



Shrimp health: Online Consultation on Strategies for Hepatopancreatic Microsporidiosis caused by *Enterocytozoon hepatopenaei* (EHP)

NACA organised an Online Consultation on Strategies for Hepatopancreatic Microsporidiosis caused by *Enterocytozoon hepatopenaei* (EHP) from 9-10 February 2021 via Zoom. EHP is an important pathogen affecting shrimp health. The online consultation aimed to discuss the current status of EHP in the region, and to present recent innovations and currently recommended strategies of control, including information to give confidence that EHP cannot be spread via chilled or frozen export products prepared and packaged for human consumption.

Experiences from selected countries that have reported the presence of the disease were presented and discussed, including: monitoring, surveillance and reporting activities; recent and current research studies; problems and other issues/gaps in managing the disease especially at the farm level. Presentations included:

- History of hepatopancreatic microsporidiosis caused by *Enterocytozoon hepatopenaei* (Prof. Tim Flegel).
- Development of research tools for EHP pathogenesis and control (Dr. Kallaya Sritunyalucksana).
- Managing the hazard of *Enterocytozoon hepatopenaei* in shrimp farming through careful planning to optimize productivity (Dr. Celia Lavilla-Pitogo).
- Updates on EHP transmission route in shrimp and recommendations for its control in the farm (Dr. Diva Cano).

- Is the fungal pathogen EHP now the key health concern for Asian shrimp producers? (Dr. Andy Shinn).
- Country reports on the status of EHP, including from China, India, Indonesia, Malaysia, Myanmar, Philippines, Thailand, and Vietnam.

The consultation also discussed the possibility of forming a regional, real-time, cooperative EHP-control network.

Video recordings available on Youtube

Recordings of most presentations are available on NACA's Youtube channel. You can find the EHP playlist at:

<http://bit.ly/shrimp-ehp>

We would appreciate it if you would please consider liking and subscribing to the channel, which will be used to host technical presentations on aquaculture from future consultations and training courses.

Youtube is a new venture for NACA and we plan to experiment further with both audio and video format materials including lectures, interviews and educational materials over the course of the year.

NACA's Youtube channel can be found at:

http://bit.ly/enaca_org

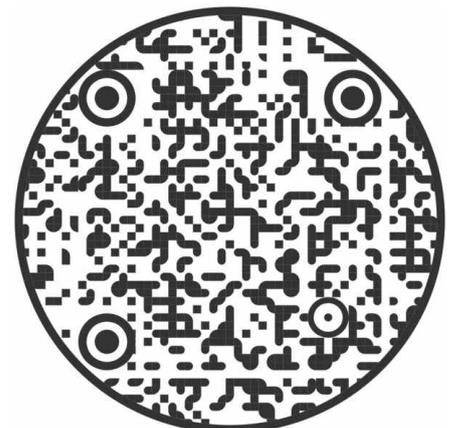
Webinar: Pathogen Free: Non-infectious Diseases and Disorders of Aquatic Animals

The fish Health Section of the Asian Fisheries Society will convene a webinar via Zoom on **21 April**, from 12:00 to 15:00 Bangkok time (GMT +7). Topics include:

- Stress-related non-infectious disorders in fish (Prof. George Iwama, Quest University, Canada).
- Nutritional diseases of aquatic animals Prof. Orapint Jintasataporn (Kasetsart University, Thailand)
- Harmful algal blooms and fish kills Prof. Lim Po Teen (University of Malaya)
- Aquaculture ecotoxicology Dr Roger Chong, CSIRO Australia).

Participation is free, but registration is required. To register your attendance, please scan the QR code below or visit:

<http://bit.ly/pathogen-free>



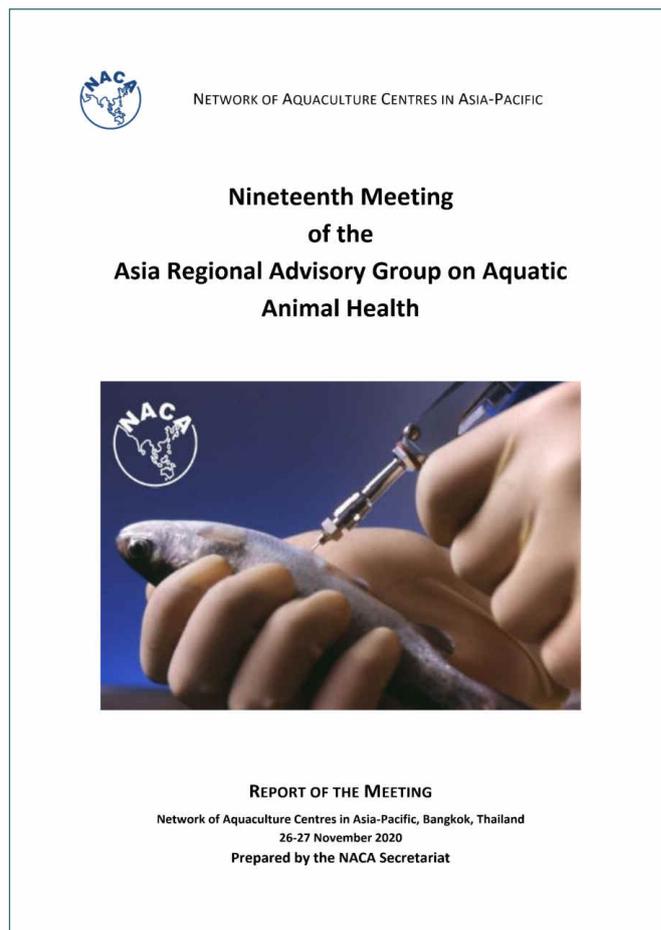
Report of the Nineteenth Meeting of the Asia Regional Advisory Group on Aquatic Animal Health

