



## First training course on culture-based fisheries held in Nha Trang, Vietnam



Participants and trainers, Nha Trang University, Vietnam.

There are many initiatives underway which are designed to increase food supply, employment and income opportunities in developing countries, most of which require considerable capital inputs. Often overlooked, are the opportunities to produce more food from the natural productivity of local ecosystems. Culture-based fisheries (CBF) are one example of a relatively simple and low cost technology that can deliver nutritional and economic benefits to rural communities, which often have few livelihood options.

The first ever Regional Training Course on Culture-based Fisheries in Inland Waters was held at Nha Trang University from 30 October to 8 November. The objective of the course was to provide participants with the skills to assist local communities to plan and manage culture-based fisheries. The course included training on:

- Current practices and relevance.
- Evaluation of water bodies for CBF.
- Establishing a management system, legal and policy framework.
- Community consultation.
- Gender mainstreaming.
- Entrepreneurship development.
- Risks and risk management.
- Stocking practices & stock assessment.

- Harvesting and marketing strategies.

The course included practical sessions and simulations on many of these aspects, and participants also provided briefings on culture-based fisheries practices in their own countries.

Video recordings of the lectures will be available for viewing and download from the NACA website in due course.

We had an unusually broad range of participants, even for a NACA event, with 41 trainees from throughout Africa (Liberia, Namibia, Nigeria, Uganda, Zambia), Asia (Bangladesh, Cambodia, China, India, Indonesia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand and Vietnam) and Australia, including many local and international students from Nha Trang University. Questions, feedback and input from the participants was exceptional, and our expert speakers certainly learned a thing or two from their students!

An unexpected feature of the course was a tropical storm that, having done substantial damage over the Philippines, intensified to a category 1 typhoon before making landfall in Nha Trang. The city was shut down to prepare for the storm, which arrived in the early hours of 5 November and we spent most of the day waiting for the winds to abate. Sadly, there were quite a few casualties for which NACA wishes to offer condolences. However, despite widespread damage and power outages the course resumed the following day and we were able to complete all planned sessions thanks to Dr Hung and his team.

The course was made possible thanks to the generous financial support of the **United Nations University Fisheries Training Programme** (UNU-FTP), which co-organised the course in partnership with NACA and Nha Trang University (NTU).

NACA wishes to express our sincere thanks to the United Nations University Fisheries Training Programme for its vision and exceptional support in making the course possible and for supporting the participation of trainees from throughout Asia and Africa.

NACA would also like to thank the Fisheries Research and Development Corporation of Australia for supporting the participation of two indigenous trainees: Mr Jerry Stephen, Member for Ugur and the Fisheries Portfolio of the Torres Strait Regional Authority (TSRA); and Mr Charles David, Senior Project Officer of TSRA.

We would also like to express our sincere gratitude to Prof. Pham Quoc Hung, his students, the staff of Nha Trang University and the Vietnamese Government. Organising an international training course is not easy at the best of times, but to do so while recovering from a public emergency is a truly exceptional effort that we will not forget. Thank you!

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## GAF7: Gender in Aquaculture and Fisheries – Expanding the Horizons



The 7th Global Conference on Gender in Aquaculture and Fisheries (GAF7) will be held from 18-20 October 2018, at the Asian Institute of Technology, Pathum Thani, Thailand.

GAF 2018 invites participants to learn about and share the latest trends and knowledge on gender in aquaculture and fisheries to become more aware of opportunities and approaches to achieving greater gender equality.

The journey of the GAF network over 20 years has been slow but steady and has partnered with the Asian Fisheries Society's Triennial Forum throughout its evolution. Today the GAF is a formal Section of the Society and is expanding its horizons, starting with its first independent event.

Through the long journey bringing gender to the fore and including it in the general discourse in fisheries, new insights have been gained. However, challenges continue – some as old as the debate itself and some relatively new and emerging in the face of sector dynamics. Real change can come only with new commitment to equality principles, strong policies translated into sensible and implementable programmes and



long term commitment. While a lot of lip service is given to the issues, very little translates into funding for work on the ground. Gender is generally a tail-end component in projects. However, several examples of gender inclusion right from inception are beginning to emerge, and this is a welcome change.

