



Cash for work, Aceh

Villagers in Pasi Lhok rebuilding water supply canals damaged by the tsunami.

Aquaculture is an important activity for many small-scale farmers in the coastal communities of Aceh, Indonesia. Before the tsunami of the 26th December 2004, around 10,000 tonnes of shrimp and 6,000 tonnes of fish were produced per year from some 47,000 ha of coastal ponds, known locally as *tambaks*. Preliminary assessments conducted in early 2005 indicated that as many as 90,000 people in Aceh may directly depend on the aquaculture sector for their employment.

The Food and Agriculture Organization of the United Nations (FAO) assessment of the impacts of the tsunami on the aquaculture sector in Aceh found that over 20,000 ha of *tambaks* had been severely damaged or destroyed with lower levels of damage to at least an additional 5,000 ha, and disruption to more than 800 km of water supply canals. The impact on the livelihoods of small-scale farmers has been significant, and most now face considerable difficulties in

restarting farming activities, which are their main source of income. The assessments indicate that the most urgent priorities for restoring *tambaks* for small-scale aquaculture are in the north-eastern coastal districts of Pidie, Bireuen and Aceh Utara.

Consultation with small-scale farmers in these districts revealed that they had difficulties in starting fish and shrimp production due to a lack of access to water, as a result of damage to water supply canals and drainage systems, and a lack of financial assets to repair ponds and to purchase the necessary inputs such as seed and fertiliser. Farmers in these districts have few other work options available and consider restoration of water supplies to *tambaks* a priority, requiring removal of sediment clogging canals. A “cash for work” program was seen as a practical way to clean up debris and silt from suitable secondary and tertiary water supply canals while providing farmers and their communities with opportunities to earn

income, and take the first steps in restoring their farms and primary source of livelihood. NACA, the World Aquaculture Society and Aquaculture Without Frontiers therefore designed and implemented a pilot project in the villages of Pasi Lhok and Jemerang, in the Pidie District to:

- i) Support farmers to restore the *tambak* water supply; and
- ii) Learn from the experience in order to apply the lessons to the development of future cash for work programs in other villages.

The project was developed in direct consultation with the farmers, the sub-district *Tambak* Farmer Association and the Pidie Fisheries Office. It was organized through and technically supervised by the Ujung Batee Regional Brackishwater Aquaculture Development Centre (Ministry of Marine Affairs and Fisheries). The project was the first step in restoring small-scale traditional aquaculture in these villages, providing a learning experience for all concerned.

Initially, a cash for work contract was provided to the Ujung Batee Centre. The contract covered the following items:

- i) Cash to pay for daily work of farmers/villagers. The workers were selected by the Tambak Farmers Association Chief of the sub-district. The village Chief organised the work schedules to share the work among villagers who wanted to work (including farmers, labourers and other people in need of income).
- ii) Purchase of manual digging tools, sandbags and water gates.
- iii) A provision that public canals and water gates are to be managed – as before – by the local Tambak Farmer Association.

Clearing canals is tough work

The length of canal to be cleared in the villages of Pasi Lhok and Jemerang was initially estimated at around 1,250m and 3,195m respectively; and the volume of silt to be removed – by hand tools alone - in the order of 2500m³ and 6390m³. It was estimated that clearance of each canal would take about 45 days with 50-60 labourers in Pasi Lhok and 25-30 labourers in Jemerang.

By early June 85 farmers in both villages had been working for approximately three weeks, for a total of 1,530 worker-days. During this period they cleared approximately 2,500m of canal, 78% of the original objective, and removed about 1,650m³ of silt. However, there are still three sections of canal that need repair, a total of about 60m, which need supporting barriers made from bamboo (to be held in position with stakes). These sections lie on sandy soil, which does not permit freestanding dykes, so some infill with more cohesive soil will also be necessary. Due to changes in the landscape an additional large water gate has been proposed for Pasi Lhok in conjunction with the two small water gates.



The hard work pays off - after only two months of planning and work, the canal is ready for operation.

A learning experience

The cash for work program has achieved its goals of providing villagers with income while they worked to rehabilitate their means of livelihood. However, the programme has had to contend with some unforeseen issues. Listed below are some issues to be aware of before planning and starting a cash for work programme. We hope that our experience will help others.

Finance

- Some unforeseen circumstances are bound to arise, so it is important to include some provision in the budget to cover uncertainties in the work. In Aceh, these have included rain, abnormally high tides and

additional equipment requirements such as water gates and pumps.