This report summarises the proceedings of the 19th meeting of the Advisory Group, held 26-27 November 2020 via video conference. The group's role includes reviewing disease trends and emerging threats in the region, identifying developments in global aquatic disease issues and standards, evaluating the Quarterly Aquatic Animal Disease Reporting Programme and providing guidance on regional strategies to improve aquatic animal health management. The group discussed:

- Progress in NACA's Regional Aquatic Animal Health Programme.
- Updates from the OIE Aquatic animal Health Standards Commission.
- Updates on the Progressive Management Pathway for Improved Aquaculture Biosecurity.
- Updates on OIE Regional Collaboration Framework on Aquatic Animal Health.
- Emerging aquatic animal diseases and pathogens in the last decade in the Asia-Pacific region.

Updates on the Quarterly Aquatic Animal Disease Reporting System, including new functionality of the WAHIS system and regional disease list.

Members of the Advisory Group include invited aquatic animal disease experts in the region, representatives of the World Animal Health Organisation (OIE) and the Food



and Agricultural Organization of the United Nations (FAO), collaborating regional organisations such as SEAFDEC Aquaculture Department (SEAFDEC AQD) and OIE-Regional Representation in Asia and the Pacific (OIE-RRAP), and the private sector. Download the report from:

<https://enaca.org/?id=1147>

Quarterly Aquatic Animal Disease Report, July-September 2020

The 87th edition of the Quarterly Aquatic Animal Disease Report contains information from fifteen governments. The foreword discusses the 19th Meeting of the Asia Regional Advisory Group on Aquatic Animal Health, held 26-27 November 2020. Download the report from:

<https://enaca.org/?id=1144>





GLOBAL CONFERENCE ON AQUACULTURE

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Join us online from 22-27 September 2021. Participation in the conference is **free!** Please register your participation at the link below.

<https://aquaculture2020.org/registration/>

Submit a poster!

Participants are invited to submit abstracts for the poster session of the conference. Please note that a registration number is required in order to submit an abstract:

<https://aquaculture2020.org/posters/>

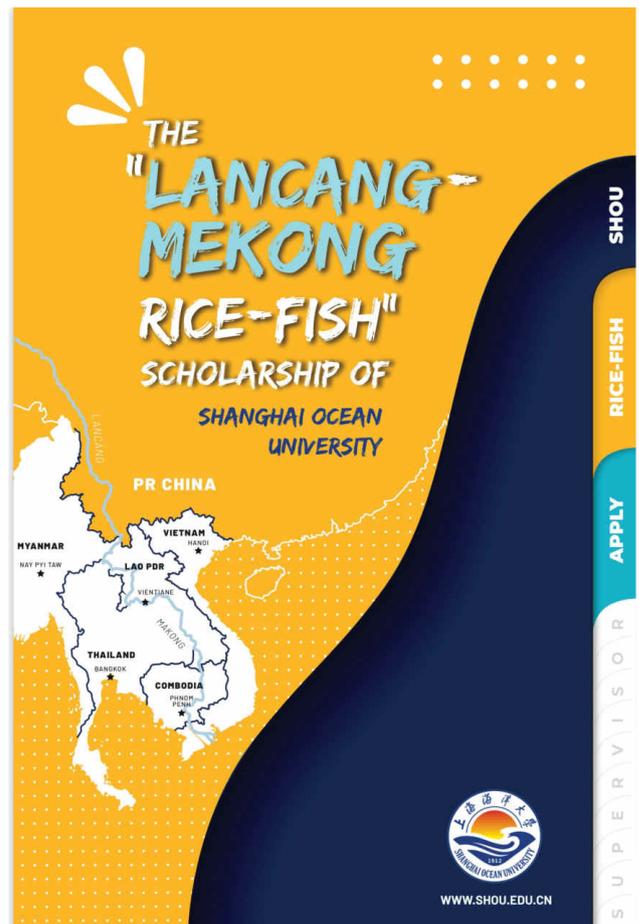
Scholarship opportunity: "Lancang-Mekong Rice- Fish" Program

Shanghai Ocean University is offering master and PhD scholarships for aquaculture and hydrobiology-related majors interested in studying rice-fish farming in the Lancang Mekong River area.

