



MEKONG FISHERIES NETWORK NEWSLETTER

SAVE THE FISH OR LOSE THE FOOD SECURITY

20 million dollars secured from Denmark for the management and preservation of fisheries resources in the Mekong Basin

On 30 May 2000 Danida and the MRC signed an agreement for a 5-year Sector Programme Support package comprising 7 components under the MRC Fisheries Programme. "This is a day of great significance for the cooperation among the four countries sharing the Lower Mekong River Basin and its rich resources" - Mr Joern Kristensen, CEO, MRC

As much as one million tonnes of fish are caught every year in the Lower Mekong River and flood plains, and in addition to this, some 200,000 tonnes of fish are produced through aquaculture. The market value amounts to approx. one billion US Dollars worth of food for the people.

Food security for the 60 million people living in the Lower Mekong Basin is based on rice and fish, and fish is the single most important source of

animal protein. With about 1,300 different fish species the Mekong River Basin has one of the greatest and most astonishing freshwater biodiversities in the world and one of the world's highest inland fish productions.

But this unique resource is coming under threat from economic development if the natural resources are not taken into consideration at the planning stage. The history of river basin development in other parts of the

world is disturbing. Most of the world's large rivers, which were once full of fish and a source of food for the people living around them, are now biologically degraded and have in many cases been transformed into waste water canals.

Thus, it is very important to take early action in the Mekong Basin, where the aquatic resources are still in relatively good condition, and to ensure that they will also be available for future generations. "Any development which starts with a serious reduction in food security may from the beginning miss the rural population," said Mr. Joern Kristensen, CEO of the MRC, at the signing ceremony which took place on 30 May 2000.

"Therefore, we must work for the preservation of the fish resources as an important source of income and food security for the rural population, and we must strive for a well planned development which makes a strong economic development possible together with the preservation



Signing ceremony on 30 May 2000.

(Continued on page 2)

DANIDA SUPPORT

(Continued from page 1)
of our natural resources," Mr. Kristensen stressed.

With the new financial agreement between Denmark and the MRC a total amount of approx. USD 20 million will be spent over the next five years for the continuation of the studies on the fish resources, and how to preserve and manage them in a joint effort among Cambodia, the Lao PDR, Thailand and Viet Nam.

The support will be given to continue studies on the amazing and impressive seasonal fish migrations, which

cause some fish to travel hundreds, and sometimes thousands, of kilometres up or downstream across the borders between the Mekong countries. Also the development of fisheries management systems, based on the participation of the fishers themselves, will get continued support and the production of information on the fisheries for planners, which may ensure that fisheries are fully taken into account when the Governments decide on the development in the region, will be strengthened.

The development of fish culture using indigenous Mekong fish species

in order to protect the environment against the introduction of exotic fish species, and the support to the establishment of joint Mekong inland fisheries statistics are new initiatives that will be supported. Danida, the Danish International Development Assistance, has now supported the fisheries sector in the Mekong Region through the MRC for ten years, and "*we are pleased to continue for another 5 years,*" underlined Mr. Claus Mogensen, the representative of the Kingdom of Denmark at the signing ceremony.

JGJ

NEW MRC FISHERIES PROGRAMME INITIATIVES

Aquaculture of Indigenous Mekong Fish Species

Capture fisheries appear to have peaked already. Only aquaculture will be able to increase the fish production of the Mekong Basin. Over the past few decades the emphasis has been on exotic species. Such introductions may cause environmental disturbance, competition with native species, the spread of disease, co-introduction of nuisance species, etc.

Focussing on the increased use of indigenous fish species in resource stocking and small-scale aquaculture, and decreasing the dependence on exotic fish species, the Component was appraised in September-October 1999 and began in July 2000 with its headquarters in Khon Kaen, Thailand. The immediate objective is: "economically feasible aquaculture systems developed using indigenous Mekong fish species, which may complement or replace

the use of exotic species for culture purposes in the Mekong Basin." Over the 5-year Component, economically feasible culture techniques and extension systems will be developed and tested.

Other New Components

The *Strengthening of Fisheries Information Systems* Component was first formulated in 1995 and will be revised prior to commencement scheduled in July 2001. The 36-month Component will gather the existing data from the four riparian countries and especially from the technical Components (details on the local resources and the socio-economic data) and summarise the processed data for many types of stakeholders, so that the current situation is known by all. Increased attention will be placed on fisheries statistics. All four riparian countries will receive the same type of training so that the data are compatible with national institutions. Different

target groups will be reached through the dissemination and exchange of specific information packages tailored for their needs.

For the *Highland Fisheries Development* Component under preparation, this will address the need for support to fisheries management and aquaculture development in mountainous areas through a watershed-based approach. One of the objectives is to conserve the local capture fisheries in small areas in the remote mountainous areas (i.e., Phongsaly Province in the Lao PDR, and Dien Bien Phu and the Central Highlands in Viet Nam). Some fact-finding missions have been undertaken in northern Viet Nam and in Rattanakiri in Cambodia, but additional missions are required to decide on the specific sites. The 48-month Component is expected to run from January 2002 to December 2005.

KIM

MEKONG COUNTRIES TAKE THE LEAD IN FISHERIES MANAGEMENT

A newly formed Technical Advisory Body on Fisheries Management (TAB) had its first meeting on 13 June 2000 in Pakse, Lao PDR, ahead of the 7th Annual Meeting of the MRC Fisheries Programme. The TAB, which is constituted by the riparian line agencies for fisheries and the National Mekong Committees, will discuss cooperation on fisheries management and development in the Mekong Basin. It may be the first regional institution of its kind in the world, and the first example of what may become demand driven coordinated fisheries research in the region. And the tasks are considerable.

