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Kasetsart University and NACA sign MOU on genetics and biodiversity

Kasetsart University through its Faculty of Fisheries (KUFF) and NACA signed on 3 November, a memorandum of understanding to cooperate in a regional program on genetics and biodiversity for aquaculture and inland fisheries management. In signing the accord, Faculty of Fisheries Dean Yont Musig cited the numerous cooperative activities that KU and NACA have entered into over the years. He said NACA's partnership with the University had offered the University valuable opportunities to be involved actively in the regional program on aquaculture development. Professor Uthairat Na-Nakorn, one of Thailand's top fish genetic scientists, and head of the genetic laboratory of the Aquaculture Department of KUFF, said the MOU is the first formal agreement signed between the KUFF and NACA and marks a closer, more productive collaboration. She was pleased that the genetic lab of KUFF has been considered as the technical focal point for collaboration, and said that the staff and graduate students will be directly involved in, and at the same time benefit from, future the cooperative activities.

The KUFF Genetic Lab, whose brand new and well-equipped building is named "Walailak" in honor of HRH Princess Chulabhorn, shall be a regional resource centre for the program and therefore another important source of assistance from Thailand to the other countries in the region.

Even before the formal agreement, collaborative work on molecular genetics by Professor Na-Nakorn of the KUFF and Dr. Thuy Nguyen, a geneticist based at NACA, had been initiated with plans to establish a regional information platform on the NACA website www.enaca.org and in Aquaculture Asia Magazine, collaboration in research activities, and development of a training manual, with advice from Devin Bartley of FAO Fisheries, for a planned regional training program on molecular genetics techniques and their applications in aquaculture and inland fisheries management.

The training activity is expected to provide the basis for development of a regional research program, to be implemented by the trainees in their own countries and coordinated and assisted by NACA. Broadly, the research would focus on the application of molecular genetics to the management of fish genetic resources for sustainable aquaculture development, and conservation of the indigenous fisheries resources. Such activities will support the requests from NACA members for guidance on improving quality of aquaculture seed, whilst conserving and better managing aquatic biodiversity and genetic resources. FAO's Fisheries Department has indicated strong interest in collaborating in the planned program. NACA has also sought the participation of the World Fish Centre. A survey of national R and D capacities and training needs in fish genetics is being readied as part of the preparation for the training program.

From left: Assoc. Prof. Dr. Prathak Tabthipwon (Vice Dean), Assoc. Prof. Theera Lekcholyut (Vice Dean), Assoc. Prof. Sunan Pattarajinda (Head of Dept. of Marine Science), Prof. Dr. Uthairat Na-Nakorn (Head of Fish Genetics Laboratory), Dr. Michael Phillips (NACA), Assoc. Prof. Dr. Yont Musig (Dean), Mr. Pedro Bueno (DG, NACA), Assist. Prof. Dr. Wara Tepahudee (Head of Dept. of Aquaculture) and Dr. Thuy Nguyen and Mr. Simon Wilkinson (NACA).

Village shrimp health management project in Andhra Pradesh

A good draw shows promise for a bigger scale program

It was standing-room-only despite the monsoon rains at the 500-seat Mogaltur movie house in east Andhra Pradesh. The show was something a Bollywood fan would have found indescribably boring: It was a farmer workshop. And the story revolved around aquaculture for community development. The plot - hang on – was "demonstrating success in combating shrimp health problems through self-help by small and poor farmers organized into clusters and adopting good management practices that they themselves were involved in developing, piloting and disseminating among their fellow farmers" with a little help from technicians and experienced workers. It was a low budget, low profile venture with an inexpensive cast that needed no elaborate or clever script; it was their livelihoods on the line.

MPEDA-NACA-ICAR pack them in.

The protagonists? Farmers who have joined the project with a mix of stories to tell; farmers who haven't but were curious; farmers who (in good faith but seemed like in revenge) asked difficult questions at the government officials and the people doing business with them. The supporting cast? Hopeful hatchery producers, feed suppliers, technical service providers, processors, exporters, bankers, the mass media including the venerable editor of the Fishing Chimes of India, officials and scientists from the Marine Products Export Development Authority and Indian Council of Agricultural Research, a state parliament member who is also farmer leader, a farmer from Thailand who has been part of the team of the field advisers (one of two flown in occasionally by NACA for specialist jobs especially at the start, the other is a health scientist of Thailand's Department of Fisheries), two staff members of the NACA secretariat, and the team of five young Indian technicians and professionals who have been organized and trained by NACA, MPEDA and ICAR to guide the project. No consultant was there with development-speak nor a politician to entertain. It was a NACA-MPEDA-ICAR technical cooperation project.

