



## High-level meeting on aquaculture transformation in the Asia-Pacific region

As a follow on from the September FAO/NACA workshop on aquaculture transformation (see article in previous issue), FAO and NACA convened a high-level meeting to discuss the issue and the outcome of the previous consultation with policy makers. The meeting was held virtually from 22-23 November and was attended by 79 senior officials from 25 countries and international organisations, with observers from industry and international NGOs.

Specific objectives of the high-level meeting were to:

- Engage senior policy makers and business leaders in the process of defining regional targets, action areas and initiatives for aquaculture transformation in the region by 2030.
- Identify strategies and mechanisms to stimulate innovation and investment.
- Enhance collaboration in the defined action areas.
- Recommend follow up actions and commitments on aquaculture transformation as a regional contribution to the global targets.

The high-level meeting provided a forum for government, private sector and development partners to identify policy, innovation and investment priorities for aquaculture transformation in the region by 2030.

As a background to the meeting FAO and NACA developed a white paper entitled *Aquaculture transformation: innovations and investment for sustainable intensification and expansion of aquaculture in Asia and the Pacific region*, drawing on contributions from stakeholders across the region through the September consultation. The draft

was informed by a series of country analyses, a regional synthesis, and an aquaculture investment paper.

The white paper provides guidance on the translation of the global vision and targets for 'blue transformation' into clear and workable strategies for transforming the aquaculture sector of the region. It has considered the FAO Committee on Fisheries Declaration for Sustainable Fisheries and Aquaculture and the Shanghai Declaration, which outline ways to maximise the contribution of aquaculture to the 2030 Agenda and the Sustainable Development Goals.

Blue transformation will not be achieved without innovation in systems, investments and partnerships. It requires commitment from national and local governments, private business and investors, civil society organisations and other stakeholders to work together towards sustainable aquatic food systems. The white paper provides guidance to put these global aspirations into practical action.

An important focus of the discussions at the high-level meeting was on follow up actions for implementing aquaculture transformation, with special emphasis on strengthening regional collaboration to progress aquaculture transformation at the scale needed.

Aquaculture transformation through sustainable intensification and expansion of aquaculture is widely recognised as a priority for the future of sustainable agrifood systems in Asia and the Pacific region. The region is the world's aquaculture leader and its progress in aquaculture transformation has global implications for the blue transformation agenda.

## Developing a regional strategy for aquatic organism health: Progressive management pathways

On 28-29 November FAO and NACA collaborated on a virtual workshop to develop a regional strategy for aquatic organism health, using a progressive management pathway for improving aquaculture biosecurity. The workshop was held under the auspices of the project "Responsible use of fisheries and aquaculture resources for sustainable development component 3: Biosecurity and health management". The workshop involved 31 experts from 16 countries, including national focal points, FAO and NACA.

The goals of the workshop were to:

- Present the country responses to a FAO self-assessment survey on biosecurity and health management capacity and performance.
- Present a preliminary analysis of the combined survey returns.
- Provide guidance to country participants on conducting a SWOT analysis.
- Prepare detailed plan for Phase II of the initiative.

The trend in aquaculture during the last few decades is that serious pathogens frequently emerge, spread rapidly, and cause major production losses. There is often a long period, usually years, from the time that a serious mortality event caused by an unknown and emerging pathogen is observed in the field, to its subsequent identification and confirmation, to global awareness, the establishment and implementation of surveillance and reporting/notification systems and cost-effective risk management measures.