By Jorgen G. Jensen

Plans for Fisheries Management

In March 2000 the MRC Joint Committee approved the formation of a Technical Advisory Body on Fisheries Management, which will facilitate the coordination and sustainable use of the economic and nutritional potential of the inland aquatic resources in the Mekong Basin. The scope of work comprises capture fisheries, inland aquaculture, strengthening of fisheries institutions and basinwide cooperation and coordination. Within this framework the TAB will propose plans for the management of important fish resources, the conservation of threatened species and overall basinwide strategies for aquaculture development in areas where aquaculture development may have basinwide effects. It will further assess the need for coordination of aquaculture and capture fisheries development as well as the coordination with the development of other economic sectors in order to ensure a sustainable development of the entire fisheries sector.

The TAB will also address the need for strengthening the capacity of fisheries institutions and propose plans for increased cooperation among fisheries institutions in the Basin. The TAB organises its own work and selects the chairperson among its members, but receives financial and secretarial support from the MRC Fisheries Pro-

gramme. It reports to the MRC Joint Committee. Financial support is secured for a 5-year period.

Giant Catfish, Carp and Co-management

On 13 June 2000 the TAB met for the first time, comprising three members from each of the four MRC Countries. The four national delegations were headed by Mr. Sam Nuov, Deputy Director, Department of Fisheries (DOF), Cambodia, Dr. Bounthong Bouahom, Deputy Director General, National Agriculture and Forestry Research Institute (NAFRI), Lao PDR, Dr. Oopatham Pawaputanon, Deputy Director General, DOF, Thailand, and Dr. Nguyen Xuan Ly, Director, Department of Science and Technology, Ministry of Fisheries (MOF), Viet Nam.

A number of important issues will be taken up during the coming year, among these the management of the pangasius species (river catfish), management and preservation of the giant fish species of the Mekong, the role of deep pools in the Mekong River, prevention of fishery with explosives and the need for co-management as a tool to ensure sustainable fishery. The MRC Fisheries Programme was given the task to produce a report on the *Pangasius hypophthalmus* comprising the fishery of fry and adult fish in the wild as well as the breeding and use of

the species in aquaculture, and to compose a joint working group, which may review and compile existing knowledge of the Mekong Giant Catfish (*Pangasius gigas*), Giant Carp (*Catlocarpio siamensis*) and *Probarbus spp.*

The TAB Takes the Lead

This may only be the beginning. The formation of the TAB makes it possible for the four countries to request scientific surveys from the Fisheries Programme and background information from its international and national experts for coordinated fisheries management decisions. The tasks taken up may grow with the increase in information on the Mekong fish resources and the identification of needs for management policies. An important institution for coordinated fisheries management has been founded.



Giant species: one priority of the TAB

FISH MIGRATIONS AND HYDROLOGY – HOW THE FISHERS SEE IT

By Anders F. Poulsen
Assessment of Mekong Fisheries
Component (AMFC)

Why do river fish migrate? Why do they spend all that energy, and take all the risks involved in these long movements, often encompassing several hundred kilometres? Probably one of the simplest answers to this question is that fish migrations in rivers are adaptations to life in running water. Through time, fish have evolved with the river and, as a consequence, developed life strategies which optimise the chances of surviving and reproducing within the particular environmental circumstances provided by the river in which they live. For example, in a tropical floodplain river like the Mekong, the life cycles of many fish species are adapted to ensure that newly hatched fish larvae and juveniles are brought out onto the highly productive floodplain areas at the onset of the flood season. Some species spawn on the floodplain itself, whereas others migrate upstream to spawn and leave it up to the river current to bring the offspring to their downstream rearing habitats. Thus, the life cycles of migrating fish ecologically connect different areas and habitats of rivers. The river basin constitutes one ecological unit interconnecting upstream spawning habitats with downstream rearing habitats and dry season refuge habitats with wet season floodplain habitats.

As waters change, fish travel

During some Assessment Component interviews with more than 350 local fishers along the Mekong mainstream, they were asked when different species migrate upstream and downstream. After adding up the answers from the fishers for all the species throughout the river, peak periods could be identified where there is more migratory activity than in other periods. This is shown graphically in Figure 1. The

y-axis represents the number of migration reports during the local knowledge interviews and the x-axis represents the months over the whole year. The graph shows the monthly water discharge of the river based on data from Kratie, Cambodia (Welcomme, 1985). For this graph, the y-axis represents the water discharge measured in $\text{m}^3/\text{second}/100$.

The migration graph shows that there are two peak periods for fish

migrations, one from May to July and another from October to December. Correlating migration with water discharge shows that fish migrations peak during periods when water level changes are relatively large. The period from May to July coincides with the onset of the flood season, whereas the period from October to December coincides with the end of the flood season and beginning of the dry season.

The migrations during the period May - July are carried out to make sure that fish and/or their offspring are brought out onto the fertile floodplain areas, for example in southern Cambodia and the Tonle Sap catchment, or floodplains associated with large tributaries in the middle Mekong. The migrations during the period October - December, on the other hand, are undertaken by fish moving out of the "drying" floodplain areas towards their dry season habitats, often associated with deep pools within the Mekong mainstream.