Talk was straight and based on the farmers' struggle to raise a crop and make some money, to suppress diseases, their uncertainty over market requirements, and unease with change. There was an occasional account of triumph. The project has been going on for a little over three years with some modest lessons deemed by farmers and MPEDA as showing enough promise to stage it on a bigger setting. At the NACA-MPEDA meeting held from 8:00 to 9:30 PM on the train back to Chennai that day, the new Chairman of MPEDA, Shri G. Mohan Kumar (joined by Joint Director Vishnu Bhat who had been MPEDA's anchorman for the project) told NACA's Pedro Bueno, Michael Phillips and the field manager Arun Padiyar, that MPEDA saw convincing evidence for the project to be extended and expanded into more of Andra Pradesh and other states. Three groups of 15-20 farmers each from other villages had also filed letters signed by all of them, saying that they wanted to join the project.

The full story: It is unexciting reading with such figures as how much the farmers improved their yields or how less frequent they were visited by disease, but we needed to fill space!

Report on the farmer workshop on "Village Demonstration-2004", at Mogaltur Village, Andhra Pradesh

The Marine Products Export Development Authority in association with NACA conducted a workshop called "The Village Demonstration 2004" on 6th November at Sri Venkateswara Movie Hall, Mogaltur, Andhra Pradesh. 650 participants, mostly shrimp farmers, joined by seafood exporters, hatchery and feed mill operators, scientists and bankers, attended. Mogaltur is 350 km east of Hyderabad and 400 km north of

Chennai. It has high-yielding carp farms, a huge rice industry, and stretches of small shrimp farms.

The purpose of the workshop was to present and discuss with farmers the results from a Village Demonstration program conducted in 2004 and to plan the summer crop of 2005. The demonstration program, a collaboration between MPEDA, and NACA, with additional support from the Australian Centre for International Agricultural Research (ACIAR) was initiated in 2001. The purpose of the program is to develop and promote the adoption of Better Management Practices through self-help farmer groups or aquaclubs. The objective is to farm healthy, safe and quality shrimps, in an environmentally sustainable manner.

In this project, a set of locally tailored Better Management Practices (BMPs) was developed based on shrimp disease risk factors. The farmers of Mogaltur and surrounding villages in Andhra Pradesh implemented these BMPs by forming 'self help groups' or 'Aquaclubs'. The study team used participatory extension approach to promote BMP adoption by farming community. The crop results from 254 demonstration ponds spread over 173 hectares of area in six villages gave a 33% increase in the yield, one-and-a-half times larger sized shrimp and 20% less disease prevalence compared to surrounding non-demonstration ponds. The quality of the shrimps was improved by not using banned chemicals and with better harvest and post-harvest practices. A farmer-friendly scheme devised by the project was a 'contract hatchery seed production system' in which many small-scale farmers could procure high quality of seeds at reasonable price from a hatchery that had proven record of producing healthy seed.

NACA's Director General inaugurated the workshop, leading the lighting of the traditional lamp. He said that NACA is committed to help aquaculturists, especially the small farmers of the region through programs that provide guidance for sustainable farming and livelihoods. The task is even more urgent in the face of increasing market requirements, he said. He commended the farmers of Sri Subramanyeswara Aquaclub, Mogaltur for actively taking part in the program and cited the farm/cluster scheme as a model for extension. Self-help farmer clubs enable small and poor farmers to take advantage of the economy of scale by organizing, he stressed, and being organized increases their ability to negotiate with suppliers and buyers and become a stronger partner of government. He thanked the Government of India in particular MPEDA and ICAR and the State Government of Andhra Pradesh for their confidence in the ability of NACA to provide technical and management assistance in field projects such as this. He highlighted the one important lesson that the project can offer to aquaculture development efforts: By engendering trust and confidence and fostering cooperation among the players along the input supply- production-marketing-processing-exporting chain, everybody wins. He contrasted this with situations elsewhere in which everyone in the chain wanted to take advantage of every one else.

Dr. S. Ayyappan, Deputy Director General (Fisheries), Indian Council of Agricultural Research (ICAR), New Delhi, released a brochure on "Village level participatory shrimp farmers through Aqua Clubs / Societies". Sri V. Vasantha Kumar, the Member of Legislative Assembly, Government of Andhra Pradesh and President of the State Prawn farmer's welfare Association, received the brochure.