GAF conferences endeavour to explore the expanding horizons of gender dimensions in aquaculture and fisheries, while highlighting the need for expanding gender inclusiveness and equity.

The GAF7 website and a conference brochure are now available. Please submit your abstracts, session and training workshop proposals by 31 March:

<http://www.gafconference.org/>

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## **3rd International Symposium on Aquaculture and Fisheries Education, 16-18 May 2018, India**

The 3rd International Symposium on Aquaculture and Fisheries Education (ISAFE3), a triennial event of the Asian Fisheries Society (AFS), is being organised by the ICAR-Central Institute of Fisheries Education (CIFE), Mumbai, India in collaboration with the Indian Fisheries Association (IFA) and Asian Fisheries Society Indian Branch (AFSIB) at CIFE, Mumbai, India during 16-18 May, 2018. The theme of ISAFE3 is "Fisheries Education for Sustainable Blue Economy".

The AFS, a non-profit Scientific Society, has been promoting networking and co-operation in fisheries and aquaculture sector for higher production, research and development in Asia since 1984. ICAR-CIFE is the only National Fisheries University of India catering to the higher education needs of this sector and producing quality human resources, including researchers, academicians, managers, entrepreneurs and policy makers, since 1961. The symposium is supported by several national and international educational and research institutions.

World aquaculture has witnessed tremendous growth since last 50 years and is also expected to be a potential sector in future for providing quality protein to the ever-increasing human population. Aquaculture in freshwater and marine environments provides about 45% of the total fish production, of which about 60% comes from freshwater aquaculture. It is expected that the dependence on aquaculture sector would grow further in years to come. Besides increasing production

and productivity, there have been several other goals posed before the sector, which include ensuring quality and safe produce, environmental sustainability, increasing export, and above all increasing farmers' income. In this endeavour, it is necessary that all the stakeholders associated with the sector are well-informed and sensitised with the latest available knowledge and wisdom. Quality human resource development through formal and informal education, therefore, is of paramount importance for taking the fisheries and aquaculture sector to meet the challenges posed from time to time.

The present symposium will discuss issues highlighted during ISAFE2 at Shanghai Ocean University, Shanghai, China and on-going issues pertaining to the fisheries education in Asia-Pacific region. It is expected that harmonisation of fisheries education across the Asia-Pacific region will enable easy mobility of researchers and students leading to wider job opportunities. This will make the sector attractive for young talent, promote technology and entrepreneurship development. The deliberations during the symposium will provide a direction to fisheries education for "Sustainable Blue Economy".

To register for the conference, view the programme or investigate sponsorship opportunities, please visit the conference website at:

<http://isafe3-cife.edu.in/index.asp>

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## **International Fishing Industry Safety and Health Conference, 10-13 June, Canada**

The National Institute for Occupational Safety and Health in collaboration with the SafetyNet Centre for Occupational Health and Safety Research (Memorial University) and the Food and Agriculture Organization of the United Nations (FAO), will be hosting the 5th International Fishing Industry Safety and Health Conference (IFISH 5) in St. John's, Newfoundland and Labrador, Canada from June 10-13, 2018.

The IFISH 5 Scientific Committee is now inviting participants in developing countries representing Africa, Asia, Pacific and Latin America to submit abstracts on their research and/or experiences with occupational safety in small-scale fisheries, aquaculture, and seafood processing. Travel and

other conference-related expenses of eligible applicants with accepted abstracts will be funded from a dedicated fund established by FAO and administered by Memorial University.

The IFISH 5 conference will offer researchers, safety and health professionals, instructors, workers and industry experts, ergonomists, governmental and regulatory representatives, and other professionals the opportunity to attend workshops, presentations, and poster sessions that feature new occupational health and safety research findings and innovations. Keynote speakers will provide an overview of advances in the field and priorities for the future, and they will highlight success stories in research, training, and industry collaboration. In the evenings and between scheduled

presentations and workshops, attendees will have a chance to network with organisations and individuals attending the conference.

Key themes for IFISH5 will include topics on safety in commercial fishing as well as occupational health and safety issues related to aquaculture and seafood processing. We anticipate that the agenda will include occupational safety and health studies highlighting collaboration with industry, evaluations of interventions, improvements to protective gear such as personal flotation devices, fisheries management and safety relationships, and the economic impacts of occupational safety and health.

