



Second High-Level Meeting on Aquaculture Transformation in Asia and the Pacific Region



Left to right: Michael Phillips (Moderator), Tom Prins (Aqua-Spark), Amorn Luengnaruemitchai (Manit Farms), Chris Aurand (Thai Union), Zhu Jian (Freshwater Fisheries Research Center), Rakesh Kumar (Deputy Commissioner, Fisheries, India), Kitiya Vongkamjan (UniFAHS).

Aquaculture development in the region faces many challenges, including resource scarcity and resource use conflicts, environmental pressure, climate change, demographic changes in farming communities and shifting trends driven by globalisation.

Innovations and investment are required to transform aquaculture into more efficient, inclusive, resilient, and sustainable aquatic food systems. This approach is aligned with the FAO's Blue Transformation Roadmap, which provides a vision for the sustainable intensification and expansion of aquaculture to contribute to future global food supply needs.

In November 2022 FAO and NACA convened the First High Level Meeting on Aquaculture Transformation in Asian and the Pacific Region (HLM). The meeting provided a forum for government policy makers, business leaders, development banks and investors to identify strategies and mechanisms to stimulate innovation and investment for aquaculture

transformation by 2030. As a background to discussions 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.

A second High Level Meeting on Aquaculture Transformation: A Call for Collective Action was held in Bangkok from 8-9 November 2023 to further facilitate regional collaboration towards the Blue Transformation vision. The purpose of the meeting was to review progress made after the First HLM and discuss specific actions and mechanisms needed to enhance regional cooperation and progress transformation at scale by 2030.

Opening remarks were given by Dr Xinhua Yuan, Deputy Director Fisheries and Aquaculture Division, FAO; Dr Jie Huang, Director General, NACA; and Dr Taworn Thunjai, Deputy Director General, Department of Fisheries (DoF),

Thailand. A keynote presentation on aquaculture transformation through innovation and investment in Thailand was given by Dr Montakan Tamtin, Director of the Kung Krabaen Bay Royal Development Study Center, Coastal Aquaculture and Development Division, DoF Thailand. Dr Tipparat Pongthana-panish, FAO RAP, gave a presentation on the white paper and progress made after the First High Level Meeting on Aquaculture Transformation, which was held in 2022.

To set the scene, the meeting began with a panel discussion on “Innovation and investment for aquaculture transformation: What’s going on in the region and the way forward?” Panelists were Rakesh Kumar, Deputy Commissioner for Fisheries, DoF India; Zhu Jian, Chief of the R&D Division, Freshwater Fisheries Research Center, China; Amorn Luengnaruemitchai, Chairman of the Thai Tilapia Farmers Association and Managing Director of Manit Farms, Thailand; Chris Aurand, Innovation Leader, SPACE_F, Thailand, and Tom Prins, Head of Deal Flow, Aqua-Spark, the Netherlands. It was moderated by Michael Phillips, FUTUREFISH.

The meeting discussed and reviewed a draft Action Guide for Aquaculture Transformation for Asia and the Pacific Region, developed through two expert consultation workshops,

involving virtual and in-person dialogue on 9–10 May and 11–12 July 2023. The action guide provides guidance to both public and private sector actors on progressing aquaculture transformation against the priority areas for innovation and investment identified by the white paper. It also guides the development of mechanisms to support implementation and monitor progress. The action guide is in press and will be published on the FAO / NACA websites in due course.

A key proposal discussed in plenary at the meeting was the development of an Asia-Pacific Aquaculture Innovation and Investment Hub, as a regional mechanism providing policy advice, monitoring, resource mobilisation, partnership and capacity building functions as a regional platform driving aquaculture transformation. The discussion focussed on the organisation, structure, mandate and functions of the hub, resource mobilisation strategies and proposed activities and workplan from 2024 to 2026.

The aquaculture innovation hub concept is still at an early stage of development. Further details will be published on the NACA website in due course.

Reported Aquatic Animal Diseases in the Asia-Pacific Region during the Second Quarter of 2023

E.M. Leño, Senior Programme Officer, Health & Biosecurity

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 2023 and the original and updated reports can be accessed from the QAAD page at <https://enaca.org/?id=8>.

The following diseases were reported:

Finfish diseases

- Infection with *Aphanomyces invadans* (EUS): Bangladesh in catla (*Catla catla*) and mrigal (*Cirrhinus mrigala*); and, India in climbing perch (*Anabas testudineus*) and snake-head (*Channa marulius*).
- Infection with epizootic haematopoietic necrosis virus: Australia in adult redfin perch (*Perca fluviatilis*)
- Infection with red seabream iridovirus (RSIV): Chinese Taipei in hybrid grouper (*Epinephelus fuscoguttatus* x *E. lanceolatus*); and, India (ISKNV) in oscar (*Astronotus ocellatus*) and black tetra (*Gymnocorymbus ternetzi*)
- Infection with Tilapia lake virus (TiLV): India in tilapia (*Oreochromis niloticus*), and Philippines in tilapia fry (*Oreochromis* sp.).

