



Webinar on Fish Welfare: What we need to know?

FAI and NACA convened a webinar on fish welfare issues on 8 March from 9:30-11:30 am Bangkok time (GMT+7), via Zoom. The webinar addressed the relationship between welfare, health, quality and profit in aquaculture production.

The programme featured:

- Animal welfare applied to aquaculture.
Murilo Quintiliano, FAI Farms, Director of Aquaculture Strategy
- Preliminary tilapia welfare assessment results in Thailand.
Win Surachetpong, Kasetsart University
- A practical framework for assessments on aquaculture productions.
Ralf Onken, FAI Farms, Chief Technology Officer
- Communicating welfare to the aquaculture industry.
FAI Farms, Project Manager – Thailand



- A joint panel discussion on fish welfare issues.

We would like to invite you to view video recordings of the presentations, which are available for viewing on Vimeo, with subtitles in five languages (English, Chinese, Thai, Portuguese and Spanish):

<https://vimeo.com/channels/naca2023/page:1>

Artemia side event at the FAO Sub-Committee on Aquaculture

A side event on the *Potential of brine shrimp Artemia production for aquaculture transformation* will be held at the upcoming FAO Sub-Committee on Aquaculture meeting at Hermosillo, Mexico, 16-19 May.

The objective of the event is to follow up on the SDG-aligned Artemia aquaculture workshop, which was held in conjunction with the Global Conference on Aquaculture Millennium +20 in Shanghai, China (September 2021) and the COFI SCA 11 conclusions regarding Artemia: Recommendations for further action, as proposed by the International Artemia Aquaculture Consortium (IAAC).

The newly established IAAC, hosted by NACA, aims to explore needs and opportunities for new international initiatives to guarantee a more sustainable provision of Artemia cysts.

The programme will include:

- A brief history of Artemia use in aquaculture since the Kyoto FAO Conference in 1976 – need and opportunities for new action.
Patrick Sorgeloos, IAAC Facilitator and Advisor.
- Presentation of the International Artemia Aquaculture Consortium.
Eduardo Leano, NACA.

- Recommendations as formulated by the IAAC membership.
Yeong Yik Sung, IAAC Chair.
- Pond production of Artemia.
Nguyen Van Hoa and Meezanur Rahman.
- Artemia resources and use in China.
Liying Sui.
- Production interests for Africa.
Betty Nyonje, Kenya.
- Sustainable harvesting of inland salt lakes.
Thomas Bosteels, Great Salt Lake Brine Shrimp Cooperative.
- Potential for improved use of Artemia in fish and shrimp hatcheries.
Philippe Léger and David Garriquez.
- Use of Artemia biomass as human food.
Shahina Syeda.

NACA looks forward to the outcomes of the event. If possible, recordings of the presentations will be made available on NACA's YouTube channel.

Handbook for Artemia pond culture in Bangladesh

Muhammad Meezanur Rahman, Nguyen Van Hoa and Patrick Sorgeloos

Brine shrimp *Artemia* nauplii constitute the most widely used live-food item for the larviculture of crustaceans and fish. The advantages of *Artemia* nauplii compared to inert diets are its small size (450 µm), movement stimulating feeding responses, high digestibility, high nutritional content in terms of protein and highly unsaturated fatty acids. Annually, about 3,500 MT of *Artemia* cysts are marketed worldwide. The unique property of *Artemia* is its ability to form dormant embryos or 'cysts'. The cysts are available year-round in large quantities along the shorelines of hypersaline lakes, coastal lagoons and solar salt works scattered over the four continents. At present, Bangladesh imports 40-50 metric tons dry *Artemia* cysts annually worth an approximate value of USD 4 million. Some countries such as Thailand and Vietnam have successfully adopted technologies for *Artemia* production in solar salt farms.

The aim of this manual is to provide technological guidelines to extension agents, researchers, and salt farmers on *Artemia* production in salt farms in Cox's Bazar. The manual was prepared through review recent of activities in *Artemia* production, the 1996 FAO Manual on the production and use of live food for aquaculture, the 2019 book "Principle of *Artemia* culture in solar salt works", relevant books and published research papers.