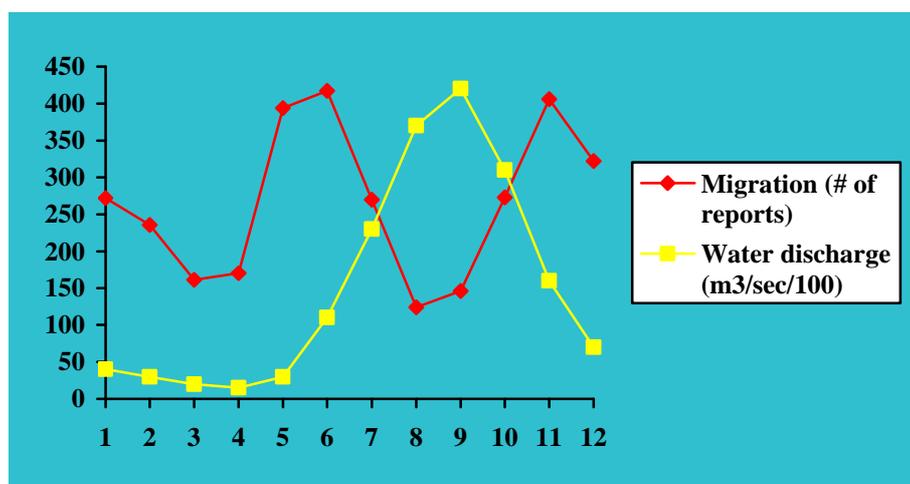
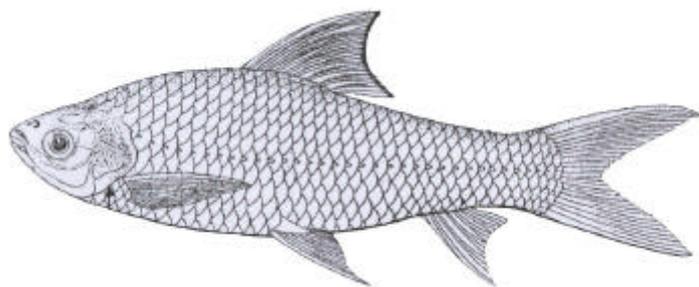


Figure 1. After adding up the answers from the fishers for all the species throughout the river, peak periods can be identified where there is more migratory activity than in other periods. This is shown graphically above.

MIGRATION PATTERNS



*The small cyprinid **Henicorhynchus siamensis** migrates upstream during the period October to February, especially around the time of the full moon and forms the basis for the dai fishery in the Tonle Sap River, Cambodia.*

When the fishers are asked about what they believe triggers these migrations, by far the most common answer is that fish migrate when water levels change rapidly. In fact, many fishers use the water level to assess when the time is right to go fishing or when they can expect to catch certain species of fish.

Some fish follow the moon

Other related factors may also trigger fish to migrate. For example, fishers along the upper river stretches of the Lao-Thai border often mention that the first rain showers after the dry season trigger fish to migrate upstream. Changes in water turbidity are also often mentioned as a factor, which bring fish on the move along this stretch of the river. These three factors (changes in water levels, turbidity and the first rain showers) are of course all indicators that the annual monsoon is coming, telling the fish that it is time to move. Some fishers state that it is the combination of the three factors that triggers migration. The lunar phase also influences migratory behaviour of many fish. This has previously been demonstrated at Khone Falls (Baird *et al.*, 1999, Singanouvong *et al.*, 1996) and in the Tonle Sap River (Lieng *et al.*, 1995). Several fishers along the

stretch from Kandal Province (upstream from Phnom Penh) to the Khone Falls mention the lunar phase as an important migration trigger for certain fish. For example, many fishers along this stretch reported that the small cyprinid *Henicorhynchus siamensis* migrates upstream during the period October to February, especially around the time of the full moon. The migrations occur progressively longer after the full moon the further upstream you get. Together with previous studies, this study strongly indicates that the *Henicorhynchus* migrating out of the Tonle Sap and into the Mekong just before the full moon (Lieng, *et al.*, 1995) are to a large extent the same fish which migrate up the Khone Falls around the new moon (Baird *et al.*, 1999).

Further upstream, along the Lao-Thai border, fish migrations appear to be far less influenced by lunar phases. However, along this stretch (in particular along its upper reaches), fishers use other indicators to gauge fish migrations. One of the most important indicators mentioned by fishers is the appearance of certain insects related to the aquatic environment such as dragonflies and mayflies. A good example of this is related to the small pangasid *Pangasius pleurotaenia*.

At least from seven sites in the upper Mekong in both Thailand and the Lao PDR, fishers reported that *Pangasius pleurotaenia* appear in high numbers when these insects (in particular dragonflies) are abundant. Aquatic insects are one of the main items on the menu of this species and several fishers had observed the fish appearing at the surface and feeding on the insects.

All this demonstrates that the ecology and hydrology of the Mekong are deeply and intimately inter-connected with each other. The high productivity, in fisheries terms, of the Mekong Basin is not so much determined by a certain amount of water containing a certain amount of fish; it is determined more by the annual rise and fall of the Mekong waters.

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ASSESSMENT COMPONENT PROMOTES REGIONAL COOPERATION AMONG TAXONOMISTS

*By John Valbo Jorgensen**

In order to understand the ecology of the highly productive fishery in the Mekong Basin it is essential to have information on the distribution of the larvae and juvenile fish in the river. In the first attempt to study fish larvae since the 1930s, the *Assessment of Mekong Fisheries Component* (AMFC) carried out a sampling campaign for fish larvae in May-June 1999, in the Mekong and Bassac Rivers in Viet Nam's An Giang Province.

Through an enormous effort by the Component's Vietnamese staff, about 1,600 samples were taken over a period of 45 days, forming the basis for one of the most comprehensive studies of fish larvae/juveniles ever carried out in a tropical river.

Apart from the sampling, which requires special equipment, a major obstacle in doing research with juvenile and larval fish is the taxonomic identification. This is because the young fish still do not have the colouration and the anatomical features of the adults, and almost all literature and identification keys only describe adult individuals.