- Grouper iridoviral disease (GIV): Chinese Taipei in seabass (*Lates calcarifer*)
- Viral encephalopathy and retinopathy (VER): Chinese Taipei in hybrid grouper (*Epinephelus fuscoguttatus* x *E. lanceolatus*), seabass (*L. calcarifer*) and giant grouper (*E. lanceolatus*).

Molluscan diseases

- Infection with *Perkinsus olseni*: India in farmed mussel (*Perna viridis*), and wild samples of charru mussel (*Mytella strigata*) and black clam (*Villorita cyprinoides*).

Crustacean diseases

- Infection with white spot syndrome virus (WSSV): Australia in farmed black tiger shrimp (*Penaeus monodon*); Bangladesh in black tiger shrimp (*P. monodon*); Chinese Taipei in whiteleg shrimp (*P. vannamei*); India in *P. monodon* and *P. vannamei*; and, the Philippines in *P. vannamei* (PL, juveniles, grow-out culture, and adult), *P. monodon* (PL, grow-out culture, broodstock), freshwater prawn broodstock (*Macrobrachium rosenbergii*), and crab (adult).

- Infection with infectious hypodermal and haematopoietic necrosis virus (IHHNV): India in *P. monodon*; the Philippines in *P. vannamei* (PL and grow out culture) and *P. monodon* (grow-out culture); and, Thailand (marine shrimp, species not specified).
- Acute hepatopancreatic necrosis disease (AHPND): Bangladesh in *P. monodon*; Chinese Taipei in *P. vannamei*; the Philippines in *P. vannamei* (grow-out culture and adult) and *P. monodon* (eggs, PL, juveniles) and *P. indicus* (grow out culture); and Thailand (marine shrimps, species not specified).
- Infection with Infectious myonecrosis virus (IMNV): India in *P. vannamei*.
- Infection with decapod iridescent virus 1 (DIV 1): Chinese Taipei in *P. vannamei*.
- Hepatopancreatic microsporidiosis caused by *Enterocytozoon hepatopenaei* (EHP): India in *P. vannamei*; the Philippines in *P. vannamei* (PL and grow out culture) and *P. monodon* (PL); and, Thailand (marine shrimps, species not specified).

Amphibian diseases

- Infection with Ranavirus species: Chinese Taipei in bullfrog (*Lithobates catesbeianus*).
- Infection with *Batrachochytrium dendrobatidis*: Australia in unknown species of frog.

Other diseases

- Bangladesh reported Infection with *Streptococcus agalactiae* in Tilapia (*O. niloticus*), and Infection with *Aeromonas* spp. in shing catfish (*Heteropneustes fossilis*), gulsha (*Mystus cavasius*) and pangas catfish (*Pangasianodon hypophthalmus*).

Expert Workshop on Aquaculture Effluent Management



Participants in the workshop.

In 2023, FAO and NACA initiated a consultation process on aquaculture effluent management in Asia and the Pacific in collaboration with NACA member governments. Experts across the region gathered information to assess the state of governance, advancements in technology and innovation in aquaculture effluent management.

The Asia-Pacific region has been leading the world in aquaculture production for decades, producing 91.6 % of globally farmed aquatic animals and algae in 2020. Aquaculture is contributing to multiple Sustainable Development Goals including ending hunger, improving health and nutrition, responding to climate change, wealth creation and poverty reduction, gender equality, and decent work. The region will

likely continue to play the leading role in global aquaculture development in the future to provide sufficient and nutritious aquatic foods for the growing population.

Notwithstanding the past achievements, the future requires that aquaculture in the region grows continuously under a broad range of challenges ranging from competition and conflict use of resources to environmental pressure, and climate change. Sustainable intensification is the primary approach to transform aquaculture in the region towards more efficient, inclusive, resilient, and sustainable aquatic food systems. The environmental resilience of aquaculture systems, much determined by the effluent reduction, reuse, and recycling, is one of the fundamental pillars supporting sustainability in the intensification.

Aquaculture effluent management represents the major technical and engineering challenge to ensure resource efficiency and environmental integrity of farming systems. Innovations and technology for aquaculture waste management have been fast advancing in recent years in the region. These include the development of new farming systems, reconfiguration, and improvement of the integration of farming components, improved feed, and feeding technology to increase feed utilisation efficiency, and novel engineering, mechanical and biological designs for effluent treatment. In addition, policies and regulations developed at the national level for aquaculture effluent management have gradually evolved into more efficient and effective institutional mechanisms for better governance of the sector.

However, there are disparities in technological development and governance among nations in the region regarding aquaculture effluent management. There is a need to facilitate collaboration, information exchange, and experience sharing to accelerate technology extension and scaleup of innovations for aquaculture effluent management.

The consultative process culminated in an expert workshop, convened from 14 to 15 November, funded by FAO, to share views and national experiences on aquaculture effluent management. The workshop was attended by 31 people from 12 countries including Bangladesh, Cambodia, China, India, Indonesia, Lao PDR, Malaysia, Nepal, Philippines, Sri Lanka, Thailand, and Vietnam, with representatives from the Thailand Department of Fisheries and Asian Institute of Technology.

