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Fish Migration and the Maintenance of Biodiversity in the Mekong River Basin

by Anders F. Poulsen and Sintavong Viravong

The authors elaborate on some implications for biodiversity management based on current ecological knowledge about migratory fish of the Mekong region and suggest some potential "points of departure" for the development of management strategies for the migratory fish, including requirements for international cooperation.

Important Role of Migratory Fish

Around the world, human cultures have developed as a result of the regular and predictable return of migrating animals. In a fisheries context, the most famous example is the seasonal spawning migrations of Pacific Salmon from the Pacific Ocean to the headwaters of North American Rivers. Indigenous communities along these rivers traditionally depended upon the salmon migrations, and often identified themselves as “Salmon People” (Narcisse, 2001). Similarly, readers of Catch and Culture will be aware that fish migrations play an equally important role for fishing communities along the Mekong and her tributaries.

Migratory animals are “living threads that tie or link widely scattered ecosystems together” (Glowka, 2000). The management of such animals requires management of all the essential habitats upon which they depend, including the migration pathways between the habitats. It does not, for instance, make sense to establish “protected areas”, or any other management measure, for an important fish feeding area, if at the same time, their spawning habitats are being are being destroyed. Many migratory stocks extend beyond national borders (often referred to as “trans-boundary” stocks) and thus require inter-governmental co-ordination in research and management. Some management options, based on existing, global conservation and management instruments, are discussed below.

Convention on Biological Diversity (CBD): Ecosystem Approach

One of the most important international legal frameworks of relevance for the management of migratory, transboundary species is the **Convention on Biological Diversity** (CBD). All six riparian countries of the Mekong Basin have

signed the Convention (although Cambodia, the Lao PDR and Thailand have yet to ratify it). The CBD commits the states to the objective of "…the conservation of biodiversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources…". It further makes special reference to the need for states to manage transboundary stocks (e.g. Article 3: "..contracting parties shall ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction"). The Convention specifically refers to the cooperation, among contracting parties, in research, management and monitoring of biodiversity, including migratory, transboundary elements of biodiversity.

The CBD has adopted an "ecosystem approach" as the primary framework for action under the Convention, cutting across all thematic areas of the Convention, including inland water ecosystems. Under its auspices, twelve principles for an ecosystem approach have been developed (UNEP, 1998). These principles include: **management should be decentralised to the lowest appropriate level** (Principle 2), **ecosystem managers should consider the effect of their activities on adjacent and other ecosystems** (Principle 3), **conservation of ecosystem structure and functioning** (Principle 5), **the approach should be undertaken at the appropriate scale** (Principle 7), **the approach should seek the appropriate balance between conservation and use of biological diversity** (Principle 10), **the approach should consider all forms of relevant information, including scientific and indigenous and local knowledge and practices** (Principle 11) and **the approach should involve all relevant sectors of society and scientific disciplines** (Principle 12).

The CBD is a very comprehensive, legally binding international instrument and, importantly, also includes the establishment of a financial mechanism for the provision of financial resources to developing country parties (Article 21 of the CBD).

Convention on Migratory Species (CMS): Species Approach

Another relevant international legal instrument of relevance is the **Convention on the Conservation of Migratory Species of Wild Animals** (CMS). This Convention dates back to the United Nations Conference on the Human Environment in 1972, which specifically recognised the need for countries to conserve wild animals that migrate across international borders. This recognition catalysed the subsequent adoption of CMS eleven years later in 1983. The CMS is a framework Convention under which contracting parties (nations) can develop specific measures for individual species or species groups within their range.

The CMS is, by nature, based on a **species approach to conservation**, but it also recognises the importance of **preserving habitats and ecosystems** as a means to conserve migratory animal species. The Convention lists endangered

migratory species (i.e. species of high priority for the Convention) in its Appendix I and species with "unfavourable conservation status" in its Appendix II. Both lists are currently biased towards mammals and birds. Interestingly, the only fish species world-wide listed on Appendix I is the Mekong giant catfish (Pangasianodon gigas).

In the context of the Mekong Basin, the main shortcoming of the CMS is that none of the six riparian nations have signed the Convention although efforts are underway to increase its profile in the region. There are also ongoing efforts to increase the integration between the CMS and the CBD. Specifically, the vision is that the CMS should become the special instrument for the implementation of the CBD with regard to migratory species (Glowka, 2000).

