



Global Conference on Aquaculture Millennium +20



Feeding an expected global population of 9 billion by 2050 is a daunting challenge that is engaging hundreds of millions of farmers, food processors, traders, researchers, technical experts, and leaders the world over. Fish and other aquatic products from aquaculture can and will play a major role in meeting the dietary demands of all people, while also meeting the food security needs of the poorest.

Farmed fish and plants have long contributed to healthy diets, poverty alleviation and rural development. It is only recently, however, that aquaculture has grown to be the leading source of aquatic food.

To realise the maximum contribution of the aquaculture sector toward achieving the targets set by the Sustainable Development Goals and Agenda 2030, coordinated and accelerated actions are required. Not only must these actions increase sustainable production, but also address the broader value chain, markets, and decent employment.

To accelerate growth and ensure the sustainability of future aquaculture, FAO, NACA and the Chinese Ministry of Agriculture and Rural Affairs invited governments, business, academia and civil society together for the Global Conference on Aquaculture Millennium +20 (GCA +20) under the theme “Aquaculture for Food and Sustainable Development”, to discuss the policy and technology innovations, investment opportunities and fruitful areas of cooperation.

The event was the fourth in a series of development-oriented conferences that began with the FAO Technical Conference on Aquaculture (Kyoto, 1976), the Global Conference on Aquaculture in the 3rd Millennium (Bangkok, 2000), and the Global Conference on Aquaculture 2010 (Phuket).

The goals of the conference were to:

- Review status, trends, and emerging issues in aquaculture development.
- Identify opportunities and challenges in aquaculture and its contributions to sustainable development.
- Evaluate the progress of aquaculture development considering previously recommended strategies and policies at regional and global level.
- Build consensus on priorities and actions needed for advancing aquaculture as a global, sustainable, and competitive food production sector.

To provide context for the discussions, an extensive series of review papers were prepared by teams of recognised experts. These included a series of regional reviews and a global synthesis of the status of aquaculture; and a series of thematic reviews addressing aquaculture systems, innovation, aquaculture’s contribution to the Sustainable Development Goals, feed and feeding, genetic resources and seed supply, biosecurity, governance, social and human dimensions of aquaculture, and value chains and market access.

The review papers, which were open for public comment, are available for download from the conference website at:

- <https://aquaculture2020.org/regional/>
- <https://aquaculture2020.org/thematic/>

Despite delays due to the pandemic, the GCA +20 was successfully held as a hybrid event from 22-25 September, with physical participation at the venue in Shanghai, China, and international participation via video conference.

The conference kicked off on the 22nd with a Workshop on Sustainable Development Goal-aligned *Artemia* Aquaculture (refer separate article, this page).

A total of 1,728 people participated in the event, of which 500 were physically present in Shanghai. Around 45% of participants were academics, 30% were from civil society groups and NGOs, 15% were from the private sector and 10% public sector. Across all participants, 41% identified as female and 52% as youth.

The Shanghai Declaration

Her Royal Highness Princess Maha Chakri Sirindhorn graced the final session of the conference and the formal adoption of the Shanghai Declaration, expressing her support for aquaculture as a solution to achieve Sustainable Development Goal #2, Zero Hunger.

A key output from the GCA +20, the Shanghai Declaration is a call to action that highlights the principles and strategic pathways to maximise the contribution of sustainable aquaculture in achieving the Sustainable Development Goals, with a special focus on “Leaving no one behind”. The Declaration will guide all players in the development of the industry and towards optimisation of the sector’s contribution to food security and livelihoods in line with the UN’s 2030 Agenda for Sustainable Development.

The Declaration recognises the capacity of aquaculture for further growth, while stressing the need to prevent that growth from impacting ecosystems and biodiversity, animal health and welfare, and social inequalities.

At the time of writing, 42 organisations have submitted written pledges expressing their support for the Shanghai Declaration and their commitment to addressing issues it contains, including universities, research institutes, international organisations, civil society organisations, industry associations and private sector companies.