- Paying a daily rate may not make most efficient use of funds where work is likely to be continually disrupted by high tides or weather. A solution may be to pay upon a daily standard of work to be completed (i.e. the notion of a start-stop-finish).
- There is also the problem that additional staff may need to be seconded to perform the tasks of the supervisor, as the officers with the experience to carry out this work are likely to be busy and unable to operate on a daily basis in the field. This may increase the cost of supervision, highlighting the necessity of covering for uncertainties.

- If the budget gets tight towards the end of the project and there are additional work requirements not accounted for in the original proposal, it can be difficult to choose who works and who doesn't.

Construction

- Sandy soils can add to construction costs, for example, we had to construct additional barriers to support dykes in affected areas of the canals, which required more than excavation alone.
- There may be additional needs to replant mangroves to control erosion, or even to build additional structures for mangrove replanting. It is important to obtain farmer support for these activities, particularly if replanting will encroach on pond area.
- Water gates should reduce the incidence of erosion within the canals and this may be figured into the budget. This may only become evident once the canals are operational again, whereas it may not have been necessary prior to the tsunami, nor evident before progressing with the work.
- Tidal profiles have changed since the tsunami, possibly due to erosion and sediment deposition across different areas. Normally the months of March to September would have relatively small tidal variation, however, the tidal variation currently being observed is indicative of the larger October to February tides. This has delayed clearance of canals and rebuilding of dikes as work can only be done during low tide.
- Monitoring is essential to ensure that quality is maintained and standard depths are met.

Employment and social issues

- Young men can place a lot of pressure on coordinators to give them work. However, placing them into working groups by themselves was found to be an effective way to confine any aggression towards those

organising working parties, which generally subsided after a few days of labour.

- Although the labourers were mostly men, the tambak cash for work also provided opportunities for employment of women. The design of the cash for work needs therefore to take an equitable and gender sensitive approach.
- Our experience has been that it can be difficult to maintain a reasonable quality of work due to the diversity of workers employed. However, if the primary objective is to give the people immediate financial support, then physical ability should not be a consideration. It is more important that each person feels that they have an equal chance of employment, or the selection process will create tension. On a daily basis most targets were not reached but with adequate

supervision and a monitoring program in place, it should be possible to maintain an acceptable standard of quality and progress.

- Controlling worker numbers can be difficult – some days the required number may not arrive, and this needs to be carefully coordinated.
- Local governing authorities (eg Dinas Perikanan), farmer groups and the head of the village must be brought into the program as they play a critical role in coordination, mobilising local people and resources and in maintaining good relations with the villagers.

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HRH Chulabhorn opens new molecular genetics laboratory, Thailand

HRH Princess Chulabhorn Walailak opened the new Walailak Centre at Kasetsart University on the 15th of June 2005. In attendance were the President and Vice-Presidents of the university, Deans of faculties and many other dignitaries.

The Walailak Centre has the state of the art research facilities for molecular genetic and fish health research and hatchery facilities for a number of commonly cultured species. HRH will conduct her PhD studies on the genetics and breeding of scallops at the centre under the supervision of the Head of the Genetics Laboratory, Professor Uthairat Na-Nakorn. The centre will also be used for teaching and research, and for training in molecular genetics in the region. In this regard, NACA in conjunction with Kasetsart University and the Department of Fisheries, Thailand



HRH Chulabhorn opens the Walailak Centre at Kasetsart University. On right is Prof. Uthairat Na-Nakorn.

expect to conduct a regional training workshop on *Application of Molecular Genetics in Inland Fisheries Management and Aquaculture in Relation to Biodiversity* in December, funded by FAO. The workshop will bring together 25 participants from network countries.

Aquatic epidemiology training

NACA has recently secured funding support from DFID (UK) to organize aquatic epidemiology training in Vietnam. The training programme is presently focused on building capacity in Viet Nam and strongly linked to the ongoing NACA-SUMA (DANIDA) aquatic animal health activities in Viet Nam. Training will target a maximum of 10 Vietnamese officers. In addition, the Mekong River Commission (MRC) will fund one candidate each from Cambodia and Laos PDR, while NACA will support two participants from Thailand.

The proposed training is strongly focused on disseminating epidemiological methodologies to address aquatic animal health problems applicable to small-scale farming systems. The training will not be a stand-alone activity. Training outcomes will be followed up by monitoring activities and providing feedback to professionals in the country until a successful transfer of expertise has been accomplished.