## Job opportunity - fish health management and husbandry researcher (three years)

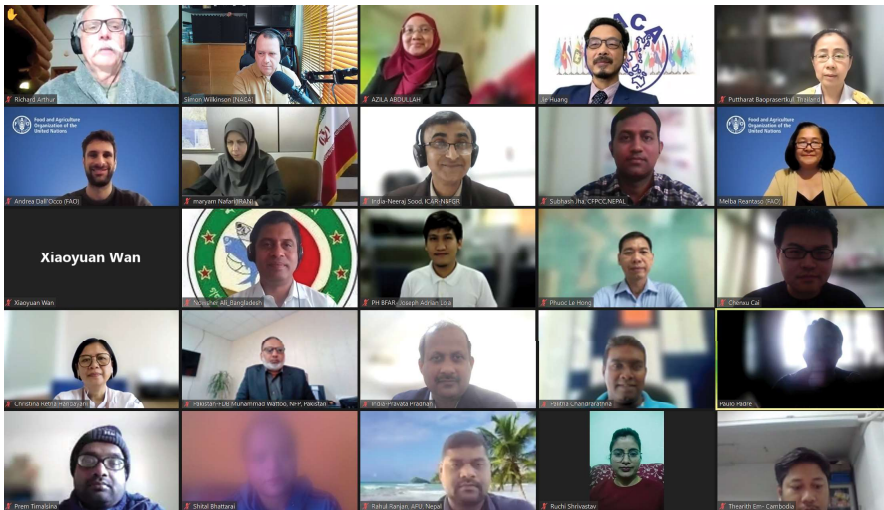
The Norwegian Veterinary Institute has a vacant three-year position as a researcher in the expanding area of sustainable aquaculture development internationally, with a desired start-up as soon as possible. This is an exciting opportunity for competent candidates with interest and experience from working internationally with farmed aquatic animal health management and husbandry. The right candidate will be joining our team of experts in epidemiology, biosecurity, diagnostics and applied health management.

Our projects are presently located in African, Latin American and Asian countries, funded mainly by the Norwegian Agency for Development Cooperation (NORAD). We collaborate with other national/international scientific institutions and international organisations such as Food Agriculture Organisation (FAO) and World Organisation of Animal Health (WOAH). The working language in the group is English. The working place is our main office at Ås, 30 km south of Oslo.

The Norwegian Veterinary Institute is committed to diversity, and we therefore encourage anyone who is qualified to apply for the position, regardless of age, gender, and functional ability, gaps in CV, nationality or ethnic background.

Applications close **16 January 2023**. For more information, please visit the website below:

<https://10600.webcruiter.no/Main/Recruit/Public/4592292269>



Biosecurity measures are less expensive when put in place preventatively and are significantly more costly when implemented in response to disease outbreaks. Biosecurity should be put in place and parallel to any aquaculture development by all producing countries. However, countries are at widely varying stages of aquaculture development, and vary in their technical capacity and resources available to manage aquatic health issues. While some countries in the region have a high proportion of industrialised production, others have many small-scale, resource-poor farmers that are in dire need of technical support.

During the last few years, FAO and partners have developed the “progressive management pathway for improving aquaculture biosecurity” concept (PMP/AB), an extension of the “progressive control pathways” used for controlling major livestock and zoonotic diseases. As the name suggests, these progressive pathways enable risk management approaches to be tailored to suit the technical capacity and resources of stakeholders at different levels, or with different roles, while maintaining a coordinated national approach. The approach also focuses on progressively building management capacity through combined bottom-up/top-down approaches with strong stakeholder engagement.