In April 2000 the AMFC invited some of the leading regional experts on fish taxonomy, namely, Professor Mai Dinh Yen (Hanoi University), Dr. Chavalith Vidthayanon and Dr. Apichart Termvidchakorn (both from the Department of Fisheries, Thailand), at the Research Institute of Aquaculture No. 2 (known as RIA-2) in Ho Chi Minh City,

to meet and work together. Over a two-week period the taxonomists not only managed to identify larvae and juveniles of 122 species, they also trained some of the AMFC staff in identifying fish at these life stages. An atlas showing drawings of the most important larvae at different stages in their development will be prepared and published later.

The three senior scientists will continue their cooperation in the development of a Mekong Fish Database, which will be published on CD-ROM next year and will incorporate all known Mekong fish species, including facts on their biology and data on the fisheries.

** Assessment of Mekong Fisheries Component (AMFC)*



From right are Professor Mai Dinh Yen, Dr. Chavalith Vidthayanon, Dr. Apichart Termvidchakorn and Mr. Vu Vi An

COMING UP: HEALTH CHECKS FOR FISH!

Huge losses in aquaculture production due to fish diseases, followed by arbitrary measures by a number of countries to prevent the spread of the diseases, constraining international trade, have led to new guidelines for trade in live fish. On 27-30 June 2000 FAO and NACA held in Beijing the Final Workshop of the Project “Assistance for Responsible Movement of Live Aquatic Animals” where new “Asia Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals” were adopted by the participants from most of the countries of South and South East Asia. *Catch and Culture* was there.

Billion Dollar Losses from Disease

During the 1980s and 90s the spread of the epizootic ulcerative syndrome (EUS), a disease which attacks freshwater fish species, caused considerable losses to fish farmers in Asia. The disease which has spread from the east, and which cost Thai fish farmers alone USD 100 million during the period from 1983 to 1993 has now reached as far as Pakistan. Diseases in the high value shrimp production have caused even greater losses. By 1999 global losses caused by the White Spot Syndrome

Virus reached USD 3 billion with losses in Thailand estimated at USD 500 million. The diseases spread through the transport of live animals, including trade in eggs, larvae, fingerlings, broodstock and even aquarium species, or, more locally, through contaminated water let out from aquaculture farms and mixed up with the water intake of other farms. As aquaculture is a thriving industry, there is no reason to believe that the problems will disappear by themselves. On the contrary. The situation led to the first application of national precautions against the import of live fish from

supposedly contaminated areas by a number of Governments, some rather arbitrarily decided upon without a proper scientific background, constraining international trade and the economic development of the sector. In order to “facilitate transboundary trade in living aquatic animals, while minimising the risk of spreading infectious diseases” FAO and NACA took the initiative to lead the formulation of guidelines on health management for the responsible movement of live aquatic animals in Asia. At the recent final workshop in Beijing, 27-30 June 2000, the participants from most South and South East Asian countries adopted the formulated guidelines as leading but flexible principles, or as a “vision” for the development of the trade.

Health Certificates for Fish

In the “ideal” situation described in the agreed guidelines, all shipments of live aquatic animals, comprising fish, shellfish and molluscs and their eggs, larvae, fry and adult individuals, will be accompanied by a certificate from the exporting country or region stating the origin and health conditions of the animals and the health situation of the zone of origin. The import must be followed by a quarantine period of a certain length, where the animals are observed for possible disease

(Continued on page 8)



Mr. Khamphone Hao-Onechanch of the Lao PDR concluded that “inadequate aquatic health management is a risk,” and “policies for transboundary movement of pathogens are weak or inadequate.”

FISH HEALTH

(Continued from page 7)



*Fish pond in front of traditional house in Dien Bien Phu, Viet Nam.
Fish seed may enter from China without control.*

outbreaks, before they are released to the industry for production purposes. In case of disease outbreaks zoning may take place, denominating a certain area around the disease prone spot from where all transport of live aquatic animals is prevented, or, in less serious cases, from where export can only take place in other areas or zones with similar or worse health conditions. Certain zones may be declared disease free and void of such procedures, if they have been observed and found to be disease free for not less than two years.

The implementation of these rules requires new laws in a number of countries, as well as the availability of laboratories well supplied with trained staff and equipment for the proper identification of infectious fish diseases. It also requires the drawing up of contingency plans for treating or eliminating disease outbreaks in a proper way, a well working information system and an appropriate operational budget for all of it.

Health Management Takes Place at the Farms

The establishment of the “ideal” set-up may be fully justified by the huge amounts of money which are at stake in the shrimp industry and in marine aquaculture. It may still seem expensive for most Mekong countries, and, can we be sure that the investments will solve the problems? Asked the question, Dr. Michael Phillips from NACA explains: “A more holistic approach to health management than what has been

seen before is needed, and these guidelines are a more realistic approach to achieve management of the situation. We need to get the message out to the fry traders and the farmers. Health management is what is going on at the farms. We need to train the veterinarians in the provinces, as it is going on right now in, e.g., the Lao PDR. Some equipment is needed, but we need to move away from infrastructure solutions and to get the operators in the sector to implement the guidelines.”

The guidelines produced and adopted are clearly in line with this. It is recognised that time is needed, and that a step-wise development is necessary for most countries. The guidelines describe three levels in the achievement of the health management plans. Step I concentrates on field activities and comprises the observation of the animals and the environment, and relies on the training, awareness building and cooperation of farmers and provincial authorities. Part of this is the development of contingency plans for disease outbreaks comprising pre-meditated action plans for the identification, isolation and treatment of an outbreak, as well as information



Fish diseases may spread through trade in fish fry and fingerlings

FISH HEALTH



Awareness building among farmers is needed to identify, report and treat fish diseases. Photo taken at Muang Mai, Northern Lao PDR.