The workshop forms part of a broader process to promote good practices and build technical and governance capacity for aquaculture effluent management. It will contribute to the larger goal of transforming aquaculture in the region towards more efficient, inclusive, resilient, and sustainable aquatic food systems. The specific objectives of the workshop were to:

- Review and examine existing national policies, regulations, and institutional setups for aquaculture effluent management and governance.



Simon Funge-Smith (FAO) and Yuan Derun (NACA).



Videos

Video recordings of the technical presentations from the workshop are in preparation and will be published on this page / made available through YouTube in due course.

- Showcase technological advances and innovations in aquaculture effluent management and governance.
- Identify country-specific challenges and issues in governance on aquaculture effluent management and governance.
- Identify national and regional needs for technical assistance and capacity building on aquaculture effluent management and governance.
- Recommend future policy directions, priority areas for governance, technology development, innovation, and capacity building in aquaculture effluent management in the region.

Larvi 2024: First announcement and call for papers

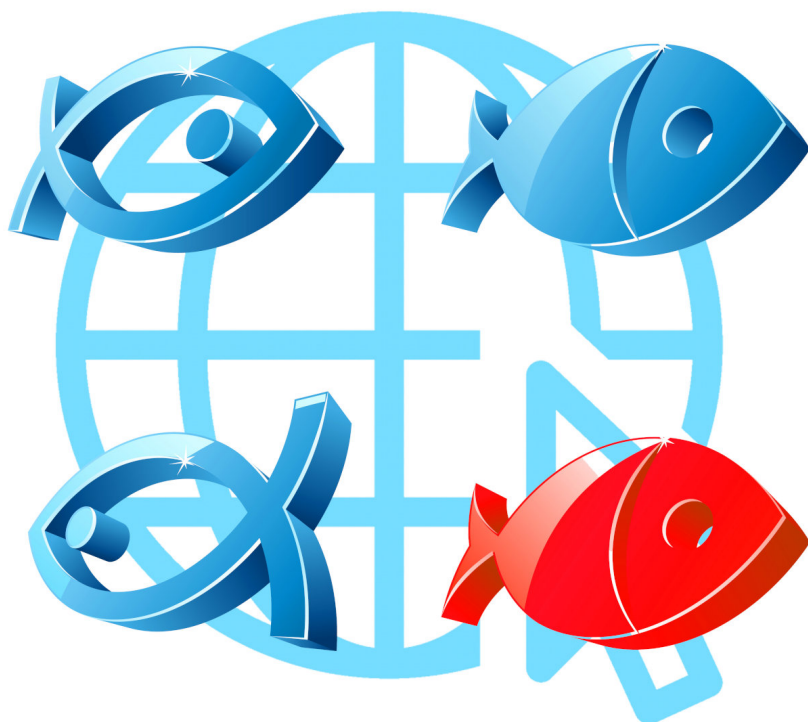
The 8th fish and shellfish larviculture symposium (larvi '24) will be held in Ghent University, Belgium, from 9-12 September 2024. Submissions are open until 12 February.

Closing the life cycle of aquaculture species of economic importance is critical for the ultimate success of aquaculture. Predictable & cost-effective availability of high-quality fry, fingerlings, postlarvae, seed, spores, etc. remain the key for a successful aquaculture venture. Knowledge generated at many different levels can further increase the success of the sector. Much progress is being made in knowledge-based insights on e.g. the genetic make-up of the broodstock, steering the ontogeny, the importance of first feeding, steering host microbial interactions and its immunological consequences, automation, etc. Research in these fields are increasingly supported and stimulated by a variety of novel and sophisticated techniques such as omics' and artificial intelligence tools. They generate an unprecedented and often fascinating

insight into biological processes. Although they generally also raise new research questions, they stand for a major leap forwards as compared to the empirical approach of a relatively recent past.

Capitalising on the previous "larvi" symposia (in '91, '95, '01, '05, '09, '13, '17), the Aquaculture R&D Consortium of Ghent University, the Norwegian University of Science and Technology and SINTEF Ocean have joined again in the organizing committee for "larvi'24" and are inviting the academic as well as the private sector to attend the 8th Fish and Shellfish Larviculture Symposium. Bringing together European and non-European stakeholders, once again the latest progress in academic research and in the production sector will be reviewed, problems identified and avenues for future collaboration explored.

For further information and pre-registration, please see the full first announcement.



larvi 2024



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NACA is a network composed of 20 member governments in the Asia-Pacific Region.



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Tuskfish CMS 2.0.7 released

Tuskfish CMS is a fast and lightweight open source software project used to build the NACA website. Version 2.0.7 introduces a couple useful features:

- Automatic expiry of content via cron job script. Expired content is marked offline and the cache is rebuilt to update pagination links.
- Back end toggling of content on/offline now uses a htmx call to avoid page reload.

Third party libraries have been updated and a few minor bug fixes implemented.

Tuskfish is available for free download from:

<https://github.com/crushdepth/tuskfish2/releases>