Mekong Agreement

The Mekong Agreement of 1995 is the foundation for the Mekong River Commission (MRC) and is therefore of paramount importance to the four member countries of MRC. However, the main drawback is that the two upstream countries, China and Myanmar, are not signatories. Thus, stocks with distribution ranges beyond the jurisdiction of the four member countries are not fully considered by this agreement. Furthermore, impacts of activities in upstream countries on downstream resources are not covered.

CBD and CMS Are Mutually Complementary

For the purpose of this article let us focus on the CBD (because it is comprehensive and because all riparian countries are signatories) and the CMS (because it specifically deals with migratory, transboundary stocks, and thus complements the CBD). In particular, since the two Conventions are already moving towards greater integration, they may in future be regarded as a single complex of instruments for the management of migratory species, where the comprehensiveness of the CBD and the specificity of the CMS, complement each other well (illustrated, for example, by the ecosystem approach of the CBD versus the species approach of the CMS).

There appear to be two potential ways of going forward in developing transboundary cooperation within the framework of the two Conventions: (1) **multi-species agreements**, and (2) **"flagship species" agreements**.

(1) Multi-species Agreements

Many multi-species movements have been identified in the Mekong River Basin. Most of them are triggered by hydrological events, such as rapid changes in water discharge. Such migration systems need an integrated management approach that involves conserving the functioning of the ecosystems within which

these migrations occur. This could ideally be developed under the CBD/CMS complex. Five international multi-species agreements are already in place under the framework of the CMS[1] .

Although none of these agreements include any fish species, lessons can be learned from them, both
procedurally and in terms of content. Let us look at one of the agreements in more detail as a model of a multi-species agreement involving several countries, the **Agreement on the Conservation of African-Eurasian Waterbirds (AEWA)**. This is the largest of any of the agreement under CMS, covering 172 species of birds ecologically dependent on wetlands for at least part of their annual cycle, and involving 117 countries. In general, this agreement provides for coordinated and concerted actions to be taken by the range states throughout the migration systems of the waterbirds to which it applies.

A detailed Action Plan is in place, which provides for harmonised and joint research on the biology and ecology of migratory water birds along with studies on the effects of loss and degradation of wetlands used by the waterbirds. Furthermore, parties (i.e., range countries) are committed to exchange information including results from research, monitoring and conservation programmes (AEWA Action Plan, paragraph 6.4).

Conservation Guidelines

Probably most importantly, nine sets of conservation guidelines have been developed under the AEWA to address nine important subject areas within the agreement:

- Preparation of single species plans
- Identification and tackling of emergency situations
- Preparation of site inventories
- Management of key sites
- Sustainable harvest of migratory waterbirds
- Regulation of trade in migratory waterbirds
- Development of ecotourism at wetlands
- Reduction of crop damage, damage to fisheries and other forms of conflict between waterbirds and human activities
- Development of waterbird monitoring protocols.

Finally, under the provision of AEWA, regular reviews are carried out involving surveys of population status and trends, information gaps, network of sites used by migratory waterbirds within the agreement area and the status of introduced, non-native waterbird species.

A substantial part of the AEWA agreement could, with little modification, be applied within a multi-species agreement for the migration systems of fish of the

Mekong Basin described above. The first step in the development of such an agreement would be to designate species as migratory and transboundary, to delineate their distribution and migration ranges and to identify critical habitats for those species (e.g., spawning habitats, dry season refuge habitats, migration corridors). These activities would have to be carried out as joint/coordinated research between the countries involved with the aim to development agreement(s) similar to the AEWA for transboundary Mekong fish species. A lot of research is currently carried out for the Lower Mekong Basin under the MRC Fisheries Programme. This work can be replicated throughout the entire Basin.

(2) Flagship Species Agreements

Some animal species have a particularly high profile in people's minds. This can be because of their size, shape, colouration and elusiveness, or any combination thereof. Examples of such animals include the giant panda of China, the Asian Tiger and many of the cetaceans of the oceans. Such species are often termed "**Flagship Species**" (e.g. Glowka, 2000). This term refers to the fact that these species can "drive" conservation efforts because of their **public appeal**. By introducing measures to conserve them, and the habitats and environments they depend on, other less high-profile but equally important species, which depend on the same habitats, will also greatly benefit from such conservation measures. Migratory animals are particularly useful flagship species because their distribution ranges cover large areas and many habitats. Conserving and managing them would therefore benefit the conservation of other elements of biodiversity, including non-migratory species.