The manual covers:

- Biology and ecology of *Artemia*.
- Cyst biology and physiology during the hatching process.
- Factors to consider in proper site selection.
- Different models of *Artemia* culture.
- Steps in proper pond construction.
- Procedure in shortening the duration of *Artemia* pond preparation through application of concentrated sea water or crude salt.
- Standard method of *Artemia* cyst incubation and stocking.
- *Artemia* pond maintenance and management.
- Suitable algae production for feeding *Artemia*.
- Preparation of processed feed and supplementary feeding.
- Diseases and health management.
- *Artemia* cyst and biomass harvesting, processing and preservation.

Earlier studies described limited knowledge, improper pond management, and climatic conditions as bottlenecks in *Artemia* production in salt farms. Recent improvement in *Artemia* production include deepening ponds to more than 50 cm water depth, a stocking density of 100 nauplii per litre, stimulating the growth of suitable algae species (diatoms, green algae), optimum supplementary feeding of green

water with fermented agricultural waste products (molasses, monosodium glutamate by-products), use of formulated shrimp feed, improvement of routine pond management such as raking of pond bottom, and health management through application of bioflocs.

Download the manual from:

<https://artemia.info/enclosure/?id=63>

Development of this manual was funded by the European Union. It is published by the Artemia4Bangladesh Project (WorldFish). Redistributed with permission.



Handbook for Artemia pond culture in Bangladesh

Introducing circularity through climate-smart aquaculture in Bangladesh



NACA YouTube channel:

@aquacultureasia

NACA now has a custom YouTube handle to make it easier to visit our channel, "@aquacultureasia". Thanks to our subscribers for signing up and making this possible! You can find us anytime by visiting:

<https://youtube.com/@aquacultureasia>

Check out the playlists on our channels to access presentations organised by workshop. We already have many great educational materials available for free access!

Reported Aquatic Animal Diseases in the Asia-Pacific Region during the Third 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 third quarter of 2022, and the original and updated reports can be accessed at the QAAD page (<https://enaca.org/?id=8>). The following diseases were reported:

Finfish Diseases

- **Infection with *Aphanomyces invadans* (EUS):** Australia in wild male adult mullet (*Mugil cephalus*); Bangladesh in rohu (*Labeo rohita*), catla (*L. catla*) and mrigal (*Cirrhinus mrigala*); and Chinese Taipei in largemouth bass (*Microp-terus salmoides*) and ayu (*Plecoglossus altivelis*).
- **Infection with red seabream iridovirus (RSIV):** Chinese Taipei in Asian seabass (*Lates calcarifer*), hybrid grouper (*Epinephelus fuscoguttatus* x *E. lanceolatus*) and jade perch (*Scortum barcoo*); and India in freshwater angelfish (*Pterophyllum scalare*) and Ram cichlid (*Mikrogeophagus remirezi*).
- **Viral encephalopathy and retinopathy (VER):** Australia in captive juvenile Queensland grouper (*Epinephelus lanceolatus*); and Chinese Taipei in hybrid grouper (*Epinephelus fuscoguttatus* x *E. lanceolatus*).
- **Infection with Tilapia lake virus (TILV):** India in tilapia (*Oreochromis niloticus*); and, the Philippines in tilapia fingerlings (*Oreochromis* spp.).
- **Enteric septicaemia of catfish:** Vietnam in pangas catfish (*Pangasius microneme* and *P. hypophthalmus*).

Molluscan Diseases

- **Infection with *Perkinsus olseni*:** India in wild mussel (*Mytella strigata*).

Crustacean Diseases

- **Infection with white spot syndrome virus (WSSV):** Australia in broodstock black tiger shrimp (*Penaeus monodon*); Bangladesh in *P. monodon* and mudcrab (*Scylla serrata*); Chinese Taipei in whiteleg shrimp (*P. vannamei*); India in *P. vannamei*; the Philippines in postlarvae and grow-out of *P. monodon* and *P. vannamei*; and Vietnam in *P. monodon* and *P. vannamei*.
- **Infection with infectious hypodermal and haematopoi-etic necrosis virus (IHHNV):** The Philippines in *P. vannamei* and *P. monodon*.
- **Acute hepatopancreatic necrosis disease (AHPND):** Bangladesh in *P. monodon*; the Philippines in *P. vannamei*; and Vietnam in *P. monodon* and *P. vannamei*.