The Shanghai Declaration and pledges of support are available for download from the conference website at:

- <https://aquaculture2020.org/declaration/>

NACA would like to thank all who contributed to the GCA +20 as participants, authors, speakers or in organising the event, our partners at FAO, the Ministry of Agriculture and Rural Affairs PRC, Shanghai Ocean University and the legion of administrators, translators, editors and others that made it possible.

Workshop on SDG-aligned *Artemia* aquaculture



With the expansion of hatchery production, the demand for *Artemia* cysts has continued to increase. Annual consumption is now estimated at 3,500 – 4,000 tonnes, which underpins the production of over 900 billion crustacean post larvae and fish fry. The hatchery industry is now valued at more than US\$ 2 billion and is responsible for the final production of over 10 million tonnes of high-value aquaculture species. With approximately 90 percent of the current *Artemia* production harvested from inland salt lakes, the future of the hatchery industry could be at risk and requires urgent attention.

A new international interdisciplinary approach is needed to tackle these *Artemia* issues and opportunities, like the breakthrough in *Artemia* use in aquaculture following the 1976 FAO Kyoto conference.

A workshop on “Sustainable Development Goals-aligned *Artemia* aquaculture” was held simultaneously in Shanghai and online via Zoom on 22 September. The workshop was the first event of the Global Conference on Aquaculture Millennium +20, and was attended by around 400 people from around the world. The workshop was moderated by Professor Liying Sui of the Asian Regional Artemia Reference Center (AR-ARC) and Dr Rodrigo Roubach, FAO. It was organised by FAO, AR-ARC, NACA, the Artemia Association of China and the Laboratory of Aquaculture and Artemia Reference Center, University of Ghent. Min Jiang, Shanghai Ocean University, and Qingyin Wang, Chinese Fisheries Society, China, gave welcome remarks.

The purpose of the workshop was to explore needs and opportunities for a new international initiative to guarantee a more sustainable provision of *Artemia*, both from natural sources and from controlled extractive *Artemia* farming integrated with salt production and other fish/crustacean aquaculture.

The workshop began with a presentation by Professor Patrick Sorgeloos (Artemia Reference Center) providing a brief history of the use of *Artemia* in aquaculture. This was followed by reports on an International workshop on *Artemia* pond production (Meezanur Rahman, WorldFish) and Webinar on the status of the use of *Artemia* cysts in fish and crustacean hatcheries around the world (Simon Wilkinson, NACA).

Tomas Bosteels (Great Salt Lake Brine Shrimp Cooperative) presented on “Sustainable harvesting of natural *Artemia* resources: The Great Salt Lake (Utah, USA) as model case”, and Honzalo Gajardo (Los Lagos University) gave a presentation on “*Artemia* species and strains diversity: threats and potential”. The final presentation was given by Gilbert Van Stappen (Ghent University) “Availability of *Artemia* genome: R&D opportunities”.

Video recordings of the presentations will be published on NACA’s Youtube channel in the near future and will be announced on the NACA website.

Professor Sena De Silva Memorial Oration, 8 October 2021

Join us on 8 October 2021 for the Professor Sena De Silva Memorial Oration. The topic for the oration is “Aquaculture and marine resources exploitation: reframing the issues”, presented by Professor Giovanni Turchini of Deakin University and organised by the Sri Lanka Association for Fisheries and Aquatic Resources. The oration will be held at 05:00 GMT (15:00 AEST) via Zoom. To participate, please use the following link:

<https://bit.ly/3A2m3ve>



Sri Lanka Association for Fisheries and Aquatic Resources
SLAFAR





Professor Sena De Silva
Memorial Oration - 2021

“Aquaculture and marine resources exploitation: reframing the issues”

Date: 8TH October 2021 | 10.30 (IST) | 15:00 (AEST) | 05.00 (GMT)



<https://bit.ly/3A2m3ve>



Professor Giovanni Turchini
Professor of Nutrition and Food Science, and Associate Dean Research,
Faculty of Science, Engineering & Built Environment,
Melbourne Burwood Campus
Deakin University, Victoria, Australia

Organized by: Sri Lanka Association for Fisheries and Aquatic Resources (SLAFAR)

Apply now: Training Course on Mariculture Technology in Asia-Pacific

A free training course on mariculture technologies will be offered online via Zoom from 18 October to 5 November, by the Yellow Sea Fisheries Research Institute (YSFRI), People’s Republic of China. The course will cover:

- Genetics and breeding of mariculture species.
- Large-scale propagation.
- Disease control and prevention.
- Nutrition research and feed development.
- Technology for different farming models.
- Equipment research, engineering and construction of farming facilities.
- Quality and safety inspection technology for aquatic products.