Training program

The training program is divided into three parts made of two training sessions separated by a follow-up and hands-on period. Throughout the training participants will be requested to contribute examples from their current and planned work activities. Trainers will not only present epidemiological concepts, but also help professionals to use epidemiological methods to the investigation and control of local problems (e.g. red spot disease in grass carp, white body disease, white tail disease, *Babylonia* mortality).

Phase I of the training programme (22-26 August 2005) will be on basic epidemiology and the training topics will include introduction to epidemiology (from the individual to the population), problems addressed during epidemiological investigations, designing epidemiological studies,

survey techniques, sampling issues and epidemiology vs statistics. Emphasis will be given to the application of epidemiology to solve problems with limited resources. Training will also deal with the development of effective surveillance systems. During the first training session the participants will also be requested to work individually and in groups on the aquatic animal health activity planned for the hands-on training period. This activity will represent a significant part of the training program.

Phase II hands-on activities are aimed at putting into practice what was learnt and developed during the first training course and will be part of the working program of the participants within their institution. Supervision during the hands-on training period will be supplied by the trainers and contributors either remotely (by e-mail or through a web-based forum) or through occasional visits as part of other on-going activities within Viet Nam.

Phase III of the training programme (January 2006) will be to assess the training uptake, exchange experiences during the hands-on phase, evaluate means to maximize learning and improve the participants knowledge on the development and implementation of epidemiological studies. Further training will also be conducted on:

- Data handling, database building and management and epidemiological analysis using epidemiological tools and software (e.g. Epi-info);
- Analyses of data from epidemiological studies (e.g. identification of risk factors);
- Presentation of results;
- Refining study designs for further studies and where possible designing intervention studies;
- Training on using epidemiological findings for disease management;
- Development of management strategies based on risk factor/

intervention study findings (e.g. risk reduction strategies, better management practices, demonstration approaches);

- Development of guidelines and frame work for producing other outputs (e.g. research papers, extension material).

This activity is hoped to allow a wider impact of the training program and the start of a longer-term support to professionals from Vietnam, Thailand, Laos and Cambodia. We hope to contribute to the development/strengthening of a “sub-regional” network of people trained in aquatic epidemiology.

Trainers and contributors include Dr Flavio Corsin of NACA; Dr Maria Correa from the North Carolina State University, USA; Dr Peter Cripps and Dr Kenton Morgan from University of Liverpool; and Dr Jimmy Turnbull from University of Stirling, UK.

STREAM Regional Conference & BMP workshop

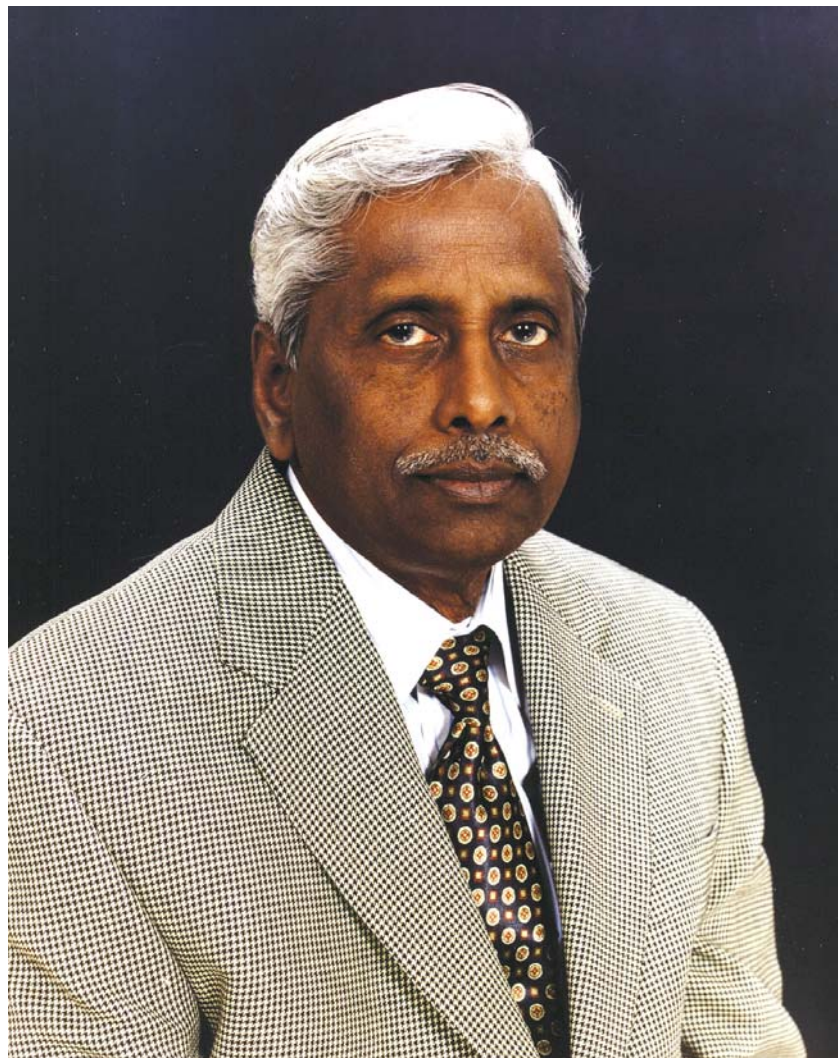
The fourth NACA-STREAM Regional Conference was held in Hanoi, Vietnam, from 13-15 June back to back with the *Better Practice Guidelines Workshop* from 17-18 June. The purpose of the meetings was to implement the STREAM Monitoring and Evaluation (M&E) System. Specifically, to decide how what STREAM does should be captured by the M&E System, i.e. how to make the step-cards work, to understand the practice of the M&E System and how a technical (database) component can support it and to collectively designing the “learning outputs” of the M&E System. CDs with the conference and workshop materials are available from paul.bulcock@enaca.org, or visit: <http://www.streaminitiative.org>.