## Submission of Abstracts

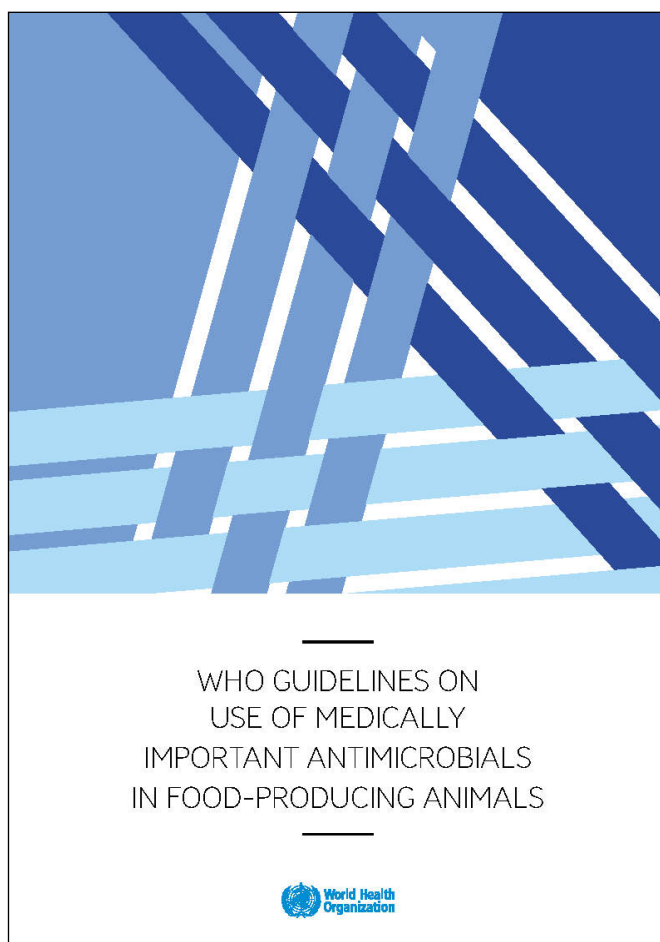
Individuals are invited to submit abstracts for oral presentations and poster formats.

Abstracts can be submitted electronically until 31 January, 2018. Questions about submissions may be addressed by sending an e-mail to [ifish@mun.ca](mailto:ifish@mun.ca).

To register, view the programme or sponsorship opportunities please visit the conference website at:

<https://ifishconference.ca/>

## WHO: Stop using antibiotics in healthy animals to prevent the spread of antibiotic resistance



The World Health Organization (WHO) is recommending that farmers and the food industry stop using antibiotics routinely to promote growth and prevent disease in healthy animals.

The new WHO recommendations aim to help preserve the effectiveness of antibiotics that are important for human medicine by reducing their unnecessary use in animals. In some countries, approximately 80% of total consumption of medically important antibiotics is in the animal sector, largely for growth promotion in healthy animals.

Over-use and misuse of antibiotics in animals and humans is contributing to the rising threat of antibiotic resistance. Some types of bacteria that cause serious infections in humans have already developed resistance to most or all of the available treatments, and there are very few promising options in the research pipeline.

“A lack of effective antibiotics is as serious a security threat as a sudden and deadly disease outbreak,” says Dr Tedros Adhanom Ghebreyesus, Director-General of WHO. “Strong, sustained action across all sectors is vital if we are to turn back the tide of antimicrobial resistance and keep the world safe.”

A systematic review published in *The Lancet Planetary Health* found that interventions that restrict antibiotic use in food-producing animals reduced antibiotic-resistant bacteria in these animals by up to 39%. This research directly informed the development of WHO’s new guidelines.

WHO strongly recommends an overall reduction in the use of all classes of medically important antibiotics in food-producing animals, including complete restriction of these antibiotics for growth promotion and disease prevention without diagnosis. Healthy animals should only receive antibiotics to prevent disease if it has been diagnosed in other animals in the same flock, herd, or fish population.