(Continued from page 8)

to other stakeholders on precautions, something which in most cases may be established with very limited investments and operational expenses, but with considerable effect. These Level I activities are considered the base upon which more advanced diagnostic capacity can be developed. Level II comprises the availability of laboratories able to do parasitology, bacteriology and histopathology, etc., and Level III the availability of laboratories able to carry out virology, electron microscopy, molecular biology and immunology, all requiring considerable investments in training and equipment as well as fair budgets for operational costs.

Inland Aquaculture: Contingency Plan Needed

Recognising the great job done in drafting the Guidelines and Manuals of Procedures, it may also be realised that it will take time to reach the ideal situation, although it may only cost a small fraction of what is lost each year due to disease outbreaks in the marine and coastal aquaculture sub-sectors. For inland aquaculture, a plan more like the drafted contingency plan may be

relevant, and also lead to quick and considerable results in terms of protecting both aquaculture and wild fish production.

Following the riparian delegates at the Workshop no such plan is in existence in any of the four Lower Mekong countries. "In Thailand, quarantine for importation is not very active and there are seven institutions or divisions which have to do with the movement of fish, so



A fish health management system must be inexpensive and effective and build on the cooperation of the pond owners and fisheries officers.

something of a link has to be established," Dr. Somkiat of Thailand said. In Viet Nam, "seed or fish are coming in from China, and nobody takes control," Dr. Luu from Viet Nam explained. A number of studies in the Lao PDR, cited in the Lao Country Paper at the Workshop, and presented by Mr. Khamphone Hao-Onechanch, conclude that "inadequate aquatic health management is a risk in aquaculture and inland enhanced fisheries," and that "policies for transboundary movement of pathogens are weak or inadequate." For Cambodia, the Country Paper, presented by Mr. So Nam, informs that an "Information System of Aquatic Animal Pathogens and Health and Quarantine must be established and shared in a timely manner and in a form that serves both the research and user communities." For inland aquaculture in the Mekong Basin, it seems inefficient to establish such fish health management schemes, unless they are coordinated in a basinwide manner and include considerations of the migrations of wild fish stocks.

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FISH HEALTH MANAGEMENT: - AN ACTION PLAN IS NEEDED FOR THE MEKONG

Although less is at stake in terms of money in the inland aquaculture sector in the Lower Mekong Basin presently producing some 200,000 tonnes of fish annually, when compared to the shrimp industry, much is at stake in terms of food security for 60 million people, if one million tonnes of inland capture fisheries production is included. It may pay off to establish a basinwide inland fisheries health management system already at this stage of the development. The Action Plan builds on a watershed conception of the Mekong Basin, which may be useful also in other planning activities.

By Jorgen G. Jensen

Fish Trade Escapes Controls

At the recent FAO/NACA final workshop on Asia Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals (see the article on page 7) representatives of most South and South East Asian Countries agreed to the need for Fish Health Management Plans in order to avoid or to control the spread of fish diseases in the region. The high values traded in coastal shrimp culture and marine aquaculture may justify and make possible considerable investments in the control of transboundary trade with fish and shellfish. Regarding the more limited quantities produced and traded in inland aquaculture in the Mekong Basin with a value presently assessed at USD 200 million annually, expenses of a few million US Dollars, or not more than 1-2 % of the sector value, may be realistic in the four countries together, provided that this amount is available under the constrained national budgets. Further, it may be taken into consideration that trade in freshwater fish fry and fingerlings takes place not in airplanes and tank carriers, but on pick-up trucks, tricycles and bicycles, crossing the borders between countries and watersheds at all kinds of spots from highways to little guarded border posts far away from the towns.

With this background a fish health management plan must be inexpensive and efficient and based on the understanding and active participation of the fish farmers. It must take the migrating wild fish populations into consideration. As such, the so-called "contingency plan" presented in the guidelines and manuals produced by FAO, NACA and the participating countries may form an excellent and very realistic basis for a plan.

Start with the Farmers

An Inland Fish Health Management Plan for the Mekong Basin, may build on four main components:

- **Awareness building among fish farmers and provincial fisheries officers on fish diseases.** This will include training of provincial and district fisheries officers in recognising the most common fish diseases and awareness building among farmers on the need to identify, report and treat fish diseases.
- **The establishment of a task force of fish disease specialists** at a national fisheries research

institute which can visit the spot of a reported disease outbreak and assist in selecting and implementing the correct action in order to isolate, treat or eliminate the outbreak.

- **Production of action plans for sub-watersheds,** which can be activated on the identification of a disease outbreak. This would comprise:
- **The division of the Mekong Basin into major sub-watersheds** which are considered as contaminated zones in case of disease outbreaks, restricted in relation to trade in live fish, and from where the disease may spread downstream with the water flow or with the migrating wild fish populations.
- **Registration by provincial or district authorities of aquaculture activities** in the sub-watershed, and information on fish migrations in the sub-watershed made available (gradually) at the provincial and central levels, which can form the basis for a **risk assessment** of an outbreak, and the decisions on how to isolate, treat or eliminate it.

(Continued on page 11)

WOMEN IN AQUACULTURE

By Tran Thi Dzung
Ministry of Fisheries in Viet Nam

A two-day meeting on Women in Aquaculture in the northern part of Viet Nam was held in Hanoi during 17-18 March 2000. The participants came from institutions which have activities related to assist the women in aquaculture, especially in the northern, mountainous areas of Viet Nam.

The participants discussed the opportunities and advantages of women in aquaculture; some of the limitations that women experience when they start their aquaculture activities; difficulties which the women face in managing and expanding their aquaculture activities.