Dr Modadugu V. Gupta awarded the 2005 World Food Prize

Dr Modadugu V. Gupta, an Indian scientist who will be well known to readers throughout the NACA network, has been named winner of the \$250,000 World Food Prize. Dr Gupta received the award in recognition of his work to enhance nutrition for over one million people through the expansion of aquaculture and fish farming in South and Southeast Asia and Africa.

Dr. Modadugu V. Gupta's name was announced by Ambassador Kenneth M. Quinn, President of the World Food Prize Foundation on June 10, 2005, at a ceremony at the U.S. State Department presided over by USAID Administrator Andrew Natsios and Acting Undersecretary of State E. Anthony Wayne. In making the announcement, Ambassador Quinn indicated that Dr. Gupta had been selected for this honor based on his work over three decades at the World Fish Center, a member of the Consultative Group on International Agricultural Research (CGIAR) of the World Bank. "Through his dedicated and sustained efforts in Bangladesh, Laos and other countries in Southeast Asia, Dr. Gupta made small-scale aquaculture a viable means for over one million very poor farmers and women to improve their family's nutrition and well-being," Ambassador Quinn stated. As a result of Dr. Gupta's efforts, freshwater fish production has risen dramatically in these countries by as much as three to five times, he added.

The Ambassador explained that Dr. Gupta developed unique methods of fish farming that require little cost and minimise environmental impact. As a result, landless farmers have turned a million abandoned pools, roadside ditches, seasonally flooded fields and other bodies of water into mini-factories churning out fish for food and income. Keen to duplicate the



success achieved in Asia, Dr. Gupta is working with a growing number of African countries to implement similar measures.

"Dr. Gupta is truly deserving of receiving the World Food Prize—the foremost international award for increasing the quality, quantity and availability of food in the world—for his achievements in bringing the Blue Revolution to those most in need," Ambassador Quinn concluded. Dr. Gupta is the sixth citizen of India to receive the World Food Prize since it was established in 1986. Previous recipients include: Dr. M.S. Swaminathan, 1987; Dr. Verghese

Kurien, 1989; Dr. Gurdev Khush, 1996; B.R. Barwale, 1998 and Dr. Surinder K. Vasal, 2000.

NACA extends congratulations to Dr Gupta, who has collaborated with the network for many years during his post at the WorldFish Center. You can read a Review of Global Tilapia Farming written by Dr Gupta and Belen Acosta on the NACA website at: <http://www.enaca.org/modules/news/article.php?storyid=453>.

Study program on marine aquaculture and seafood markets in southern China, 2005

The first ever such study program covered seafood markets in Guangzhou, Dhansui, Shenzhen, Shanwei, Raoping and Hong Kong from 4-15 July. The study program introduced participants from exporting and producing regions in the Asia-Pacific area to the markets and marine aquaculture in southern China. The trip was organized by NACA as one of the activities of the Asia-Pacific Marine Finfish Aquaculture Network, in cooperation with the Guangdong Provincial Bureau of Ocean and Fisheries, Guangdong Fishery Society, Guangdong Daya Bay Mariculture Research and Development Center (Department of Marine & Aquatic Products, China), and the Agriculture, Fisheries and Conservation Department (AFCD) – Hong Kong SAR. There were a total of 14 participants from China, Hong Kong, India, Indonesia, Maldives, Marshall Islands, Philippines, and Singapore.