Shri G. Mohan Kumar, IAS, Chairman, MPEDA thanked NACA for its cooperation in the program, which he said was an important part of MPEDA's development initiatives to increase export earnings for the economy and improve farmers' lives. He noted the increase in yields, decrease in production costs, and improvement in the quality of products, which he said are the basic requirements for market competitiveness, especially of a highly traded commodity like shrimp. He assured the support of MPEDA to the shrimp farmers throughout the country to implement the BMPs through formation of Aqua clubs/farmer societies. In this regard he announced the extension and expansion of the MPEDA/NACA program from pilot to wider-scale implementation in Andhra Pradesh and other important shrimp farming states. He announced the establishment of revolving funds to help promote implementation of BMPs.

Other speakers included Dr. Michael Phillips, NACA Environment specialist who highlighted the importance of cooperation among the players, Mr. V. Vasantha Kumar, MLA, & Honorary President, A.P. State Prawn Farmers Welfare Association who said that adoption of good management practices has its own rewards in better yields, less pollution and less dependence on government assistance, and Mr. M. S. Swamy, President, All India Shrimp Hatcheries Association, Mr. U.K.V. Raju, President, Seafood Exporters Association of India, A.P. Region, Mr. V. Suresh, Joint Director, Department of Fisheries, Andhra Pradesh, Mr. A. K. Rayudu, Secretary, A.P. State Prawn Farmers Welfare Association, who all lauded the project and urged MPEDA, NACA and ICAR to continue with their assistance. The field technical team made a Powerpoint presentation (the movie house large screen came in handy) on the progress of the project, the outcomes of the demonstration during 2004, and a list of suggestions to farmers for 2005 summer crop. The results were discussed with the farmers, and recommendations drawn from the deliberations.

Aquaclub leaders from six villages including Mr. G. Narayana Murthy, President of the Sri Subramenyeswara Aqua club of Mogaltur described their experiences and said they were satisfied with the farm-level progress. They urged MPEDA and NACA to continue the technical support not only to their clubs but also to other farmers of Andhra Pradesh. Farmers from neighboring villages formally asked to join the 2005 program.

A committee to manage fish health in Viet Nam

Viet Nam, as many other countries in Asia-Pacific, has been investing a lot of resources into the development of sustainable aquaculture. These efforts have been hampered by disease epidemics. The white spot disease (WSSV) outbreak in shrimp farming is a classic example of this. Since its appearance in 1993, WSSV been threatening the livelihood of hundreds of thousands of farmers worldwide and remains one of the major causes of crop losses in the region. The effect of aquatic animal disease goes beyond the loss in production. Farmers experiencing health problems in their farms are more likely to use chemicals, which could lead to a reduction in product quality. For these reasons, aquatic animal disease control has become a priority for many countries. The efforts towards a better management of aquatic animal health have been strongly supported by regional and international organizations such as NACA, FAO and OIE.

Participants discussed development of a fish health committee for Vietnam.

Through its Aquatic Animal Health Program, in collaboration with FAO and OIE, NACA supports countries in the harmonized implementation of health management through disease diagnostics, surveillance and reporting, health certification, quarantine, emergency preparedness and, perhaps most importantly, the establishment of a national strategy for aquatic animal health management.

A crucial step in setting up a national strategy is the establishment of a forum where aquatic animal health issues can be discussed by people with diverse expertise and roles in the system, and decisions made on the major issues and actions to be included in the national strategy. National committees for aquatic animal health have already been established in 4 of the 21 countries in the NACA region, namely Australia, Indonesia, Malaysia and Thailand, and the experience gathered by these countries is highly valuable for other countries in the region.

For this reason, on 24-25 September, a meeting between representatives of those four countries, NACA and FAO aquatic animal health experts and a delegation of Vietnamese national stakeholders led by Dr Nguyen Xuan Ly (Director of Science & Technology Department) was held in Jakarta, Indonesia. The objective of the meeting was to exchange experiences and draft the structure and responsibilities of a national committee for aquatic animal health in Viet Nam.

The meeting was supported by the Danish-government funded Support to Brackish water and Marine Aquaculture project (SUMA) and NACA and was held in conjunction with the FAO/NACA/World Fish Center/Government of Indonesia regional workshop on preparedness and response to aquatic animal health emergencies.