Where possible, sick animals should be tested to determine the most effective and prudent antibiotic to treat their specific infection. Antibiotics used in animals should be selected from those WHO has listed as being “least important” to human health, and not from those classified as “highest priority critically important”. These antibiotics are often the last line, or one of limited treatments, available to treat serious bacterial infections in humans.

“Scientific evidence demonstrates that overuse of antibiotics in animals can contribute to the emergence of antibiotic resistance,” says Dr Kazuaki Miyagishima, Director of the Department of Food Safety and Zoonoses at WHO. “The volume of antibiotics used in animals is continuing to increase worldwide, driven by a growing demand for foods of animal origin, often produced through intensive animal husbandry.”

Many countries have already taken action to reduce the use of antibiotics in food-producing animals. For example, since 2006, the European Union has banned the use of antibiotics for growth promotion. Consumers are also driving the demand for meat raised without routine use of antibiotics, with some major food chains adopting “antibiotic-free” policies for their meat supplies.

Alternative options to using antibiotics for disease prevention in animals include improving hygiene, better use of vaccination, and changes in animal housing and husbandry practices.

WHO's Guidelines on use of medically important antimicrobials in food-producing animals build on decades of expert reports and evaluations of the role of agricultural antibiotic use in the increasing threat of antibiotic resistance. They contribute directly to the aims of the Global action plan on antimicrobial resistance adopted by the World Health Assembly in 2015 and the Declaration of the High-Level Meeting of the United Nations General Assembly on Antimicrobial Resistance, adopted in 2016.

To download the guidelines please visit:

<https://enaca.org/?id=932>

## Register for the 8th International Symposium on Aquatic Animal Health

Organisers of the 8th International Symposium on Aquatic Animal Health (ISAAH) have opened the conference registration and put out a call seeking abstract submissions for oral and poster presentations. The 2018 symposium marks the thirtieth anniversary of the ISAAH, which will be held September 2 – 6, 2018 in Prince Edward Island, Canada. The ISAAH meets every four years and typically attracts 300–400 fish health professionals from around the world.

Delegates attending ISAAH 2018 will have the opportunity to join other aquatic health professionals from around the world for scientific workshops, business meetings, keynote

and research presentations. The theme of this year's symposium is “Integrating Biotechnology in the Advancement of Aquatic Animal Health”.

Early Bird registration rates are available now, and, as there are limited spaces for registered delegates to attend the pre-conference scientific workshops, organisers encourage participants to sign up as soon as possible.