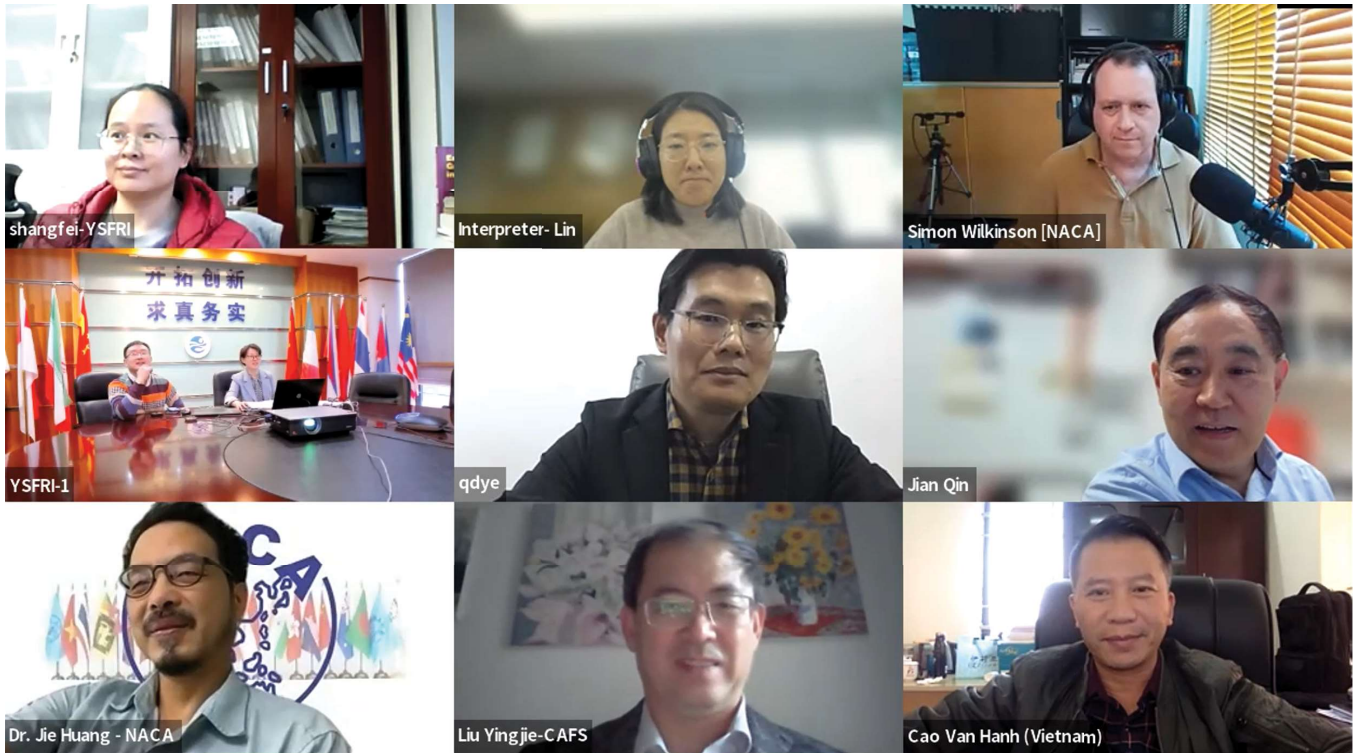
The PMP/AB is a pathway aimed at enhancing aquaculture biosecurity capacity at the regional, national, local-sector and enterprise levels by building on existing frameworks, capacity and tools using risk-based approaches and public-private sector partnerships. Whereas most progressive control pathways focus on the

control of a single disease or disease complex, the PMP/AB focuses on building a generalised resilience to aquaculture biosecurity vulnerabilities, e.g. threats to sustainable aquaculture due to pathogens and the associated diseases that result from poor management practices, legal and uncontrolled trade, and lack of capacity in public and private institutions.

The PMP/AB addresses the lack of effective national plans by focusing on mid- to long-term national aquaculture biosecurity strategy development processes and by promoting a co-management approach to actively engage stakeholders. Specifically, the PMP/AB enhances awareness and adoption of appropriate biosecurity governance at the producer and sector levels, which can lead to reduction in the incidence and impact of targeted priority diseases and thus promotes greater recognition of the important role of biosecurity. The PMP/AB provides a solid platform for public-private sector partnership, as PMP/AB’s strategic and implementation plans should be jointly developed by industry stakeholders and governance authorities. This encourages buy-in and best-fit for each country, whilst providing a template that delivers a degree of consistency between participating countries or regions.

The preparation conducted during this workshop will feed into a physical meeting to finalise a regional biosecurity strategy. Further details will be announced on the NACA website and in this newsletter in due course.

# 2022 China-ASEAN International Forum on Sustainable Development of Fisheries and Aquaculture Under the Blue Transformation Strategy



Ocean University of China (OUC), in collaboration with universities, research institutes, organisations, and associations, convened the 2022 China-ASEAN International Forum on “Sustainable Development of Fisheries and Aquaculture Under the Blue Transformation Strategy” from 20 to 22 November 2022. The forum was held in a hybrid format with participation in-person in Qingdao, China and also online via Zoom, with participants hailing from 15 countries.

The forum will host discussions about the implementation of the “Blue Transformation” strategy, further expansion of the space for fisheries and aquaculture, and ways of improving the production capacity of aquatic products, with the purpose of facilitating the achievement of the UN Sustainable Development Goals. The strategy was discussed in the context of international talent cultivation and training, innovation in science and technology, and industrial synergy.

The forum aimed to promote the high-quality development of fisheries, accelerate industrial transformation and improvement, and enable the production of more aquatic products with better quality. China and ASEAN together shoulder the important task of carrying out this “Blue Transformation”.