The first day of the meeting was focused on presenting and discussing the regional experiences. Dr Nguyen Tu Cuong (Director of the National Fisheries Quality Assurance and Veterinary Directorate) also presented the current Vietnamese strategy for the management of aquatic animal health and his views on the role and responsibility of the national committee. On the second day the Vietnamese participants discussed the structure and mode of operation of the committee, while the international participants discussed a strategy to aid other countries in the establishment of similar committees. The meeting continued with a presentation delivered by Ms Phan Thi Van (Research Institute for Aquaculture No.1) in which the outcome of the discussion was reported to the international participants. The presentation was then followed by an exchange of opinions between the participants.

By the end of the meeting the objective was reached and the structure and mode of operation of a committee was drafted. The Vietnamese delegation agreed that the primary objective of the committee would be to advise the Minister of Fisheries on issues related to aquatic animal health and more specifically on strategy development,

legislation, implementation, contingency funds, chemical use for aquatic animals etc. Members will be selected from government and academic institutions and will include the NACA National Coordinator, i.e. the person in charge of coordinating the implementation of aquatic animal health management in Viet Nam following the guidelines agreed with other countries in the NACA region.

The next step will be to submit the drafted committee outline to Vice-Minister Nguyen Van Thang and receive the final approval from the Minister of Fisheries Ta Quang Ngoc. The first meeting of the committee is expected to be held next January, before the Vietnamese Lunar New Year.

This process of regional consultation proved very useful, not only for Viet Nam, but also for countries that already have a committee because of the possibility of learning from experience gathered in the region. By the end of the meeting participants agreed that this approach of consultation should be pursued in the future not only for the establishment of similar committees in other countries but also to deal with other aquatic animal health issues to make best use of the available knowledge and to reach a truly harmonized approach to aquatic animal health in the region.

China to promote healthy shrimp farming

China will actively promote the healthy, safe and environmentally friendly shrimp farming methods to ensure the sustainable development of the sector, said Mr. Liu Zheng, deputy director of the fishery administration under the Ministry of Agriculture. He was speaking at the opening of the two-day "International workhop on healthy, safe and environmentally sound shrimp farming" held in Beijing during 15-16 November 2004. This workshop was jointly organised by the Ministry of Agriculture, China, the Food and Agriculture Organization of the United Nations (FAO), Rome and the Network of Aquaculture Centers in Asia- Pacific (NACA), Bangkok.

Mr Zhen said that shrimp has been a major aquaculture species for more than 20 years and played an important role in China's aquatic exports. Statistics from the ministry shows that from 1996, the country's shrimp culture has experienced a recovery after the 1993 outbreak of shrimp disease. In 2003, China produced 780,000 tons of farm-reared shrimp of which about 120,000 tons were exported. Meanwhile, there has been no report of trade dispute related to quality or safety problems so far this year in shrimp exports. The European Commission also lifted the export ban on aquatic products from China on October 18 this year.

Nonetheless, Mr. Liu admitted that there are still some problems still lagging the sector, citing the unbalanced development between different areas, frequent occurrence of some diseases in some aquaculture farms, and low quality of shrimp post larvae. He noted that the country is now taking measures to strengthen quality control and technical training to ensure a healthy development of shrimp sector.

Shrimp aquaculture and food safety experts from FAO, NACA, INFOFISH, China, Thailand, Viet Nam, India and Ecuador shared their experiences on management practices for addressing food safety, quality and environmental issues affecting the shrimp sector.

An important recommendation from the meeting was the request for FAO and NACA to work further on the development of an internationally accepted set of principles for "healthy, safe and environmentally sound shrimp farming". China will take an active and leading role in the development of these principles, and to vigorously promote regional and international cooperation on the development of responsible shrimp farming.

"Father of China's Shrimp Aquaculture"

Professor Fazhen Zhao is widely acknowledged as the father of shrimp farming in China. He is shown here chairing the FAO/NACA/China workshop on food safety, quality and environmental sustainability of shrimp aquaculture in Beijing on 15-16 November. He began to research shrimp (*Penaeus chinensis*) breeding in 1959, which led to the first shrimp culture activities in Qingdao. Recognizing his scientific and technology development achievements in aquaculture, the Chinese Government has named Prof Zhao to the Chinese Academy of Engineering. At 75 he remains busy with research and research advisory. He is Honorary Director of the Yellow Sea Fisheries Research Institute in Qingdao and Vice President of the China Fisheries Society, which was co-organizer of the workshop.