<https://isaah2018.com/>

## Quarterly Aquatic Animal Disease Report, July-September 2017

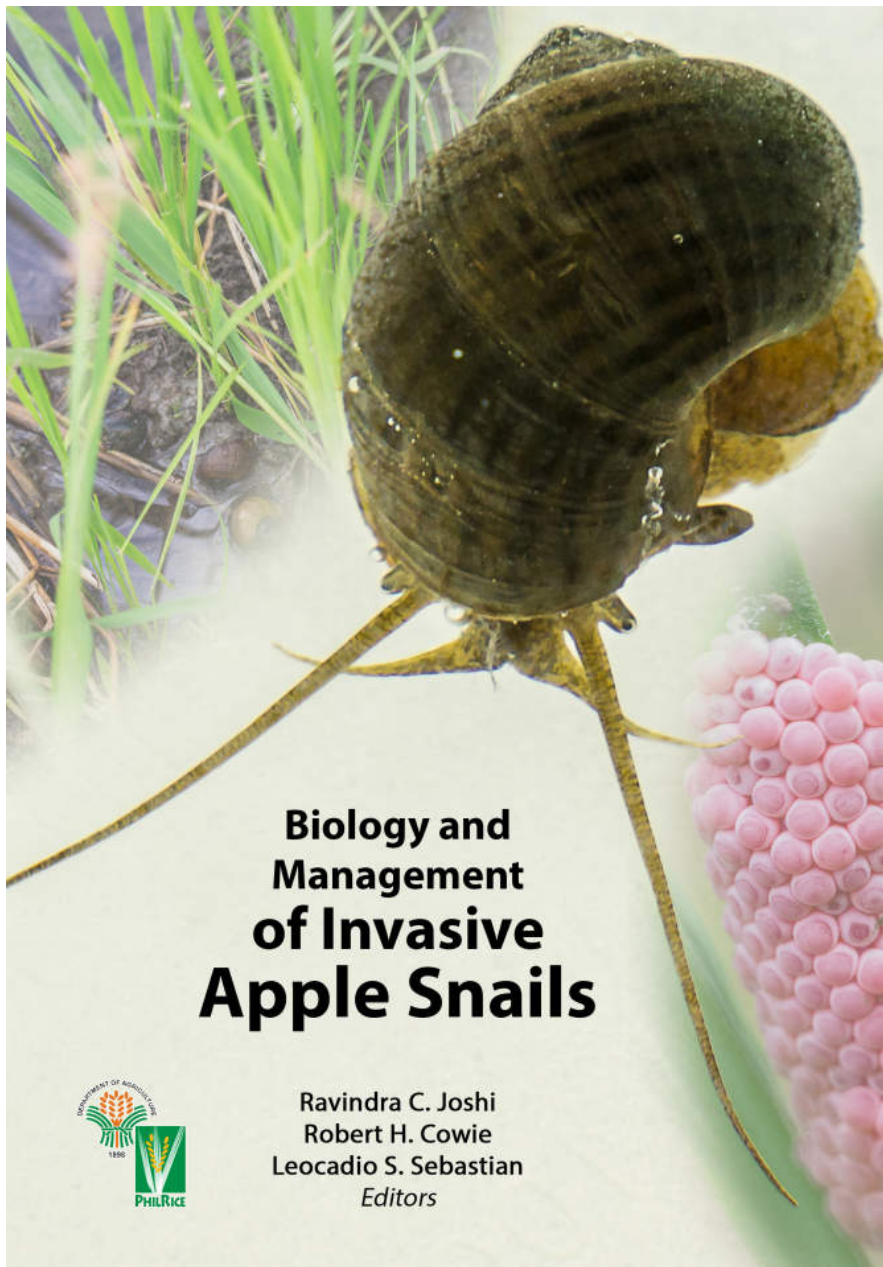
The 75th edition of the Quarterly Aquatic Animal Disease Report contains information from 14 governments. The foreword discusses the 10th Symposium on Disease in Asian Aquaculture, and the 11th Technical Group Meeting and election of a new Executive Committee for the Fish Health Society (2018-2020). To download the report please visit:

<https://enaca.org/?id=938>

## Free download: Biology and Management of Invasive Apple Snails

Apple snails, family Ampullariidae, are so called because many species, notably in the genera *Pomacea* and *Pila*, bear large, round shells. *Pomacea* species are native to South and Central America, parts of the Caribbean, and the southeastern USA, while *Pila* species are native to Africa and Asia. In the year 2000, one species of apple snail, *Pomacea canaliculata*, was listed among the world's 100 most invasive species, largely because it had become a major pest of wetland rice in much of Southeast Asia. However this listing was published at a time when there was still confusion regarding the true identity of the invasive species in Asia; in fact two species are involved, not only *Pomacea*





# Biology and Management of Invasive Apple Snails



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*canaliculata* but also *Pomacea maculata*. *Pomacea canaliculata* is native to Argentina and Uruguay, while *P. maculata* is more widely distributed from the La Plata region of Argentina to the Amazon basin of Brasil, including Uruguay and Paraguay, and possibly Bolivia, Ecuador and Peru.

These two species have commonly been referred to as golden apple snails, or GAS, often without clarifying specifically which species, perhaps both, was involved, or indeed simply assuming it to be *Pomacea canaliculata*. For clarity, this book avoids this ambiguous common name designation, and hopes that others will move forward with the correct species designation for the

apple snails with which they work. Only in this way can research results be truly comparative and useful.

One or both of these species of *Pomacea* have become widely established not only in many parts of Southeast Asia but also in Japan, Taiwan Province of China, Guam, Hawaii, Papua New Guinea, the Dominican Republic, Spain and parts of the mainland USA. *Pomacea diffusa* has been introduced to Sri Lanka, and *Pomacea scalaris*, as well as *Pomacea canaliculata*, has been introduced to Taiwan Province of China. An additional unidentified species has been introduced to the southeastern USA. Most of these introductions are the result of escape or release from

aquaculture operations, or happen through the pet trade. In the Philippines alone, estimates of economic losses associated with apple snails ranged from US\$425 million to US\$1.2 billion in 1990.

