



## Culture-based fisheries exchange visit from Lao to Cambodia



Community representatives (right) with the project team (left), Kompong Tom Province, Cambodia.

A team of Lao researchers, government officers and three community representatives visited Cambodia from 25-29 May 2014 to observe local culture-based fisheries practices and to share experience. The exchange was conducted as part of the ACIAR-funded research project *Culture-based Fisheries Development in Lao PDR and Cambodia*, which has been running since 2012. This was the second such exchange under the project; in 2013 participants from the Cambodian side had visited Lao PDR.

The Lao team began their visit, which would circumnavigate the Great Lake by road, in Phnom Penh after a long drive from Vientiane. After meeting their counterparts at the Cambodian Department of Fisheries, they travelled to

Kompong Tom Province to observe a large farm operating by an irrigation canal and reservoir. Due to favourable topography the farm was able to implement a gravity-fed flow-through system through the culture ponds, which were stocked mainly with tilapia, bighead and silver carp. The farm adopted a partial harvest regime with harvesting time and quantity determined according to current market demand. The team also observed a nearby natural lake which was one of the culture-based fisheries sites being piloted by the project. However, it was not possible to take a close look due to the condition of the road.



*Irrigation reservoir used for secondary culture-based fisheries activity, Kompong Tom Province, Cambodia.*

In the afternoon the team visited a community that were practicing culture-based fisheries in a community pond through the project. The community committee warmly welcomed the delegation and gave presentations on the local development initiatives in their village, which also included fisheries management and micro-credit programmes. The community expressed satisfaction with their first experiences in culture-based fisheries under the project and indicated that they planned to scale up the activity over the next few cycles as they became more confident.

On the 27th of May the group travelled to Bantaey Province and visited a fisheries conservation site. The conservation area was a deep part of a river connected to the Great Lake (Tonle Sap), adjacent to a temple. Fishing in the conservation area was forbidden and obviously this restriction was enforced, as the pool was heavily populated with large *Pangasius*, tinfoil barb and to a lesser extent carp species.

The team reached Kompong Chhang Province on the 28th, where they observed floating communities and cage culture taking place in the Great Lake. As it was the dry season the water level was low. Hundreds of boat houses were clustered together with cages beneath for fish culture, which were mainly stocked with *Mystus* catfish, which fetches a high market price of around US\$8/kg. The team also observed a fishing boat landing its catch, with many species and a great variation of sizes of fish ranging from less than one



*The trials of field work. Get out and push!*

hundred grams to several kilograms. In the afternoon the group travelled back to Phnom Penh and visited fish farms in the outlying suburban areas, which combined hatchery and grow-out operations. Fry and fingerlings were nursed

in hapas before being stocked out into the ponds. A simple compound feed paste was mixed and cooked on site into a paste for feeding.

The final day of the exchange visit was spent at the Cambodian Fisheries Administration, where Cambodian counterparts gave presentations about their culture-based fisheries activities and experiences under the project, followed by questions and answers. The Cambodian side indicated that they had found culture-based fisheries to be a very effective mechanism for improving the livelihoods of rural communities, although work was still at a relatively early stage with much learning to do. They advised that careful site selection especially with regards to the social aspects of the project were the key to success. It was important to work with

communities that had both a strong commitment to the project and good local organisation and leadership, as it would be difficult to make progress otherwise.

The exchange visit highlighted differences in the operating environment between the two countries that affected culture-based fisheries activities. Aside from different styles of local government and community organisation, Cambodia differs from Lao PDR in having an open access policy with regards to fishing. In Cambodia by law, anyone can fish in a water body (excepting designated conservation areas), whereas in Lao PDR access to a water body can be controlled or restricted by the local community.



*Above: Landing the catch from a well boat. Below: Sorting it on deck in a floating cage house. Tonle Sap, Cambodia.*



*Fish conservation area in a deep pool, Banteay Province, Cambodia.*



Usual practice in culture-based fisheries is to protect newly stocked fish for a period in order to let them reach a good size and maximise the returns on investment.

In Cambodia this is not possible due to the open access policy, which is important for food security of the poor and must be respected. However, Cambodia does designate portions of water bodies as conservation zones that are closed to fishing. Discussions are underway about the possibility of using conservation zones as nursery areas for stocking seed for culture-based fisheries activities.