The scholarship programme is open to nationals of Myanmar, Cambodia, Lao PDR, Thailand and Vietnam who are less than 35 years old and have a bachelor degree with good academic record.

The scholarships include full tuition fee waiver, accommodation, living allowance and medical insurance. Applications close **30 May 2021**. For more information, please download the brochure from:

<https://enaca.org/?id=1148>



International *Artemia* Aquaculture Consortium



Network of
Aquaculture
Centres in
Asia-Pacific

Prof. Patrick Sorgeloos gave a presentation at FAO's FI Department Seminar Series on 27 January. A video recording of the seminar is available at:

<http://bit.ly/artemia-consortium>

Brine shrimp *Artemia* cysts are the critical live food source in the annual hatchery production of more than 100 billion crustacean post larvae and marine fish fry, a hatchery industry valued at more than 1 billion US\$ responsible for the final production of over 10 million tonnes of high-value aquaculture species (e.g. shrimp, prawn, crab, bass, bream, grouper, flounder, milkfish).

At the first FAO Technical Conference on Aquaculture in 1976 the future use of *Artemia* as hatchery food was questioned because of its limited availability at that time from only 2 sources in the USA. Where annual world consumption of cysts was only a few 100 kgs in the 1970s it is now over 3,000 metric tons harvested from large salt lakes in North America and in Asia, and produced under controlled conditions (be it still in moderate quantities) in seasonal salt works in SE Asia.

As has happened with several lakes in the last decade, inland salt lakes are under constant threat to dry up and with climate change this situation could get worse in the future. With 90% of present *Artemia* harvested from inland salt lakes the future of the hatchery industry could be at risk and requires urgent attention.

In order to guarantee a more sustainable provision of *Artemia* for the still expanding hatchery industry several critical issues need to be addressed but also different opportunities could be better explored: e.g. conservation of *Artemia* biodiversity, use of science-based protocols (as developed for the Great Salt Lake in Utah, USA) for sustainable harvesting of wild sources (especially from salt lakes in Central Asia), socio-economic opportunities for integration of *Artemia* production as extra income in the many seasonal artisanal salt farms in Asia and Africa (locally available *Artemia* will facilitate new aquaculture developments), study of the possible impact of climate change

on *Artemia* production both in inland lakes as well as coastal saltworks, development of new applications through strain selection and selective breeding (available *Artemia* genome), propagation of improved guidelines for its production and bio-secure use in aquaculture (updated *Artemia* manual, *Artemia* webinars), integration of this extractive *Artemia* farming with intensive fish/crustacean aquaculture, use of *Artemia* biomass as high-value protein ingredient in local human diets, among other possible improvements for the aquaculture sector.

An international interdisciplinary approach is needed to tackle these *Artemia* issues and opportunities, similar to the breakthrough in *Artemia* use in aquaculture following the FAO Kyoto conference as a result of the accomplishments of the "International Study on *Artemia*" in the period 1978-1997 by a multidisciplinary group of *Artemia* experts from Europe and the Americas. This resulted in the exploitation of several new natural resources (in Australia, Brazil, China, Ecuador, Iran, Russia and Venezuela), new techniques for the processing of *Artemia* cysts and its use in aquaculture hatcheries (*Artemia* Manual 1986, Live Food Manual 1991) and the setting up of seasonal *Artemia* production in coastal artisanal saltworks in Kenya, Mozambique, Peru, the Philippines, Sri Lanka, Thailand and Vietnam.

A recent inquiry revealed interest in establishing a new "International *Artemia* Aquaculture Consortium" from institutes and companies active with *Artemia* in Bangladesh, Belgium, Brazil, Cambodia, Chile, China, Ecuador, Greece, India, Indonesia, Iran, Kazakhstan, Kenya, Malaysia, Myanmar, Russia, Spain, Sri Lanka, South Africa, Sweden, Tanzania, Thailand, USA, Uganda, Uzbekistan and Vietnam. In this sense, the speaker wants to bring the issue in order to explore with FAO the best strategy to tackle these critical *Artemia* issues for the sustainable development of hatchery aquaculture as well as the new opportunities for food production and job creation.

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



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Patrick Sorgeloos has been involved in fish and shellfish larviculture R&D in Europe, Asia, Latin America and Africa ever since the mid-seventies. In 1978 he established the *Artemia* Reference Center and in 1986 he became the first professor of aquaculture at Ghent University in Belgium. Until his retirement as emeritus professor in October 2013 over 250 Master (from > 50 countries) and 70 PhD alumni (from > 20 countries) graduated at Ghent University in the field of aquaculture under his guidance. Patrick is a strong promoter of international networking in aquaculture and is still involved with the European Aquaculture Technology & Innovation Platform EATIP, the European Commission, FAO and the World Aquaculture Society. In 1983 he was co-founder of the spin off company *Artemia* Systems that is now operating under the name of INVE Aquaculture and belongs to Benchmark Holding. He received honorary awards in China, Egypt, Greece, India, Malaysia, Russia, Thailand, USA and Vietnam.