*Pomacea* species are also important transmitters of *Angiostrongylus cantonensis*, the rat lungworm, which has had major human health consequences, most notably in southern China, where the snails are eaten raw as a delicacy.

There is therefore a clear need to control the proliferation and spread of these pests in ecologically and economically sustainable ways. This requires research on control and management measures, but also a clear understanding of the identities and basic biology of the species involved.

In 2006, a previous book, *Global Advances in the Ecology and Management of Golden Apple Snails* (edited by R. C. Joshi and L. S. Sebastian), documented progress in this arena. However, in the decade since publication of that landmark book, research on apple snails has burgeoned and the identities of the species involved has been clarified.

The present book reinterprets old problems and presents much of this new knowledge, with the lessons learned and knowledge available in one country or region informing management approaches more widely.

We hope that this new book will not only bring together this new knowledge in a single accessible place but also highlight the need to prevent the further spread of these invasive species, especially in the context of a changing climate.

The book is available for free download from:

<https://enaca.org/?id=931>



## Emergency Regional Consultation for Prevention and Management of Tilapia Lake Virus in the Asia-Pacific



Since 2009, tilapia aquaculture has been threatened by mass die-offs in Israel and Ecuador, which have been caused by a novel Orthomyxo-like (RNA) virus named Tilapia lake virus (TiLV). This has been reported as a newly emerging virus that causes syncytial hepatitis of tilapia (SHT). As of 2016, countries affected by this emerging disease included Israel, Ecuador, Colombia and Egypt. In 2017, Thailand and Taiwan Province of China confirmed the presence of the virus among farmed tilapia, which has caused mass mortalities since 2015. This is the first report of the disease in Asia-Pacific region. NACA released a Disease Advisory as part of the awareness programme in the region. The advisory was widely disseminated to all NACA member governments, partner institutes and other interested parties in the region and beyond.

As tilapia is a highly important aquaculture species in the region, it is highly important to contain the disease and prevent its spread to other major tilapia-producing countries such as China, the Philippines, Indonesia, Lao PDR and Bangladesh. Tilapia-producing countries in the region should be able to harmonise efforts in preventing the entry of the pathogen through improved quarantine and biosecurity measures. As such, the Emergency Regional Consultation was held to discuss and plan actions on the overall prevention and management of this disease. The consultation focused on the following:

- Implementation of proper quarantine and biosecurity measures, as well as responsible movement of live tilapias within the country and across the region.
- Strengthening of diagnostic capacities as well as active surveillance for the disease (to detect presence or absence of the virus).
- Formulation of recommendations on the sanitary measures for disease prevention
- Emergency preparedness for countries not yet affected by the disease highly considering the capacity of each country. As tilapia is a common food for many people in the region, especially among rural communities, emergency preparedness will make a big impact in the management of this emerging threat for tilapia aquaculture.
- Important diseases of cultured tilapia (Prof. Jianguo He, Sun Yat-Sen University).
- The Role of Trade in Spread of Transboundary Aquatic Animal Diseases (Dr Eduardo Leafio, NACA).
- Overview of TiLV (Dr Mona Jansen; Norwegian Veterinary Institute).
- Update on TiLV research in Thailand and potential strategies for control (Dr Ha Dong; KMUTT, Thailand).
- Virus characterisation, clinical presentation and pathology of TiLV (Dr Win Surachetpong, KU, Thailand).
- Import Risk Assessment: Role in prevention of transboundary aquatic animal diseases (Dr Hong Liu; AQSIQ, China) .
- Biosecurity: Role in aquatic animal disease prevention and control (Dr Jie Huang; YSFRI, China).

The Consultation was organised by NACA in collaboration with the National Fisheries Technology Extension Center (NFTEC), Ministry of Agriculture (MOA) and Sun Yat-Sen University, People's Republic of China. It was held at Sun Yat-Sen Kaifeng Hotel, Guangzhou, China on 27-28 September 2017, and was attended by 45 foreign and local participants. The following topics were presented and discussed:

- Tilapia aquaculture in the Asia-Pacific Region: Status and Trends (Dr Derun Yuan, NACA).