## International talent cultivation and training

Universities and research institutes of China and ASEAN spoke on the demand for international talent, talent training programs and achievements in fisheries and aquaculture under the “Blue Transformation” strategy, with a view to promote the development of higher education and

vocational education in fisheries to meet the growing needs of international competition and cooperation in fisheries and aquaculture.

## Science and technology innovation

To meet the demand of the “Blue Transformation” strategy, hot topics and new measures for scientific and technological innovation were discussed from perspectives such as the protection, development and utilisation of fishery resources, aquaculture, the processing and safety of aquatic products, and fishery management.

## Industrial synergy

Discussions will be centred around markets and information, processing and trade, derogation and waste, policies and support in the fisheries and aquaculture industry, as well as measures and experiences of enterprises and institutions to respond to the change, cooperation or potential cooperation with ASEAN.

The forum was organised by the Research Center for Shandong-ASEAN Exchanges and Cooperation; Key Laboratory of Mariculture, Ministry of Education, China; Engineering Research Center of Mariculture, Ministry of Education, China; China Fisheries Alliance in Emerging Agriculture; Sino-Thai Academic Center on Marine and Fishery Sciences; UMT-OUC Joint Academic Centre for Marine Studies; Seaweed Center for International Science and Technology Cooperation.



It was co-organised by Xiamen University; Dalian Ocean University; Guangdong Ocean University; Jimei University; Hainan Tropical Ocean University; Institute of Oceanology, Chinese Academy of Sciences; Yellow Sea Fisheries Research Institute, Chinese Academy of Fishery Science; South China Sea Fisheries Research Institute, Chinese Academy of Fishery Science; Fourth Institute of Oceanography, Ministry of Natural Resources; China Aquatic Products Processing and Marketing Association; Society of Aquaculture Ecology of Chinese Society for Oceanology and Limnology; NACA and the ASEAN Fisheries Education Network.

## A new progressive management pathway for improving seaweed biosecurity

A new paper in Nature Communications by Cottier Cook et al. describes the need for a new progressive management pathway to improve seaweed biosecurity.

The seaweed aquaculture industry has rapidly expanded to 35 million tonnes per annum, a production that represents 51% of global coastal aquaculture by volume. The industry is globally connected supplying a variety of products including foods, ingredients for cosmetics, pharmaceuticals, and food additives. Recently, seaweed aquaculture has been recognised for its potential to capture atmospheric carbon.

Rising seawater temperatures and coastal eutrophication have led to an increase in infectious diseases and pest outbreaks. However, research to identify seaweed pests and diseases is at an early stage. Control is difficult, given the open nature of seaweed farming systems, but there is evidence that relatively simple control measures can significantly reduce the incidence of disease.

The paper, which is co-authored in part by NACA staff, describes a process for developing and implementing locally-adapted progressive management pathways to address seaweed disease and pest issues. It is an open access publication, distributed under the Creative Commons Attribution 4.0 International License. The paper may be downloaded for free from:

<https://www.nature.com/articles/s41467-022-34783-8>

## Indian delegates visit Thailand for training and industry exposure

NACA welcomed five delegates from India on an aquaculture training and exposure visit from 31 October to 4 November. The delegates were:

- Mrs Nallamani Chandra, Executive Director (Technical), National Fisheries Development Board.
- Mr Ramakrishna Rao Guttula, Fisheries Research and Investigation Officer, Department of Fisheries, Animal Husbandry and Dairying.

- Mr Ajith Stalin Justin Christopher Laisal, Senior Executive (Technical), National Fisheries Development Board.
- Mrs Janjarapu Deepa Suman, Executive (Technical), National Fisheries Development Board.
- Ms Kanchi Bhargavi, Executive (Technical), National Fisheries Development Board.

The visit began with a discussion at the NACA Secretariat on Thai mariculture, the recently established International Artemia Aquaculture Consortium, and better management practices concerning hatchery production and use of live feeds.

The delegates left Bangkok the next day to visit seabass cage and pond culture and a shrimp nursery in the Chachengsao area and Bangprakong River. The following day they travelled to the Rayong Coastal Aquaculture Center and visited local farm sites before overnighting in Chantaburi. On the final day they visited the Kung Krabae Bay Royal Development Study Center and mangrove walk; and a freshwater fish farm to observe intensive carp and pangasius culture.

NACA would like to thank the Thai Department of Fisheries for their generous assistance and sharing of experience with the delegation.

