had finally been found to control bacterial diseases. Antibiotics, a class of antimicrobial agents, kill or inhibit the growth of bacteria, but they have no significant effect on other types of microorganisms such as viruses.

"Bacteria, the oldest life form on this planet have survived 4 billion years due to their remarkable ability to adapt to changes in their environment... any 'resistance' gene present in any member of any species in the microbiome has the potential to transfer to any other species" says Dr Peter Smith of Ireland.

National delegates representing China, Malaysia, the Philippines and Viet Nam; fish health experts from India, Ireland, the Netherlands, the Philippines, Viet Nam and the United States; and representatives of the Government of India, Nitte University, FAO, NACA and the OIE are participating at an international workshop to address antimicrobial use (AMU) and AMR in aquaculture, convened by FAO and Nitte University, in Mangalore, India, 10-12 April.

Dr J.K. Jena, Deputy Director General of the Indian Council of Agricultural Research, highlighted the importance of aquaculture and the need to address issues related to diseases and the irresponsible use of veterinary drugs. "Strengthening laboratory networks and increasing AMU/AMR awareness as well as research on safety, efficacy and withdrawal period, resistance mode and process of transfer of resistance for different antimicrobials are needed", he said.

In his Presidential Address, the Vice-Chancellor of Nitte University, Professor Ramananda Shetty, urged interdisciplinary studies to be undertaken as all sectors have a responsibility towards this burning problem. He emphasised the need for regulation of antibiotic

sales, responsible implementation of treatment regimens by the doctors and diligent attention to medical advice by the patients.

The complexity of the issue calls for a "One Health" platform involving both human medicine and the agriculture sector in an interdisciplinary and integrated approach to tackle what is very much a common problem. This approach combined with concerted actions at the national level that span policy and regulatory spheres, preventive actions and engagement with producers and other food value chain stakeholders are needed to prevent and reduce AMR.

Detailed guidance was provided on developing the aquaculture component of the National Action Plans on AMR covering the four focus areas of FAO's Action Plan on AMR: awareness, governance, evidence (usage and surveillance) and practice (prudent use). National delegates will further develop the action plans, disseminate the scientific information delivered during the workshop and create awareness of AMR issues among national stakeholders.

NACA has recently commenced a project, funded by FAO, to investigate document and characterize antimicrobial use in the aquaculture sector including current and proposed practices in aquaculture and aquatic disease status in Asia. The project will operate on freshwater fish aquaculture in Myanmar, shrimp aquaculture in Thailand and *Pangasius* aquaculture in Vietnam.



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NACA is a network composed of
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Asia-Pacific Region.



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