- **Hepatopancreatic microsporidiosis caused by *Enterocytozoon hepatopenaei* (EHP):** India in *P. vannamei*; and the Philippines in *P. vannamei*, *P. monodon* and freshwater prawn (*Macrobrachium rosenbergii*).

Amphibian Diseases

- **Infection with *Batrachochytrium dendrobatidis*:** Australia in various species of frogs including *Crinia signifera*, *Limnodymastes peronii*, *Lim. tasmaniensis*, *Litoria caerulea*, *Lit. fallax*, *Lit. lesueuri*, *Lit. nasuta*, *Lit. nudidigitus*, *Lit. peronii*, *Lit. phyllochroa*, *Lit. verreauxii*, *Lit. wilcoxii*, *Lit. raniformis* and *Mixophyes iteratus*.

Other Diseases

- Bangladesh reported Infection with *Streptococcus agalac-tiae* in Tilapia (*O. niloticus*), and Infection with *Aeromonas* spp. in climbing perch (*Anabas testudineus*), shing catfish (*Heteropneustes fossilis*), gulsha (*Mystus cavasius*) and pabda (*Ompok pabda*). Hong Kong SAR reported Infec-tious spleen and kidney necrosis virus (ISKNV) in speckled blue grouper (*E. cyanopodus*) and hybrid Sabah giant grouper (*E. fuscoguttatus* x *E. lanceolatus*).

E.M. Leaña, Senior Programme Officer
Health and Biosecurity

13th Asia-Pacific Marine Biotechnology Conference 2-6 October 2023, Australia

The 13th APMBC and 5th ANZMBS conference are combining to engage marine biotechnologists, industry, investors, and policy makers in current marine biotechnology research, and industry development in the Asia-Pacific region. The conference will be held from 2-6 October 2023 in Adelaide, Australia.

This is the first time the APMBC will be held in the Australia/ New Zealand region. The combination of Australian and New Zealand marine territories makes it the second largest in the world and the largest in the Asia-Pacific region, with a rich biodiversity.

This provides a great opportunity to participate in the growth and future development of the marine biotechnology industry in the region and globally.

A key objective of the joint Conference is to encourage academic-industry partnerships across the region.

A key feature of the conference program will be the balance of academic and industry participants.

The program also offers industry, investment and policy forums to align industry needs and government priorities with productive collaborations and research and development essential for achieving industry's full potential.

Abstract submissions and early bird registrations are now open!

Program development information is available at the APMBD conference website <https://apmbc2023.com/>

Or download the prospectus at:

<https://enaca.org/enclosure/?id=1266>

Professor Wei Zhang
Conference Chair and Convenor



Global Seafood Trade Fair 28-30 June Guangzhou, China

In June, China will open its doors to the world through the Global Seafood Fair.

With over 50,000 visitors and a strong buyer presence, the fair is an excellent opportunity for businesses to showcase their products.

The event will feature over 1,000 exhibitors and more than 10,000 products for buyers to choose from.

Attendees can also participate in several industry-focused events, including the Global Shrimp Industry Development Summit Forum, the Overseas Seafood Products Digital Trade Forum, the Tilapia Industry Chain Summit, and the China Aquatic Prepared Dishes Development Summit.

In addition to aquatic products, the fair will also showcase aquaculture technology and equipment, feed, medicine, oceangoing fishing tools and equipment, processing and packaging equipment, cold chain storage and transportation, and trade services.

China is the largest producer and consumer of fish products globally.

The fair is a world-class event, jointly built by Liangzhilong and China Food Trade Fair, and an essential platform for seafood enterprises to expand their customer base.

The Canton Fair Complex (Area D) in Guangzhou, China, will be the venue for the fair.

The fair is being organized by Wuhan Shihedao Network Technology Co., Ltd. and hosted by the China Aquatic Products Processing and Marketing Alliance and the China Aquatic Production Chamber of Commerce.

For further details, please refer to the information sheet linked below.

<https://enaca.org/enclosure/?id=1265>



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



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