## PhD scholarships: Shanghai Ocean University PhD Programme 2023

Shanghai Ocean University (SOU) is offering full scholarship PhD programmes in a wide range of marine sciences 2023. Disciplines include: Aquaculture, biology, fisheries science, fisheries resources, marine science, food science and engineering, fishery economics and management, and marine engineering and information.

### Scholarships

The scholarships are open to non-Chinese citizens under 30 years old who have a masters degree with a good academic record and outstanding research potential. The scholarships cover tuition, accommodation, medical insurance and include a stipend.

### Applications

Applications are due **1 February 2023**. For details of the programmes, eligibility criteria, required documentation and application procedures, please download the prospectus linked below. If you have any questions, please email [admissions@shou.edu.cn](mailto:admissions@shou.edu.cn).

### Postgraduate opportunities

Postdoc positions are available for excellent graduates and full-time faculty positions are available for excellent international postdocs.

### Download the prospectus

<https://enaca.org/?id=1240>

# Reported aquatic animal diseases in the Asia-Pacific region during the second quarter of 2022

With the implementation of the new aquatic animal disease reporting in the Asia Pacific region from January 2021, and in lieu of the published QAAD Reports (last issue published was 4th quarter of 2020), NACA is publishing reported aquatic animal diseases submitted by countries in the Asia-Pacific region. This report covers the second quarter of 2022 and the original and updated reports can be accessed at the QAAD page at:

<https://enaca.org/?id=8>

The following diseases were reported:

## Finfish diseases

- Infection with *Aphanomyces invadans* (EUS): Australia in wild adult mullet (*Mugil cephalus*), bony bream (*Nematalosa erebi*) and yellowfin bream (*Acanthopagrus australis*) and Chinese Taipei in largemouth bass (*Micropterus salmoides*).
- Infection with red seabream iridovirus (RSIV): Chinese Taipei in hybrid grouper (*Epinephelus fuscoguttatus* x *E. lanceolatus*); and India in freshwater angelfish (*Pterophyllum scalare*) and Ram cichlid (*Mikrogeophagus remirezi*).
- Viral encephalopathy and retinopathy (VER): Australia in wildstock garfish (*Belone belone*) and kahawari (*Arripis trutta*); Chinese Taipei in hybrid grouper (*Epinephelus fuscoguttatus* x *E. lanceolatus*).
- Carp edema virus (CEV): India in koi carp (*Cyprinus carpio*).
- Infection with tilapia lake virus (TILV): India in tilapia (*Oreochromis* spp.), and Philippines in tilapia (*Oreochromis* spp.).

## Molluscan diseases

- Infection with *Perkinsus olseni*: Australia in wild abalone; and India in saltwater clam (*Paphia malabarica*).

## Crustacean diseases

- Infection with white spot syndrome virus (WSSV): India in whiteleg shrimp (*P. vannamei*); Philippines

in black tiger shrimp (*P. monodon*), *P. vannamei*, mudcrab (*Scylla serrata*), and Philippine freshwater prawn (*Macrobrachium daqueti*); and Thailand (shrimp species not specified).

- Infection with yellowhead virus genotype 1 (YHV-1): Thailand (shrimp species not specified).
- Infection with infectious hypodermal and haematopoietic necrosis virus (IHHNV): Philippines in *P. vannamei* and *P. monodon*.
- Acute hepatopancreatic necrosis disease (AHPND): Chinese Taipei in *P. vannamei*; Philippines in *P. vannamei* and *P. monodon*; and Thailand (shrimp species not specified).
- Hepatopancreatic microsporidiosis caused by *Enterocytozoon hepatopenaei* (EHP): Chinese Taipei in *P. vannamei*; India in *P. vannamei*; Philippines in *P. vannamei* and *P. monodon*; and Thailand (shrimp species not specified).
- Infection with decapod iridescent virus 1 (DIV1): Chinese Taipei in *P. vannamei*.

## Amphibian diseases

- Infection with *Batrachochytrium dendrobatidis*: Australia in yellow-spotted tree frog (*Litoria castanea*), Australian green tree frog (*Litoria caerulea*) and striped marsh frog (*Lymnodynastes peronii*).

## Other diseases

- Singapore reported Infection with *Lates calcarifer* birnavirus in Asian seabass (*L. calcarifer*).

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



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