The Mekong River Basin appears to be an ideal place for "**flagship-species management**". The biodiversity is so rich and supports the livelihoods of so many people that any measures to protect a few flagship species would automatically benefit the whole system profoundly, including the millions of people depending on it. The Mekong ichthyofauna contains several species that have the potential to become flagship species in terms of developing management strategies, including the Mekong giant catfish (Pangasianodon gigas), the giant barb (Catlocarpio siamensis) and members of the genus Probarbus. All are migratory species. The giant catfish is possibly the most famous and esteemed fish of the Basin. It has cultural, in some cases even mythical, significance in many places along the river.

Management strategies for a species such as the giant catfish could be implemented directly under the CBD and the CMS. In this respect it is a great advantage that the species is already listed in Appendix I of the CMS and is already recognised as a threatened migratory animal at both the global and regional scene. The combination of the species-focus of the CMS and the more holistic ecosystem focus of the CBD is ideal for this purpose. One of the important points here is that ecosystem structure and functioning must be maintained (as stipulated by the Ecosystem Approach principle # 5 of the CBD).

Any spatial (habitat removal, river channelisation, etc.) and temporal (e.g. hydrological regulation) simplification of the ecosystem will compromise the ecosystem structure and functioning and, therefore, be a serious threat to the Mekong giant catfish as well as all other parts of the biodiversity system. This would subsequently lead to the deterioration of the aquatic resources that are so important for the local people of the region.

Some research and management initiatives for the Mekong giant catfish have already been taken in Cambodia as a joint effort between the Department of Fisheries, the Mekong River Commission (through its Component for the Management of Freshwater Capture Fisheries of Cambodia) and the WWF. Under these initiatives, specimens of giant catfish, caught accidentally in the Tonle Sap 'dai' fishery, are bought and released (Pengbun et al., 2001). Furthermore, fish are weighed and measured and samples are taken for future genetic analysis (with the long-term objective to establish stock structure). This programme should be built upon and developed into a basinwide coordinated activity involving all six riparian countries. This could possibly be promoted under the above-mentioned framework of the CBD/CMS.

It is important that any regional agreement, that may eventually emerge from the Mekong Region on the conservation and management of aquatic biodiversity in the Mekong River is not only an agreement between national governments of the countries involved. Such agreements must also include practical action plans that will be carried out at the relevant levels and scales, including regional, national and local levels. Whether agreements are drawn up for a multi-species assemblage or for a single, flagship species, they must reach out to where management actions take place, for example among the local communities living near important habitats and migration corridors (i.e., principle 2 in the Ecosystem Approach Principles of the CBD). Local peoples and communities are part of the ecosystem and should be seen as a resource in both planning and implementation of management practices, not as threats to conservation, as is also emphasised in the principles of the CBD ecosystem approach. This is reflected in the following statement taken from an introduction to the ecosystem approach on the CBD website (www.biodiv.org): **"Ecosystem management needs to think globally, but act locally."**

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Symposium Biodiversity Management

The first ever **International Symposium on Biodiversity Management and Sustainable Development in the Lancang-Mekong Basin** was held during 4th – 7th December 2001 in Xishuangbanna, Yunnan, China. The Symposium, hosted by the Chinese Academy of Sciences and the Xishuangbanna Tropical Botanical Garden, brought together over 80 scientists from twelve countries, including Cambodia, China, the Lao PDR and Thailand that all share the resources of the Mekong River.

Facilitating Communication

The purpose of the Symposium was to facilitate communication between countries within the Lancang-Mekong River Basin, discuss the possibility of transboundary international cooperation, and provide potential strategies for conservation and sustainable development in the context of rapid population growth, large-scale development, and unprecedented environmental change.

Research Results

During the first two days of the Symposium, scientists and researchers presented the results of studies and projects undertaken in the Lancang-Mekong River Basin. The topics included *Fish Migrations and the Maintenance of Biodiversity in the Mekong River Basin* (Sintavong Viravong and Anders Poulsen) and *The Role of Giant Fish Species in Managing the Mekong Ecosystem* (Niklas Mattson, Kongpheng Bouakhamvongsa, Naruepon Sukumasavin, Nguyen Tuan and Ouk Vibol). Fisheries issues were featured prominently at the Symposium, due in part to broad participation by the MRC Fisheries Programme, the MRC Environment Programme, ICLARM, and the Food and Agriculture Organisation of the United Nations. Several university scientists also presented their research results:

Professor Yang Junxing of the Kuming Institute of Zoology (*The Aquatic Organisms of the Lancang River as Threatened by the Construction of Cascading Hydro-power Stations)* and Dr. David Dudgeon of the University of Hong Kong (*What Constrains the Conservation of Biodiversity in Southeast Asia?*) In addition, Dr. Tyson Roberts moderated a lively debate about the downstream ecological implications of China's Lancang hydropower and navigation interventions.