Country representatives then presented "Tilapia Health Management with Focus on Status of and National Action Plan on TiLV". Countries represented were China (Dr Li Qing), Egypt (Dr Shimaa Elsayed Mohamed Ali), India (Dr Pravata Pradhan), Indonesia (Ms. Ratna Amalia Kurniasih), Malaysia (Dr Azila Binti Abdullah), Myanmar (Dr Kay Lwin Tun), Philippines (Dr Sonia Somga), Thailand (Ms. Jaree Polchana) and Vietnam (Dr Pham Hong Quan). A panel discussion was held and discussed the following issues:

- Formulation of regional plan for prevention and control of TILV.
- Research gaps and priorities.
- Surveillance and reporting.
- Listing in OIE.
- Way forward.

Panelists include representatives from regional and international organisations as well as key institutes in China including: Dr Hong Liu (AQSIQ), Prof. Jianguo He (SYSU), Dr Yan Liang (NFTEC), Prof. Hong Yang (FFRC), Dr Stian Johnsen (OIE), Dr Shimaa Ali (WorldFish), Dr Rolando Pakingking, Jr. (SEAFDEC AQD), and Dr Eduardo Leaño (NACA). The proceedings of the consultation are still under preparation and will be available on the NACA website once published.

## Antimicrobial use in the aquaculture sector

NACA has recently completed two FAO funded projects on antimicrobial usage in the aquaculture sector. Antimicrobial resistance (AMR) poses a fundamental threat to human and animal health, development and security. It occurs when pathogens undergo adaptive evolutionary changes that enable them to withstand antimicrobial substances.

Every use of antimicrobial agents in food production creates opportunities for the development of AMR, and this is more apparent when antimicrobials are overused or misused. The consequences of the development of resistance to antimicrobial agents are potentially severe, with a real risk of losing treatment options which could jeopardise not only human and animal health, but also global food safety and food security. In aquaculture the use of antimicrobials has historically been practiced in response to many devastating disease outbreaks, either as a prophylaxis for disease prevention or as a treatment when disease occurs.

The projects were *Documentation and characterisation of antimicrobial use in the aquaculture sector, including current and proposed practices in aquaculture and aquatic disease status in Asia*; and *Review and comparative study of the antimicrobial usage and practices in the aquaculture sector on selected aquaculture species in Indonesia, Myanmar, Thailand and Vietnam, and the application plan of the methodology for use by other countries in Asia*. The projects largely ran throughout 2017 with some activities scheduled for early 2018.

In most intensive aquaculture production systems AMR can develop in the culture water or the fish gut bacteria as a result of antimicrobial therapy or contamination of the aquatic environment. However, the extent and persistence of antimicrobial residues in aquatic systems is unknown and current evidence is conflicting. Water is an important vehicle for the spread of both AMR and resistance determinants. Minimising the emergence and spread of AMR requires coordinated, focused and multi-national effort.

These projects were undertaken to assess the current status of AMU in selected aquaculture species in Indonesia (groupers) Myanmar (freshwater fish), Thailand (shrimp) and Vietnam (catfish). The projects accomplished the following activities:

- A review of current aquaculture practices for major aquaculture species in selected countries.
- A comprehensive review of diseases affecting identified major aquaculture species.
- Piloted methodology for AMU documentation on selected farms in Indonesia, Myanmar, Thailand and Vietnam.
- Developed a framework methodology document for assessing antimicrobial use in the aquaculture industry. The methodology framework includes the value chain, datasets to obtain and specific industry profiles to describe assessment procedures at farm and national levels.



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NACA is a network composed of 19 member governments in the Asia-Pacific Region.



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- Provided recommendations on prudent and responsible use of antimicrobials that will contribute to existing good aquaculture practices and biosecurity practices.
- Conducted and documented aquaculture stakeholder consultations (government, industry and academe) to raise awareness on anti-microbial usage and resistance surveillance in aquaculture.
- Used the results of these activities to identify specific capacity requirements to implement effective anti-microbial usage and resistance surveillance / diagnosis in the aquaculture sector.
- Conducted a final workshop on AMU to share experiences and lessons learned in Singapore, from 11-14 December 2017.