NACA would like to thank the Cambodian side for their excellent support in organising and coordinating the exchange visit, in particular His Excellency Mr Srun Limsong for generous use of his time in accompanying the Lao team for the entire trip.



Lao and Cambodian teams in the Cambodian Fisheries Administration Office, Pnomh Penh.

## National Fish Day, Cambodia

NACA was privileged to have the opportunity to attend the National Fish Day celebrations in Cambodia, held at the Kdol Reservoir in Kampol Chhnange Province on 1 July and organised by the Fisheries Administration. Approximately 10,000 people attended the ceremony, including many school children and villagers from surrounding areas, which was presided over by Prime Minister Hun Sen. The Director General of the Fisheries Administration gave a report on fisheries and aquaculture development over the past year. This was followed by a speech by the Prime Minister who spoke at length about recent changes to fisheries laws including the replacement of the fishing lot system with an open access fishing regime in inland waters and the need to observe conservation measures such as respecting closed seasons to allow fish to breed, the protection of conservation areas and bans on illegal types of fishing gear. The ceremony concluded with the release of approximately 1.5 million fry into the reservoir, as well as a large number of adult brood-stock of a wide variety of species.



Releasing fish seed into the Kdol Reservoir.

## WAS Adelaide: Special Session on Regional Cooperation for Improved Biosecurity

Raising awareness of the link between genetics and disease was addressed by the global aquaculture community at a special session on regional cooperation for improved biosecurity held at the World Aquaculture Adelaide 2014 conference on 11 June.

Aquatic animal health issues cause massive losses in the aquaculture industry each year. It is estimated that across the global tropical shrimp industry alone around 40% of production is lost to disease.

Much of the impact falls upon small-scale farmers, who are not equipped to deal with disease outbreaks. These often have devastating effects on their incomes and livelihoods. Larger scale commercial producers are also not immune from disease issues, often suffering major financial setbacks due to outbreaks which can also impact on international trade.

Effective health management is a shared responsibility that requires a coordinated approach from all countries. The session gave participants of the conference the opportunity to network and discuss this important issue.

The session was organised by Network of Aquaculture Centres in Asia Pacific and sponsored by the Australian Centre for International Agricultural Research, with the aim to bring together industry and scientists to discuss closer cooperation in health management and biosecurity.

The session was organised into three sub-sessions:

- Regional cooperation in aquatic animal health management.
- Dealing with emerging diseases (focussing on EMS / AHPNS as a case study).
- Domestication programs and disease emergence.

Discussion panels were held after the sub-theme presentations to allow participants to interact with the presenters. Recordings of the presentations will be available for download or online access via the NACA website in due course, please visit the Podcast section <http://www.enaca.org/modules/podcast/>.

### Inbreeding and disease in tropical shrimp aquaculture: a reappraisal and caution

The disease crisis facing shrimp aquaculture may be propelled, in part, by an interaction between management practices that cause inbreeding, and the amplification by inbreeding of susceptibility to disease and environmental stresses. The study describes and numerically simulates gene flow from *Penaeus (Litopenaeus) vannamei* hatcheries that employ a 'Breeder Lock' to discourage use of their PL as breeders, through 'copy hatcheries' that breed the locked PL, to inbred shrimp in farm ponds. Re-analysis of published data shows that inbreeding depression under stress is exceptionally strong in shrimp. Inbreeding is currently overlooked as a problem because: (1) procedures recommended for well-managed hatcheries do not consider their implications for the copy hatcheries that supply most farmed shrimp (estimated 70%), (2) inbreeding in hatcheries is often reported as zero even though zero is the mathematical expectation of the usual estimator (Fis, fixation index) whatever the true genealogy of the broodstock. Simulation shows, however, that inbreeding can be estimated with Wang's trioML estimator, that Fis can differentiate Breeder Locked from copy PL and that simple tests can verify the lock status of PL. The importance of inbreeding should be re-evaluated in the context of disease and environmental stress. Unrecognized inbreeding may increase the incidence, prevalence and lethality of WSSV, IHNV, EMS (AHPND) and other diseases.