The second part of the meeting considered such questions as:

- How women can overcome their difficulties and limitations; how to facilitate their aquaculture activities?
- How can women make decisions themselves? What are the reasons that prevent women from making a decision? How to overcome these barriers?
- How to train women and how extension can achieve the purpose of the gender programme?
- Which technology is appropriate to women's needs?
- How can women be reached through information?

The Research Institute of Aquaculture No. 1 (RIA-1) held a study tour to a fish farm with a pond-pigsty



and chicken coop in Nam Sach, Hai Duong Province. The owner of the farm nurtures up to 2,000 chickens, 1,000 ducks, 20,000 mono-sexual tilapia in one pond. Grass carp, silver carp and common carp grow up together in two other ponds.

(Continued on page 12)

(Continued from page 100)

- **Listing of frequent and potential fish diseases** in the Mekong Area, and the formulation of plans for their treatment, if an outbreak should occur.
- **Information dissemination** to other national and regional authorities on the outbreak in order to alert them. This task may be carried out in cooperation with NACA, which is already maintaining the Asian component of FAO's Aquatic Animal Pathogen and Quarantine Information System (AAPQIS).

Inexpensive and Effective

A system like this may build on already available resources, including

provincial and district fisheries officers, and the selection of (not less than) one national aquaculture research institute in each country for the formation of a **disease task force** and the proper identification of fish diseases. Assistance from a well equipped laboratory (Level 2 or 3) may possibly be arranged for specific cases on a regional basis. The most important inputs will comprise training and awareness building, for which the assistance of international development organisations, including FAO, NACA, the MRC and others may be available.

The plan will only become effective through regional cooperation. In this respect the MRC Fisheries Programme may have a role to play in cooperation with NACA. A watershed-based Fish Health Management Plan will work well together

with other present or potential aspects of the MRC Fisheries Programme, such as the description of fish migrations, the identification of fisheries research and management needs, a reservoir fisheries management plan, policy guidelines for the use of exotic fish species in aquaculture and reservoir stocking, plans for the development of the aquaculture potential watershed-wise, impact assessments of water management projects, and cooperation with other MRC activities such as the Water Utilization Programme (WUP), etc., etc., all leading to a comprehensive plan for fisheries management in the Basin. A fish health management plan may become the first of a number of elements in a basinwide Mekong fisheries management plan.

WOMEN IN AQUACULTURE

(Continued from page 11)

Four local women from the Provinces of Hai Duong, Lai Chau, Nghe An attended the meeting. The other participants included: 2 from the Ministry of Fisheries; 1 from the National Network for Women in Fisheries in Viet Nam; 1 from the Committee for the Advancement of Women in Fisheries; 2 from the Thu Duc Agriculture and Forest University; 1 from the Binh Dinh Fisheries Extension Centre; 1 from the Hai Duong Fisheries Extension Centre; 2 from the AIT - Gender & Development School of Environment, Resources and Development (Mrs. Kyoko Kusakabe and Mrs. Govind Kelkar); and 5 from RIA-1.

The meeting made some observations on the following:

Advantages/Opportunities

- * Women are hardworking.
- *The Government issued a policy to allow farmers to change the production structure.
- *The Government issued a policy to loan money to the poor.
- *Institutions of the Ministry of Fisheries have conducted several fisheries extension courses for women.
- *All family members can take part in aquaculture activities.
- *In each province there is a women's club, the basic organisation to implement aquaculture extension training courses.
- *Aquaculture activities have increased the income of farmers and supplement other agricultural activities (4 times higher).

Difficulties/Limitations

- *Capital is limited and the procedure to obtain a governmental loan is too complicated. The place to obtain bank credit is far from many villages, especially in mountainous areas.
- *The materials for setting up aquaculture activities are limited. It is necessary to issue capital for preparing the pond, buying fingerlings and feed.
- *Usually the man in the family is the decision-maker. Many women have no opportunity to go to school and this is why their knowledge is limited. In traditional society it is understood that only men catch fish.
- *In the mountainous areas of Viet Nam, the time for producing fish through aquaculture is short (only 6 months).
- *The women themselves are occupied with housework. Without the men the women cannot protect their production and do heavy work.
- *Owing to a lack of knowledge about aquaculture, women cannot conduct these activities themselves, so it is necessary to train them in aquaculture.
- *Equality between men and women is at a different level in the north and south of Viet Nam.

How can barriers be overcome?

- *Promote the development of house-scale economics.
- *Set up women credit groups.
- *Develop the need to save; develop the saving consciousness.
- *Improve the procedure of obtaining a governmental loan.
- *Encourage women to take out loans as their pay-back rate is high.

- *Strengthen the extension network; the Ministry of Fisheries should organise their system to supply fingerlings and feed, and assist women in aquaculture.
- *Upgrade the knowledge of officers and policy-makers at different levels to implement gender equality successfully.
- *Eliminate backward customs in relation to women.
- *The women themselves have to make an effort to upgrade their knowledge. The aquaculture extension should be combined with the eradication of illiteracy, especially in mountainous areas.
- *Encourage husbands to help with chores at home.
- *Establish specialised training courses for women in aquaculture.
- *The lectures should be short, easy to understand and use pictures as much as possible.
- *The extension training should be conducted in the field.
- *It is more effective if the women are grouped together. A leader should be selected to direct the other members.
- *The training course should include subjects to assist women in calculating the economic effectiveness of her aquaculture activities.
- *Training should include study tours in the field.
- *The aquaculture technology introduced during the training course should meet women's requirements and be appropriate to local conditions.