Hong Kong

In Hong Kong, participants visited the Fish Marketing Organisation (FMO) Aberdeen and Kwun Tong Wholesale Fish Markets and special discussions were held with seafood traders and business owners to help understand the demand trends for species and prices. Field trips were arranged to the local live seafood street and wet market at Lei Yue Mun, with side visits to floating cages and pond fish farms. Participants also had the opportunity to visit the Au Tau Fisheries Office and a briefing on Aquaculture in Hong Kong and the Accredited Fish Farm Scheme, Fisheries Education Centre of AFCD, and Tai Lung Veterinary Laboratory and briefing on the fish health programme and fish diseases.

Presentations included:

- Asia-Pacific Marine Finfish Aquaculture Network and brief Marine finfish hatchery development in SE Asia (NACA).
- Consumption, import and export of seafood in Hong Kong (AFCD).
- Legislation related to mariculture in Hong Kong and recreational fishing scheme (AFCD).
- Biofilter project (AFCD).
- Environmental impact assessment and aquaculture (AFCD).
- Monitoring and management of red tides in Hong Kong (AFCD).
- A demonstration of the Red Tide Management Information System (AFCD).

Guangdong

In Guangdong, the study tour visited Huangsha Live Seafood Wholesale Market, the largest live seafood market in China, and the Yanbu Fish Wholesale Market, the largest freshwater fish aquaculture market in Guangdong. Special discussions were held with business owners and seafood traders to understand the requirements and demand trends of marine finfish species in Southern China. In addition, the tour visited local live and dry seafood retail streets and restaurants including a visit to the Dongjiang Group of restaurants featuring live seafood.

Marine aquaculture activities included visits to farms producing abalone, kingfish, scallops, flat fish and groupers, tuna, snappers, as well as to marine finfish hatcheries and shrimp farms, covering Dhansui, Nan'ao, Shanwei and Raoping. A field trip was organized to the Guangdong Daya Bay Mariculture Research and Development Center in Dhansui, which

has been successful in producing various marine species such as sea urchin, abalone, groupers, snappers, seabreams and puffer fish.

The China Inspection and Quarantine (CIQ) in Shenzhen was also included in the program in order to understand the import regulation and quarantine procedures for importing live aquatic organisms into Southern China.

The overall coordination of arrangements for the Hong Kong component was organized by AFCD, and in Guangdong was strongly supported by the Guangdong Provincial Bureau of Ocean and Fisheries and the Guangdong Fishery Society. NACA extends thanks for their wonderful support and assistance in co-organizing this first special study program on marine aquaculture and seafood markets. A report will be available from NACA website before end of August 2005.

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Hong Kong SAR



Visit to FMO Aberdeen Wholesale Fish Market.



Participants & seafood traders at FMO Kwun Tong Wholesale Fish Market.



Discussion with live seafood traders and business owners.



Participants thank grouper farmer after visited his farm.

Guangdong Province



Visit to kingfish and scallop farm.



Shrimp farmer explaining the farming conditions.



Discussion with Huangsha Live Seafood Wholesale Market management team, seafood traders and business owners.



Visit to retail stalls at Yanbu market.

The third Regional Grouper Hatchery Production Training Course

The third Regional Grouper Hatchery Production Training Course was conducted at the Brackishwater Aquaculture Development Center, Situbondo, East Java, Indonesia from 18 April to 8 May. There were a total of 17 participants coming from Australia, Brunei Darussalam, Indonesia, Malaysia, Maldives, Marshall Islands, Singapore, and Vietnam. Skretting sponsored a private sector participant from Vietnam. The Asia-Pacific Marine Finfish Aquaculture Network sponsored a fisheries officer from Aceh to participate in the training course as part of the capacity building

for rehabilitation of the aquaculture sector in Aceh, the area most severely affected by the Tsunami on December 26, 2004. InterVet Singapore contributed one fish health expert Dr. Cedric Komar to provide technical presentations on fish diseases and health management. Participants enjoyed a mixture of theory, practical exercises and field trips. NACA would like to thank both Skretting and InterVet for their support to the training course. The report of the training course is available from NACA website, www.enaca.org.



Above: Trainers showing how to check grouper for parasites after a freshwater bath. Below: Participants sorting grouper fingerlings during practical hand-on training.



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Mr Faisal (above on the left), a fisheries officer from Aceh, learning to make artificial grouper feed.