The course is aimed towards officials, researchers and technicians from fisheries and aquaculture departments, research institutions, and enterprises. Priority will be given to personnel from developing countries.

The course is hosted by the Yellow Sea Fisheries Research Institute (“Belt and Road” Training Base for Mariculture Technologies, Ministry of Agriculture and Rural Affairs, PRC) of the Chinese Academy of Fishery Sciences, and NACA. It is organised by the Department of International Cooperation, Ministry of Science and technology, PRC.

Applications

To apply for the course, please:

- Download the prospectus (refer to the section “Qualifications of Trainees”):
<https://enaca.org/enclosure.php?id=1174>
- Fill in the online application form at:
<https://forms.office.com/r/B7A9D1KrRJ>
- Email a recent passport photo of yourself to:
ice@ysfri.ac.cn.

Applications close 11 October and space is limited, so be quick! YSFRI will advise applicants of their admission status in due course. For more information, please download the prospectus.

New project on “Blue transformation in aquaculture”

NACA and FAO have signed an agreement to implement a project in support of FAO's Blue Transformation Initiative. The project will identify and document priority thematic areas and innovations contributing to the transformation of aquaculture in participating countries and convene a virtual meeting on country strategies for upscaling innovations, as a lead in to scale up through field projects and capacity building activities in the region.

Aquatic food is an important food resource for human consumption, both for high-quality protein and fat, supplementary and necessary vitamins, minerals and micronutrients. Moreover, the waters that cover most of the global surface offer enormous potential for aquatic food production. The recognition that aquatic foods should contribute a more significant and sustainable share in human food systems is the rationale of the blue transformation initiative of FAO. This initiative recognises the unique benefits of aquatic foods for food and nutrition security, livelihoods, trade, and as the source of the social values that gel many societies together.

As a new concept, blue transformation acknowledges successes while facing the sector's sustainability challenges head-on. To better understand the possibilities the aquaculture sector offers to the blue transformation initiative, it is important to document innovations that will support the sustainable intensification of the sector.

If the current population growth continues unchanged, by 2030 the planet will have to feed as many as an additional 1.5 billion people, 90 percent of whom will live in developing countries and world food production will need to increase 60-70 percent to feed an additional nine billion people by 2050 (FAO, 2019). With land and water finite, feeding the world will require enhanced agricultural productivity and efficiency to produce more food using less resource inputs through production systems that not only conserve, but that actually enhance natural resources. This will require the sustainable intensification of agriculture and food production systems including aquaculture, the use of an ecosystem approach, and a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable manner.

Blue transformation is FAO's vision of how to achieve a balance between the need for positive societal outcomes and ecological sustainability in food production from the blue economy. It has three core components, namely:

- Sustaining fish supplies and feed the world through aquaculture intensification. As aquaculture will need to provide the majority of supply increases – scale-up, address resource-use bottlenecks and transfer knowledge through sustainable development of aquaculture.
- Transforming fisheries through better management. By addressing overfishing and overcapacity, combating illegal, unreported and unregulated (IUU) fishing and rebuilding overexploited stocks, fisheries can improve livelihoods and supply. However effective management is non-negotiable.

- Upgrading fish value chains. Improving the efficiency, viability and inclusiveness of fish value chains. Providing additional supply sources and ensuring socio-economic benefits, just distribution and access.

A video of the concept of blue transformation in aquaculture presented by Dr Simon Funge-Smith, FAO RAP, is available on the NACA Youtube channel at:

- <https://www.youtube.com/watch?v=O8D7If-E4P0>

As the first activity under the project, a virtual consultation was held on 15 September to:

- Introduce the blue transformation of aquaculture.
- Gather input from representatives of NACA Member Governments and Regional Lead Centres.
- Present the current and planned priority areas and innovations identified by the countries that will contribute to the blue transformation of aquaculture.
- Summarise the regional priority areas and sub-areas and innovations contributing to blue transformation of aquaculture in Asia and the Pacific.
- Present the objectives and work plan for detailed country reports on priority areas, innovations, and scaling-up strategies to support blue transformation of aquaculture in Asia and the Pacific region.