Goals and Specific Recommendations

On the final day of the Symposium, the participants agreed to endorse the following general goals:

1. All six countries within the Lancang-Mekong River Basin should be equal partners and work in close cooperation to protect biodiversity

2. Sustainable use of natural resources and conservation of biodiversity can only be achieved by acknowledging that humans are an integral part of the ecosystem

3. A management framework for biodiversity must be devised that can adapt and evolve to include all stakeholders

The **specific recommendations** included eleven priority activities:

- Production of systematic inventories of biodiversity, including the synthesis of existing data

- Development of indices of biotic integrity and monitoring programmes to detect environmental change and/or deterioration

- Implementation of management of habitats and species assemblages, not just individual species. Special concern was voiced about projects impacting the entire mainstream of the Lancang-Mekong River

- Enhancement of communication and networking among regional stakeholders able to contribute to biodiversity research and conservation. Strengthening of international, transboundary linkages and initiatives

- Establishment of a formal network of researchers to discuss issues relevant to the Lancang-Mekong River Basin. It was suggested that the MRC and the Chinese Academy of Science initiate this activity, making every effort to involve government officials, NGOs, international agencies and other interested parties

- Identification, designation and establishment of additional protected areas within the Lancang-Mekong River Basin for the benefit of biodiversity and humans

- Strengthening of local capacity for undertaking biodiversity research, including increased funding and support for researchers, students, equipment, infrastructure and joint international workshops

- Adjustment of Environmental Impact Assessment (EIA) policies and practices to ensure that biodiversity is given due weight in EIA reports. Biodiversity (and especially transboundary biodiversity) issues must be placed at the core of the decision-making process

- Development of nationwide and basinwide policies for the management of alien/exotic species to protect native biodiversity

- Use of flagship species to promote biodiversity and sustainable development

- Development of techniques to integrate all available relevant information (e.g., climate, biodiversity, population and economics) about the Lancang-Mekong River Basin into a package that is easy to understand and that allows for the modelling of different development options.

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New Fisheries Institute for Cambodia

On 24 May 2002 the Department of Fisheries headquarters in Phnom Penh hosted the ground breaking ceremony for Cambodia's new Inland Fisheries Research and Development Institute (IFReDI). The construction of the buildings is made possible through the generous support of the Government of Denmark. It is expected that the new Institute will be operational in early 2003. Seen at the centre of the picture are H.E. Mr Sou Sorath, Under Secretary of State of the Ministry of Agriculture, Forestry and Fisheries, Cambodia, and Mr Joern Kristensen, CEO of the MRC (on the right).

Establishing Fisheries Co-management in Viet Nam: Making it easy

The Reservoir Fisheries Component in Viet Nam (known as MRF II—Viet Nam), in association with the Ministry of Fisheries, held a one-day workshop in early 2002 at Buon Ma Thuot on fisheries development in the Central Highlands and south-eastern part of Viet Nam. The 63 participants included staff from the Ministry of Fisheries and its three Research Institutes for Aquaculture, and staff from various government agencies of the eight landlocked southern provinces.

The workshop laid the foundation for closer cooperation between the Ministry and the eight provinces (i.e., Kon Tum, Gia Lai, Dak Lak, Lam Dong, Tay Ninh, Binh Phuoc, Binh Duong and Dong Nai). It also presented a forum for the Reservoir Fisheries Component to present some ideas on facilitating the development of co-management in Viet Nam.

Local-level Management Systems in Viet Nam

In Viet Nam, there are a number of conditions that favour the establishment of local-level co-management systems. The benefits of decentralisation are widely appreciated, and there is a high degree of local autonomy. People are used to working together for the common good, and there is a very strong sense of ownership, in terms of both decision-making power and responsibility. While no society is completely "equal," the level of equality among various social "classes" is relatively high, and property rights are developing.

Of course, there are difficulties, as well. The extent to which co-management can be implemented in Viet Nam depends mainly on local conditions and local stakeholders. When local conditions and all stakeholders favor the legitimization of co-management, the job is not particularly difficult, but if one crucial stakeholder objects, the process is stopped. The process can be influenced by different government agencies, which sometimes have conflicting mandates. Unless a water body is stocked, fishers are limited to banning practices that are banned nationally (such as explosives, poison and electrofishing), but cannot otherwise regulate legal fishing gear. The level of government that is authorised to approve and support community involvement in fisheries management should fit the scale of the water body and the communities that depend on it. Finally, fishers more often than not are poor and busy: While they should invest in these management initiatives, they often cannot afford to invest enough to assure success, so provisions for outside support, at least initially, are highly advisable.