Professor Fazhen Zhao.

NACA collaboration can extend to west and central Asia, Iran mission suggests

I.R. Iran acceded to the NACA Agreement on April 25, 2004. In this regard, Iran invited the Director General of NACA to visit Iran to discuss collaborative arrangements between NACA and I.R. Iran under the new relationship. A short visit was made between 30 September and 7 October to centers and institutions, development projects, farming areas, and individual farms in two provinces in the north and two in the south as well as Tehran. The visit was to provide a broad picture of the aquaculture development priorities, and opportunities for cooperation with NACA (it was not meant to assess technically and in-depth the aquaculture development status, problems and needs). The findings and conclusions of the visit were discussed at a meeting with the Managing Director of Shilat Organization attended by the Aquaculture Deputy, the General Director for International Cooperation, and other senior officials of Shilat Organization, and the Deputy Director General of the Iranian Fisheries Research Organization. The results of the discussions were finalized and given an implementation framework at a final meeting with the Aquaculture Deputy and the various general directors of services.

Mr. Lotfollah Saeidi, Vice Minister of Jihad-e-Agriculture & Managing Director of Iranian Fisheries, at work. This photo was taken the day after my formal meeting with him and his staff. I was unaware that it was a holiday so I walked to the Shilat Headquarters to say goodbye to friends. I found him working that morning.

The meeting with Mr. L. Saeidi and his staff resulted in the following conclusions:

1. Iran has a very high capability for research, training and implementation of stock enhancement, management and conservation, especially of coldwater species, the result of more than 30 years of work on sturgeon and its relatively more recent but there have been equally intensive activities with some species in the Caspian region (*Rutilus* spp, Caspian "salmon" *Salmo trutta caspius* and rainbow trout *Onchorynchus mykiss*). In this regard, Iran's coldwater aquaculture R and D centres and institutions could play a significant role in the Network's programs. Related to this, Iran's centers for coldwater fisheries and aquaculture resources could become the launch pad for NACA to engage (collaborate with and provide assistance to) the countries of Central and West Asia.
2. The introduction and development of new forms or systems of aquaculture such as mariculture should be accompanied by strengthening the basic or essential local capacities for the new systems. Technical assistance and technology transfer should be geared at manpower capacity building for aquaculture. Demonstrating the feasibility of an aquaculture production system and species in Iran must be supported by a strong indigenous capacity as a requisite to sustainability.
3. On the issue of introduction of alien species, the meeting agreed that any introduction will carry risks that could impact on biological diversity and/or health of native species. But risks can be managed. Any decision to introduce an alien species should therefore be based on a proper risk assessment. Government and the other primary stakeholders could then decide what level of risk it was willing to accept, and design and install the appropriate management and safety protocols to manage the risk. The discussion was precipitated by the MD's question on the benefits and potential risks from introducing *P. vannamei*.
4. On the planned cage culture of marine species, the principle was stressed that sustainability will be ensured by capacity building in terms of manpower and facilities and the use of indigenous marine finfish species.

5. The Managing Director emphasized that addressing the white spot disease problem that had occurred in Chaebde, Khuzestan is a high priority, firstly because farmers there need productive employment and secondly, to prevent the disease from further occurring in other shrimp farming areas.
6. The Managing Director invited NACA's sponsorship of technical and scientific conferences that Shilat will hold in the future. One such conference being planned for 2005 is on "Larviculture".

Participants in the integrated farming, stock enhancement and co-management study tour to China.

Training

Thai Seabass, snakeheads and tilapia

The Secretariat arranged a study visit to Thailand for an aqua-farmer delegation from Adhra Pradesh, India, 12-14 October. By visiting hatcheries, farms and exporters of seabass, snakehead and tilapia in Samut Songkram, Chachoengsao, Chonburi and Nakhon Nayok, the delegation studied the potential of alternative species to marine shrimp species. This self-financed delegation was headed by Dr. V. Venkatesan, President of the Fish Farmer and Hatchery Operator Association, Andhra Pradesh. The other two members in the team were Mr. R. Seshachar, Managing Director, and Mr. Narendran, Director; both from Growel Formulations, Hyderabad, Andhra Pradesh, India.

Dr Venkatesan (centre) and colleagues visit Thai fish hatcheries, producers and exporters to look for alternatives to shrimp farming.