Issues raised were many and various, but mainly could be categorised within the blue transformation priorities, which are:

- Governance, sector and policy reform.
- Socio-economic benefits and considerations.
- Biosecurity and disease.
- Feed ingredient and feed technology innovations.
- Genetic improvement, breeding and diversification.
- Digital technologies and intelligent systems.
- Environmental control and regulation.
- Value chain efficiency.
- Climate change.

The next phase of the project will involve preparation of national reports and a consultation on country strategies for up-scaling, to be completed in 2022.

Webinar on Status of Artemia cyst use in fish and crustacean hatcheries



A free webinar on the Status of the use of *Artemia* cysts in fish and crustacean hatcheries around the world was held on 2 September via video conference.

The webinar is facilitated by the International Artemia Aquaculture Consortium (under formation) as a follow up to the recommendations of the recent article Past, present and future scenarios for SDG-aligned brine shrimp *Artemia* aquaculture in FAO Aquaculture News (<http://www.fao.org/documents/card/en/c/cb4850en/>).

The goal of the webinar was to document differences in practices used by fish and crustacean hatcheries in the use of *Artemia* cysts for the preparation of live feeds. Over time, the practices used by hatcheries in Asia, Europe and Latin America have diverged from the good aquaculture practices for *Artemia* production recommended by FAO in the 1991 Live Food Manual.

Speakers included technical experts using *Artemia* in the production of shrimp, freshwater prawn, mud and mitten crabs, seabass, seabream and other marine fish from Bangladesh, Brazil, China, Ecuador, Greece, India, Spain, and Thailand.

The programme began with a presentation by Patrick Sorgeloos (Artemia Reference Center, Belgium) "An introduction to the *Artemia* cyst hatching process and the crucial parameters to ensure optimal hatching and preparation of *Artemia* for use in the hatchery feeding of fish and crustaceans.

This was followed by short presentations of how *Artemia* cyst decapsulation, cyst hatching, umbrella/nauplii separa-

tion, cold storage, heat-killing/freezing, enrichment, etc. are performed in small- and large-scale hatcheries in the main regions of the world:

- Thailand (shrimp and Asian seabass): Montakan Tamtin (Department of Fisheries)
- Vietnam (shrimp, prawn and mud crab): Nguyen Van Hoa (Can Tho University) and Trinh Trung Phi (Viet-Uc company)
- India (shrimp): Nageswara Rao (All India Shrimp Hatcheries Association, AISHA)
- Bangladesh (shrimp and prawn): Meezanur Rahman (Artemia4Bangladesh EU project, WorldFish)
- China (marine fish, shrimp, prawn and mitten crab): Liying Sui (Asia Regional Artemia Reference Center, AR-ARC) and Song Gao (China Artemia Association, CAA)
- Greece (European seabass and seabream): Dimitris Dimopoulos (Tapias Hatchery of Phylofish company)
- Spain (European seabass and seabream): Gustavo Espelleta (Avramar company)
- Ecuador (shrimp): Stanislaus Sonnenholzner (Centro Nacional de Acuicultura e Investigaciones Marinas CENAIM)



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



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- Brazil (shrimp): Marcos Camara (Federal University of Rio Grande do Norte) and Cristine Macedo (on behalf of Camar company and Aquatec company)

The last session was a Q&A session moderated by Simon Wilkinson (NACA).

The webinar produced a report with specific recommendations for a follow up meeting on Sustainable Development Goal-aligned *Artemia* aquaculture, held in conjunction with the Global Conference on Aquaculture (refer separate articles, this issue). The workshop contributed to preparation of updated recommendations on how to better use *Artemia* in hatcheries as an important input for a new FAO *Artemia* manual and future training programmes for local hatcheries.

The technical presentations from the workshop are available for viewing on NACA's new Youtube channel at the link below. Please subscribe!

<https://bit.ly/artemia-2021>