Recommendations for Co-management

The recommendations listed here come from two sources: (a) the MOFI-SUMA workshop held in Hanoi on fisheries development in the Central Highlands, 28-30 November 2001, condensed and modified to take into account all fisheries situations, not just those of coastal aquaculture, and (b) experiences in the Management of Reservoir Fisheries Component in Viet Nam after over three years' of encouraging increased involvement of fishing communities in managing the resources on which they depend.

Certainly, establishment of community-based co-management is possible in Viet Nam, but the following recommendations may make the job easier.

Recommendations (1) to (4) are fundamental since they relate to the establishment of a policy environment to facilitate the establishment of resource use co-management in Viet Nam.

(1) Legislation in support of co-management should be at the highest level of law (not decree or ordinance level). Because there are many sectors involved, a supra-ministerial level of legislation is necessary. The law is also essential to provide a framework for the sustainable development of aquaculture and fisheries.

It is recommended that the National Assembly Legislative Committee establish a Working Group including the organisations concerned under the guidance of the Ministry of Fisheries. (These are recommended to include the Ministry of Agriculture and Rural Development, the Ministry of Science Technology and Environment, the Ministry of National Defense, the Ministry of Industry, the General Department of Land Administration, the General Department of Mapping, the Ministry of Finance and the Ministry of Planning and Investment).

It is necessary to have an agreement on the management framework between these stakeholder representatives. **Definitions of the roles, functions, and responsibilities of the various government agencies and levels should be included**. **Resource use rights also need clarification.**

The Ministry of Fisheries should consider taking the necessary initiative with the National Assembly Legislative Committee.

(2) In framing the necessary supporting legislation and policies, the Legislative Committee and Ministries will need information and data from agencies and projects already involved in the establishment of co-management.

Concerned communes, districts, and projects should furnish the needed data and information, in the form of case studies or otherwise, in order for

central and provincial agencies to frame appropriate regulations and policies.

Policy research on co-management and current management systems are desirable, including consideration of how they serve the people, especially the poor.

(3) Draft legislation and policies should be fed back to the local government and communities for their comments. This could be done jointly with awareness-building exercises.

Taking into account recommendations (1) and (2**), a process to establish a more enabling environment for the establishment of co-management** may be as in the diagram below.

The loop indicates that feedback from the local governments and communities is needed after implementation, in order to make necessary refinements, over time.
(4) It should be conveniently possible to establish local groups of an appropriate nature (cooperative, union or otherwise) at the district and commune levels, as well as the provincial level, perhaps through the Viet Nam Fisheries Association. Most water bodies fall under the jurisdiction of local, not provincial, authorities and local authorities are in a better logistical position to work with such groups.

(5) Hence, **approval of and support for a given fisher's organisation should be at the level of government responsible for the particular water body or area in question.**

(6) Fishers' groups should have the mandate to regulate and manage the fishery in whatever way is appropriate to assure high, sustained yields from the fishery. Currently, they can prohibit various destructive fishing practices, but cannot otherwise regulate fishing effort unless they stock the water body. Hence, in cases where stocking is not practicable, regulations to restrict some sorts of fishing effort cannot be enacted.

(7) Technical and financial support should be provided to fishers' associations and cooperatives. The source of such support needs discussion. Self-financing by fishers is necessary, but often not sufficient: Fishers tend to be poor and busy. Hence, provisions for modest external support, at least during the inception period, will more often than not be needed.

Support can include various kinds of incentives: tangible and intangible, physical and non-physical, training, infrastructure, e.g., dykes, credit, prices, insurance and tax benefits, land/water tenure rights…) to those who participate in co-management.

(8) Support should be given for such associations to achieve self-financing as soon as possible. Often this can be achieved, if the fishers' organisation is allowed to tax the users at a mutually agreed level, and keep a portion of the proceeds. The benefits from such taxation should be satisfactory to the fishing community, after a reasonable period of time.

(9) The MOFI-SUMA workshop recommended that the **Ministry of Fisheries issue general guidelines for the establishment and implementation of co-management**.