Integrated farming, stock enhancement and co-management in China

The Freshwater Fisheries Research Centre, Wuxi, China, conducted a training-cum-study tour programme for 12 officials from Bangladesh, 16-26 October. The training part covered development and technical issues in carp based low-cost aquaculture, integrated fish farming, inland capture fishery resource enhancement, management and co-management strategy for open water bodies and conservation programme implementation. Field visits relating to the subject matters were arranged for participants for case study and analysis.

The programme was financed by the IFAD-assisted Aquaculture Development Project in Bangladesh. A brief wrap-up session was held at the NACA Secretariat when the team was on transit in Bangkok for Bangladesh. Participants to this programme included Mr. Zahangir Alam Khan, Mr, Sk. Hamim Hassan, Mr. Zia Haider Chowdhury, Mr. Md. Ataur Rahman Khan, Mr. Md. Jasim Uddin, Mr. Md. Abu Baker Siddique, Mr. Wahiduzzaman, Mr. Md Emadadul Haq, Mr. Oliur Rahman, Mr. Md. Mamunur Rashid, Mr. Abdur Razzaque and Mr Md Ramjan Ali.

Thailand & China: Inland fisheries management and aquaculture development

Six fisheries officers from Bangladesh participated in a study tour to Thailand and China on inland fisheries management, aquaculture development and support to industry with regards to issues such as aquaculture feeds and machinery, 25 October to 6 November. It was financed by the IFAD-assisted Aquaculture Development Project in Bangladesh.

Bangladeshi officers in Thailand, studying new developments in inland fisheries & aquaculture management.

The participants included two senior officials from the Ministry of Fisheries and Livestock, Mr. Muhammad Asraful Islam and Mr. Mortuza Ahmed, and four officers from the Department of Fisheries, Mr. Serajul Islam, Mr. Haripada Mondal, Mr. Syed Shajahan, Mr. Md. Sazder Rahman. Xiaohua, Director of Training, National Fisheries Extension Centre, Mr. Chao Xiangfei, Director of Jiangsu Provincial Fisheries Extension Centre and Mrs. Wang Zhengying from Beijing Fisheries Extension Centre.

Thai and Malaysian ornamental fish and plants

Four fisheries officials from China visited Thailand and Malaysia on an ornamental fish aquaculture study tour to the two countries, 27 October-3 November. In Thailand, the delegation visited the Aquatic Plant and Ornamental Fish Research Institute and ornamental plant and fish breeders in Pathum Thani and Chachoengsao, followed by a visit to marine ornamental fish breeding station in Krabi in Southern Thailand.

The Department of Fisheries, Malaysia, organized a briefing to the visitors before showing them ornamental fish breeding research at the Freshwater Fisheries Research Centre in Malacca and the Xian Leng Company, the largest Asian arowana breeder in Malaysia.

The study tour team was led by Mr. Ju Li, Deputy Director General of China National Fisheries Extension Centre. Others in the team included Mr. Zhou

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STREAM conducts monitoring and evaluation workshop

In collaboration with its Indian counterparts Gramin Vikas Trust and the Central Institute for Fisheries Education, Mumbai, STREAM recently hosted a Monitoring and Evaluation workshop in Ranchi India, attended by farmer, government and NGO colleagues from throughout Eastern India. STREAM was particularly pleased to welcome the Fisheries Director of Orissa, Mr Satyabrata Sahu. The workshop focused upon measuring process indicators in combination with encouraging people to write about significant changes they experience, which can highlight unanticipated changes in people's lives that are not picked up by conventional monitoring and evaluation indicators. The workshop also considered the usefulness of monitoring and evaluation amongst partner organizations in the DFID-NRSP funded project R8334, Promoting the Pro-Poor Policy Lessons of R8100 with Key Policy Actors in India.

STREAM to support aquaculture in western Orissa

During October and November STREAM held discussions with the Government of Orissa and the state Fisheries Department, as well as the DFID funded Western Orissa Rural Livelihoods Project. Extensive field visits were undertaken in Bolangir and Nuapara districts, and a workshop with over 60 stakeholders developed a plan for the Government of Orissa to establish One-stop Aqua Shops for those districts. STREAM colleagues from the Jharkhand OAS shared their experiences and insights in providing this service and the STREAM Communications Hub Manager presented about the OAS Information Service (OASIS). For more visit: http://www.streaminitiative.org/Library/India/india.html.