(Continued on page 14)

AQUACULTURE DEVELOPMENT COMPONENT

Rural Extension for Aquaculture Development (READ) Component

The Rural Extension for Aquaculture Development (READ) Component, operating in Cambodia and Viet Nam, is testing a sustainable approach for small-scale aquaculture extension (Figure 1). Farmer problems and needs were first identified for specific agro-ecological zones. Then depending on the amount of knowledge available on specific problems READ conducts

on-station research (OSR), on-farm research (OFR) or tests technologies in on-farm trials (OFT) managed by the farmers themselves. READ is monitoring results and analysing feedback to refine management and extension packages being tested. Reflecting local conditions, some technologies are taking longer than others to test and refine and READ is therefore working at different speeds as necessary in different areas.

Having identified areas with high and medium potential for aquaculture in Kandal, Prey Veng and Takeo Provinces of Cambodia, READ is conducting a second season of refined OFTs testing grow-out packages for specific agro-ecological zones, while also supporting the development of a localised fish seed distribution network of hatcheries and nurseries.

(Continued on page 14)

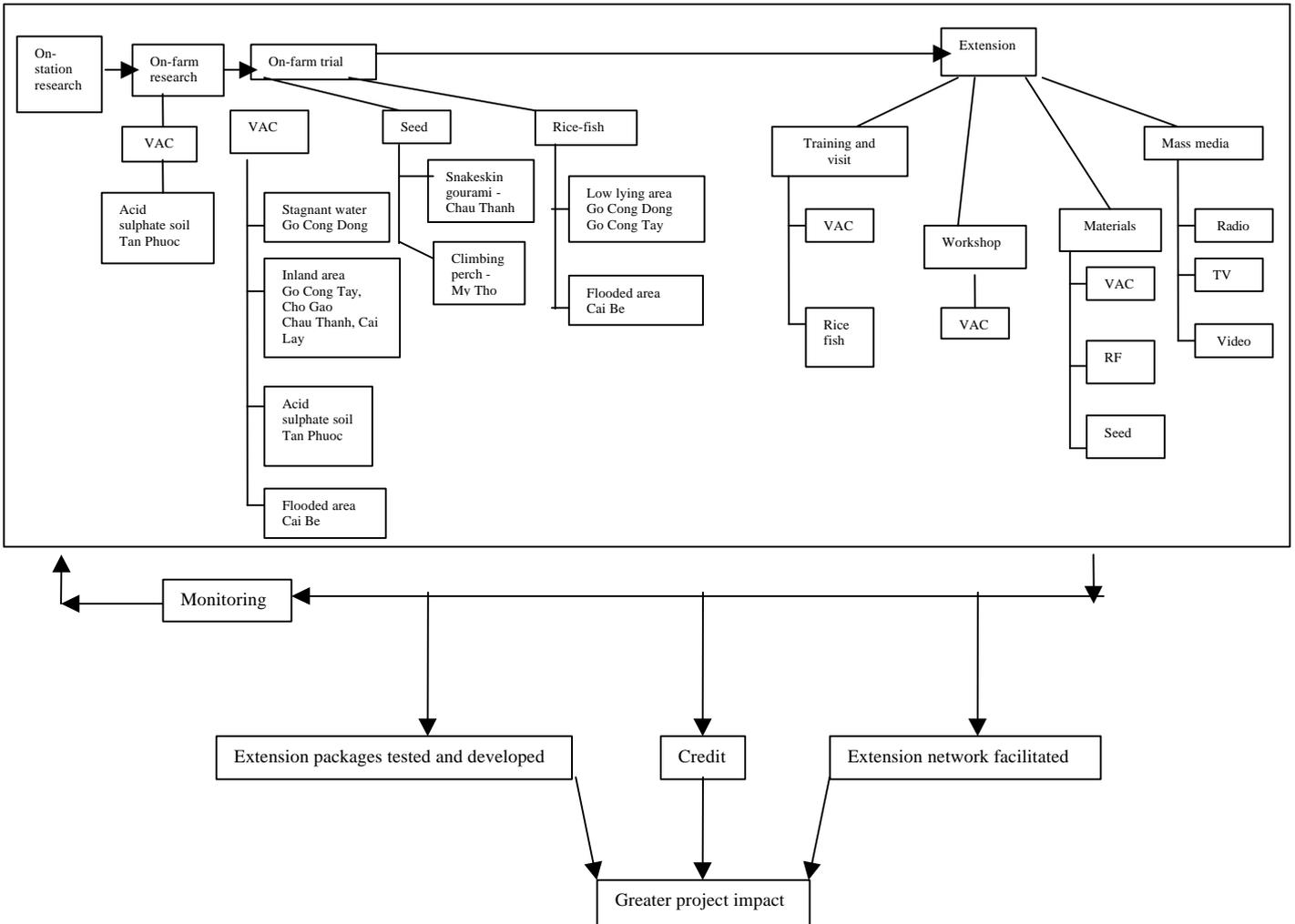


Figure 1: Testing a sustainable extension approach in Viet Nam

(Continued from page 13)

In Tien Giang Province of Viet Nam READ has developed robust technology packages for VAC systems in flood prone, inland and stagnant areas, rice-fish systems for low land and flood prone areas and breeding recommendations for indigenous snakeskin gourami (*Trichogaster pectoralis*) and climbing perch (*Anabas testudineus*). These technologies are being disseminated to farmers and institutions through the development of extension materials and direct training and visit programmes for farmers and staff from other key institutions.

A significant Component breakthrough has been the Vietnam Bank Agriculture and Rural Development (VBARD) agreeing to provide credit for fish culture to 131 READ farmers for the 2000-2001 season. Recognising that READ can reach

only a limited number of farmers through direct extension, the project is facilitating the establishment of an extension network and the strengthening of links and information flow between key stakeholders. READ is presently accessing the training and support needs of agencies and institutions (formal and informal) that influence and support the livelihoods of farmers in Viet Nam through a series of local participatory meetings. READ's impact will also be maximised by the wider application of mass media beginning with a series of short TV programmes in Viet Nam.