In support of this, a model for a process to set up fisheries co-management that was provided at the workshop is presented on the following page. It should be noted, however, that the graph does not show important steps that follow the setting up of the initial fisheries co-management system, such as the plan of implementation, monitoring, reviewing and adaptation.

The model is open to modification according to local circumstances.

(10) Work should also begin on guidelines related to establishment of intersectoral co-management. The fisheries sector does not exist alone, and in inland fisheries, for instance, the health of the catchment area is crucial to the health of the fishery.

(11) An awareness of the need for co-management of resources needs to be enhanced at various government levels, particularly at local levels, and in different agencies, as well as in fishing communities. Fishers decide whether or not they will fish, so are involved in management already! Recognition of this fact and that they need to be included in making decisions that affect the resource will help assure that the resource is maintained at high, sustained levels. This should be tied in with **building the capacity of the various stakeholders and agencies concerned with establishing co-management,** particularly at local levels.

(12) Pilot projects to establish such management schemes should be encouraged, and include feedback to policy-makers at national and provincial levels.

(13) At the local level, **women and representatives of other groups likely to be affected by management decisions should be included in any decision-making body**.

(14) Experiences and lessons learned should be exchanged among agencies and projects concerned with establishing

co-management, and the need for effective communications channels among these organisations.

MEKONG RIVER AWARENESS KIT: A Training Tool for River Ecology

In light of the importance of enhancing the basic understanding on the concepts of the river ecology, the Environment Programme (EP), a Core Programme of the MRC, is preparing the Mekong River Awareness Kit (RAK) as a part of Environment Training Programme Block II (ETP Block II). The purpose of the RAK is to use multimedia and interactive CD-ROM learning tools to train the staff of the Mekong River Commission (MRC), National Mekong Committees (NMCs) and riparian government agencies about Mekong River ecology. Upon completion of the RAK programme, it is hoped that the MRC and riparian agency staff members will have a better understanding of the natural and man-made processes affecting the sustainability of the Mekong River system.

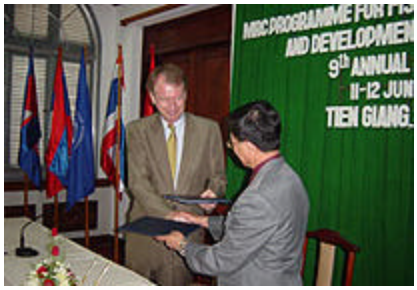
By way of background it may be recalled that the Mission of the MRC, in accordance with the 1995 Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin, is *"to promote and coordinate sustainable management and development of water and related resources for the countries' mutual benefit and the people's well being by implementing strategic programmes and activities and providing scientific information and policy advice."*

In order to achieve the said Mission, many people with different experiences and backgrounds from various institutions and organisations are involved in the processes of planning, implementation, monitoring, evaluation, etc. They are working within the same framework dealing with water and related resources of the Mekong. The common understanding of the basic knowledge on the ecology of the Mekong River is, therefore, a prerequisite to any further activities in the Basin. Training on this particular subject should be conducted targeting several groups of relevant personnel.

The emphasis of the RAK CD-ROM will be on understanding the scientific basis of river ecology in relation to the MRC's objectives of water resource management, livelihoods, and sustainable development. Information contained in the RAK will also increase awareness among riparian agencies regarding the need for sound management and policy programmes related to the Mekong River. The one-year project commenced in January 2002.

The RAK is a very essential step towards a better understanding and awareness of the importance of the environmental, human and social issues related to the Mekong River. The development of awareness material in terms of multi-media training material is a challenge, which opens an attractive opportunity to implement a new attitude to training.

9th Annual Meeting for the Fisheries Programme



The 9th Annual Meeting of the MRC Programme for Fisheries Management and Development Cooperation was jointly organised by the Ministry of Fisheries in Viet Nam and the MRC Fisheries Programme in My Tho during 11-12 June 2002. The meeting discussed a successful Review of the Fisheries Programme (22 April—17 May).

Over eighty participants attended the ***9th Annual Meeting*** from the four riparian countries and various organisations (Danida, FAO, ICLARM, NACA, SEAFDEC, SIDA and others).

The Annual Meeting offered an opportunity for the participants to plan for the fisheries resources in the Basin, including the ecology of large and small-scale fisheries in the region, impact assessments and mitigation measures, small-scale aquaculture and its potential for enhancing the livelihood of farmers, environmentally sound aquaculture with indigenous fish species, nutrition of aquatic resources, gender issues in the Mekong Region, amongst others.