Full article by Roger Doyle available at:  
<http://dx.doi.org/10.1111/are.12472>

### Shrimp EMS/AHPND Special Session at DAA9

The organisers of the 9th Symposium on Diseases in Asian Aquaculture (DAA9) will convene a special session on shrimp EMS/AHPND. If you want to know the latest on this emerging shrimp disease and become part of the Fish Health Section (FHS) of the Asian Fisheries Society (AFS) network, don't miss this opportunity.

Prof Tim Flegel will facilitate the session in collaboration with FHS and DAH (MARD) with an opening presentation titled "EMS/AHPND: a game changer for the future development of aquaculture". This will be followed by presentations from other invited speakers and speakers selected from submitted abstracts. Prof Lightner, Dr Gomez-Gill, Dr Hirono, Prof Grace Lo and Prof Sorgeloos have confirmed making presentations at this session. We are expecting many more presentations from leading researchers from within and outside this region. The scope of the session will be broad and cover sequencing and analysis of genomic and epigenomic DNA of AHPND isolates; pathology, epidemiology and control; plus ongoing regional/international initiatives in Asia Pacific for dealing with the disease. The session will be part of the five day DAA9 event and is open to all DAA9 registered delegates.

Visit DAA9 website at [www.daa9.org](http://www.daa9.org) and register now. Submit your AHPND research for presentations as oral or poster papers.

## 2nd International Symposium on Aquaculture and Fisheries Education

The 2nd International Symposium on Aquaculture and Fisheries Education (ISAFE2) is jointly organised by the Asian Fisheries Society and Shanghai Ocean University. The symposium will be convened at the SHOU campus at in Shanghai from 22-24 April 2015.

ISAFE2 will bring educators, distinguished speakers and training agencies from across the aquaculture and fisheries industries, teaching institutions and education regulatory agencies to discuss many critical issues pertaining to the needs of the industry on the one hand and the issues confronting the training, academic and education regulatory agencies in ensuring a sustainable well-educated industry sector on the other in the Asia-Pacific (AP) region.

ISAFE2 will have the theme "Better education, Better professionals, Better Industry". The symposium will discuss issues highlighted during ISAFE1 and on-going issues confronting aquaculture and fisheries education in the region. It will:

- Discuss the current status of aquaculture and fisheries education in the AP countries with special reference to
- Curricula and courses.
- Accreditations, quality and certification.
- Collaboration and partnership.
- Examine the existing and future linkages between AFS and regional educators with international agencies and institutions.
- Explore the on-going development of distance education and its impacts on the delivery of aquaculture and fisheries education.

### Call for papers

The symposium will be calling for submission of oral and poster papers in the near future. All submitted papers must be based on original research and have not been previously submitted for publications or presented in another

conference. A comprehensive list of topics is under consideration for presentations during ISAFE2. They include:

- Current status of fisheries and aquaculture education.
- Need-based curriculum development.
- Vocational Vs Technical Vs Higher education training.
- Innovative teaching and learning methods.
- Distant / flexible education.
- Partnerships between stakeholders – academic, training and industry sectors.
- Support to young aquaculture and fisheries scientists.
- Future direction and strategy.

For more information, please visit the ISAFE2 website at :

<http://isafe2.shou.edu.cn/>.

### Report on Sustainable Fisheries and Aquaculture for Food Security and Nutrition

A new report addresses a frequently overlooked but extremely important part of world food and nutrition security: the role and importance of fish in seeking food and nutrition security for all. Fisheries and aquaculture have often been arbitrarily separated from other parts of the food and agricultural systems in food security studies, debates and policy-making.

The report presents a synthesis of existing evidence regarding the complex pathways between fisheries and aquaculture and food and nutrition security, including the environmental, economic and social dimensions, as well as issues related to governance. It provides insights on what needs to be done to achieve sustainable fisheries



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and aquaculture in order to strengthen their positive impact on food and nutrition security.

The ambition of this compact yet comprehensive report is to help the international community to share and understand the wide spectrum of issues that make fisheries and aquaculture such an important part of efforts to assure food security for all.

The High Level Panel of Experts on Food Security and Nutrition (HLPE) was created in 2010 to provide the United Nations' Committee on World Food Security (CFS) with evidence-based and policy-oriented analysis to underpin policy debates and policy formulation. The HLPE reports provide evidence relevant to the diversity of contexts, with recommendations aiming to be useful to guide context-specific policy interventions. Download the full report from:

<http://www.fao.org/3/a-i3844e.pdf>