READ is seeking funding from 1st August 2001 for a new Component that builds on the piloting of this sustainable extension approach for aquaculture and disseminates the results perhaps even beyond the delta areas of Cambodia and Viet Nam.

(Continued from page 12)

- * The extension activities should be implemented in close cooperation with the local women's union.
- * Communication of the aquaculture extension information to women should be conducted in appropriate ways through television, radio spots, posters, etc.
- * Women's clubs should be developed, based on ways to assist women in aquaculture.

In summary, women in rural areas are poor and the level of knowledge is low. They are poor because they lack information and the ability to manage their lives. It is necessary to set up a special project to assist women in rural areas to improve their living conditions by involving them in aquaculture activities.



Nursing pond of local fisher in Prey Veng Province, Cambodia.

NEW PERSONNEL

NEW COORDINATOR OF READ



No sooner had we bid farewell to Dr Zigmund Jeney who returned to his native Hungary, when Mr **Donald Griffiths** succeeded him at the end of May 2000 as the new Programme Coordinator of the Rural Extension for Aquaculture Development (READ) Component in Cambodia and Viet Nam.

Born in the UK, Mr Griffiths' key experience includes leading a multi-disciplinary team implementing a successful UK Department of Foreign International Development (DFID) bi-lateral rural aquaculture development project emphasising sustainable livelihoods. He has Bangladesh and Thailand country-specific experience working with major stakeholders (farmers, NGOs, universities and government departments) in the aquaculture and fisheries sector. In fact, Mr Griffiths has over 16 years of overseas experience with freshwater and brackish water aquaculture expertise with carps, tilapia and prawns including farm and hatchery systems design, construction, production, processing and marketing.

His qualifications comprise a BSc (Hons) in Ecology from Edinburgh University (1977), followed by a City and Guilds Diploma in Practical Sea Fisheries from Falmouth

College in Cornwall, UK (1981). He earned his MSc in Aquaculture and Fisheries Management at Stirling University, Scotland (1985), and also served as a research assistant at the Institute of Aquaculture there, supporting the Southeast Asia Projects Group, particularly rice-fish activities. Later he received two diplomas from Hull University (1990) in Fisheries Marketing and Fisheries Planning and Management, respectively.

Prior to joining the MRC Fisheries Programme, he has been in Bangladesh since 1992 as the Team Leader of the Northwest Fisheries Extension Project that constructed a 20 hectare hatchery, farm and training centre funded by ODA/DFID. Working with a poverty focussed livelihoods approach, the project developed five extension methodologies that are being replicated by other donor projects in Bangladesh.

While in Thailand he was affiliated with the Asian Institute of Technology (AIT) and advised on adopting the small-scale aquaculture technologies and extension methodologies into the Department of Vocational Education Agricultural College curricula (1991-92). From 1986 to 1989 he served as the Project Manager at the Tinsulanonda Songkhla Fisheries College in southern Thailand. As a member of the UK's Volunteer Service Overseas (VSO, 1982-84), he taught at Udonthani Agricultural College in north-eastern Thailand. Before that he was a fisheries extension biologist in northern Lesotho (1978-80), near South Africa. While there he designed and constructed 14 carp farms.

GIS SPECIALIST



Ms **Penroong Bamrungrach** came to the MRC Fisheries Programme at the end of June 2000 as a GIS Specialist attached to the Technical Support Division (TSD) of the MRC Secretariat in Phnom Penh. Born in Bangkok, Thailand, she earned her BA in Geography from Chulalongkorn University (1991) and master's degree from Western Illinois University (1995). While there, she also served as a Graduate Assistant at the Geography Department.

Before joining the Fisheries Programme, she worked as a Research Associate at the Thailand Environment Institute in Bangkok (1996-98). One of her duties was to conduct practical training courses on GIS applications for staff members of the Pollution Control Department (PCD) and the Department of Mineral Resources (DMR). She was also responsible for two of the DMR's projects, "Geographic Information System for Mineral Resources Management: Land Use Management" and "Technological Geologic Data System Development."

Welcome aboard!

KIM

The 7th Annual Meeting of the MRC Programme for Fisheries Management and Development Cooperation was jointly organised by the National Agriculture and Forestry Research Institute, Ministry of Agriculture and Forestry, Lao PDR, and the MRC Fisheries Programme in Pakse, Lao PDR, during 13-15 June 2000.

Regional and International Institutions such as SEAFDEC, NACA and the AIT AquaOutreach Programme reported on activities that complement those of the MRC Fisheries Programme. FAO's fisheries related activities in the region include plans for a large River Basin Conference in 2002 as a joint FAO – MRC initiative. ICLARM's fisheries and aquaculture research activities in the Mekong Basin were explored. Representatives from the Asian Development Bank (ADB) spoke on their planned environment and fisheries projects in the Mekong Region. International Support Institutions included SIDA and Danida.

The MRC Fisheries Programme will be updated for the period 2001-2005, taking into account the recent changes in the Component financing and implementation, and new time schedules for pipeline Components. The emphasis of the Sector Programme Support (SPS) will be on information production and dissemination. Information packages will be produced for specific groups such as the press, the general public and other target groups. The 3rd Symposium on Mekong Fisheries will be held during 8-10 December.

The meeting agreed that the Fisheries Programme will facilitate the preparation of a *Report on the Fisheries Sector, Status, Opportunities and Need for Actions*. It will build on the *Fisheries Sector Study* of 1992 as the background document for the Programme. A draft will be presented at the 8th Annual Meeting scheduled to be held in Cambodia, tentatively during 12-14 June 2001.

KIM

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