Discussed were the information requirements of the Basin Development Plan (BDP) from the fisheries sector for planning the development of the region. Therefore, fisheres database, ecological and socio-economic data, gender disaggregated data, communicating to various levels of stakeholders with tailor-made publications, as well as a film on the fisheries in Cambodia called “Where There Is Water, There Is Fish” were highlighted. (See related story on page 14).

Review of Programme

An important issue at the Ninth Annual Meeting was the discussion of a recent Review of the Fisheries Programme carried out from 22 April to 17 May 2002. The Review found that the Programme has and does contribute significantly to the awareness of the importance of the freshwater fisheries in the region, the trans-boundary capacity and the development of the network in the region. The Review Team found the data and the information gathered by the Fisheries Programme is highly relevant to the core Programmes of the Mekong River Commission (MRC). However, the mission found that a revised Fisheries Programme should include more focus on and linkage with the core programmes of the MRC. The MRC’s CEO further explained to the audience the background for the reduction of funding from Denmark to the MRC and how this influences the programming of various activities, particularly the Fisheries Prograsmme.

The Meeting also addressed the future. Mr Joern Kristensen, the MRC’s CEO, provided some of the background explaining the required changes to the

Programme. The participants considered the process through a concept note and the result of the Review Team's mission from 22 April to 17 May 2002.

Support for the TAB

In the future, the Fisheries Programme will also maintain its support to the **Technical Advisory Body (TAB)** that was established two years ago and in the future will be the "Steering Committee" for the Programme. The details of the new Programme are still being elaborated, but it is clear that the three main working areas will be fisheries ecology and socio-economic aspects of fisheries, particularly in relation to trans-boundary issues, further development of co-management systems and networking and capacity-building in the four countries. Part of the networking and capacity-building will include information production and dissemination. Information packages will be produced for specific groups such as the press, the general public and other target groups.

Short Statement

The representatives of Cambodia, the Lao PDR, Thailand and Viet Nam adopted the following short Statement on the most important conclusions of the Meeting:

"The Ninth Annual Meeting of the MRC Programme for Fisheries Management and Development Cooperation recognises the need for continued cooperation in fisheries research and management in the Mekong Basin. The Meeting expresses satisfaction with the accomplishments of the MRC Fisheries Programme during 2001-2002 and due to unexpected budgetary constraints agrees to the measures proposed to restructure the ongoing Programme according to the new development objective and the immediate objectives as suggested by the Review Team.

"The Ninth Annual Meeting is grateful to the Socialist Republic of Viet Nam, especially the Tien Giang provincial authorities, and the Ministry of Fisheries in Viet Nam for hosting this meeting.
"The Meeting thanks Danida for its generous financial contribution to the MRC Fisheries Programme, and reiterates the need for its continued and sustained support.

"The Meeting would like to record its appreciation to the MRC Fisheries Programme for its unstinting efforts to contribute to the development of fisheries in the Mekong Basin.

"The Meeting noted that the MRC Fisheries Programme has circulated, among many other important technical papers, the document entitled, *Fisheries in the Lower Mekong Basin: Status and Perspectives* (May 2002), to update the former Fisheries Sector Study as a background document for the Programme, and recognised its usefulness in restructuring the Programme.

“In addition, the Meeting noted with satisfaction the signing of the Memorandum of Understanding between the Network of Aquaculture Centres in Asia-Pacific (NACA) and the Mekong River Commission that occurred on this occasion.

“Moreover, the Meeting **recommends** that:

· The annual meetings of the MRC Fisheries Programme continue to be held with participants from the National Mekong Committees, the riparian line agencies for fisheries, the MRC Programme Officers and invitees from local, regional and international organisations and donor agencies supporting fisheries activities in the Mekong Basin.

“With regard to future activities, the Meeting…

- Encourages the MRC Fisheries Programme to continue integrating fisheries considerations into basinwide river management activities (i.e., the MRC’s Basin Development Plan, the Water Utilisation Programme and the Environment Programme);

- Recommends that the MRC Fisheries Programme continue to emphasise the ecological and livelihoods aspects of the fisheries sector;

- Agrees that the MRC Fisheries Programme continue to support co-management of fisheries in the Mekong Basin;

- Appreciates efforts to mainstream gender considerations/issues in all levels of fisheries development in the Mekong Basin;

- Requests the MRC Fisheries Programme to enhance its interaction with other regional institutions engaged in aquatic resource management and development for the mutual benefit of the agencies concerned and the peoples of the Mekong Basin;

- Strongly supports the dissemination of results from the MRC Fisheries Programme to all stakeholders through publications, videos and interactive CD-ROMs; and

- Urged the MRC Fisheries Programme to seek additional sources of funding in order to carry out activities that benefit the Mekong River Basin and its peoples.

“It was agreed that the Tenth Annual Meeting will be held in Thailand, tentatively during mid-June 2003.”

Excursion

The participants undertook a field visit to the Unicorn Island in the Mekong River in Tien Giang Province to observe the life and culture, *dai* fisheries and cage culture of tilapia.

Fisheries Information Available

The Fisheries Programme has generated many exciting new publications, CDs and videos

Technical Papers Series

The first six publications of the **MRC Technical Papers Series** comprise the following fisheries topics:

***Status of the Mekong Pangasianodon hypophthalmus resources, with special reference to the stock shared between Cambodia and Viet Nam**, 29 pages. MRC Technical Paper No. 1, April 2002.*

***Status of Pangasiid aquaculture in Viet Nam**, 16 pages. MRC Technical Paper No. 2, April 2002.*

***Mekong giant fish species: on their management and biology**, 29 pages, MRC Technical Paper No. 3, April 2002.*

***Deep pools as dry season fish habitats in the Mekong River Basin**, 24 pages. MRC Technical Paper No. 4, April 2002.*

***Financial analysis and risk assessment of selected aquaculture and fishery activities in the Mekong Basin**, 66 pages. MRC Technical Paper No. 5, April 2002.*

***Fisheries in the Lower Mekong Basin: Status and Perspectives**, 95 pages. MRC Technical Paper No. 6, May 2002.*

*All **MRC Technical Papers** cost US$5.00, plus postal costs. Summaries are available on the MRC website:* http://www.mrcmekong.org

Mekong Development Series

Another fisheries publication, *Local Knowledge in the Study of River Fish Biology: Experiences from the Mekong***, is the first of the** Mekong Development Series. **(No. 1, July 2001, 22 pages). The full-colour report is designed to inform decision-makers and the public about Mekong River issues, describes the critical interaction between habitats and flood patterns to fish migration, spawning and finding dry season refuges. Based on interviews with expert local fishers and fish sellers at over 50 locations along the mainstream, the report shows how using local knowledge makes it possible to obtain vital information not revealed using conventional biological techniques. This study further confirms the value of people's**

local knowledge as a legitimate basis for basinwide planning and development strategies.

See the electronic version (text only) available on the MRC website: http://www.mrcmekong.org

Fish migration CD-ROM

Knowledge about migration routes, timing of fish migrations and location of spawning areas is crucial for assessing impacts of water management projects as well as for fisheries management in flood plain river systems. An interactive CD-ROM on ***Fish Migration and Spawning Study*** is available with results of a survey that includes interviews with more than 350 fishers in over 110 locations along the Mekong River. Data from the four-year study are augmented by digital maps showing migration routes of specific species, and information on river ecology. The US$20 price does not include postage.

Mekong Conference Series

Also remember that the second volume of the **Mekong Conference Series** is the ***Proceedings of the 4th Technical Symposium on Mekong Fisheries*** (Phnom Penh, December 2001) 305 pages. The first volume was also generated by the Fisheries Programme, namely the ***Proceedings of the 3rd Technical Symposium on Mekong Fisheries*** (Phnom Penh, December 2000), 266 pages.

Plans are underway to hold the ***5th Technical Symposium on Mekong Fisheries*** in Khon Kaen, Thailand, 11-13 December 2002.

Also relevant to fisheries is the ***Proceedings of the 1st Annual Mekong Flood Forum***, 23-24 April 2002, Phnom Penh. This is free, except for postal costs.

Video Available

Mekong: The Mother is a half-hour video on the importance of the Mekong River to its people. Available on VCD in English, Thai and Khmer. Available on VHS in Lao and Vietnamese. Free, except for postal costs.

MRC Contact Point

For any of the above, please contact the Mekong Documentation Centre, MRC Secretariat, P.O. Box 1112, Phnom Penh, Cambodia, Tel: (855-23) 720-979, Ext. 1030; Fax: (855-23) 720-972; and/or e-mail: **mrcs@mrcmekong.org**

Mekong government agencies should write to the MRC for free copies of the above-mentioned items.

International Symposium on Large Rivers for Fisheries

Rivers and their social, cultural, economic and ecological importance, remain grossly neglected or under-valued. Production from inland fisheries is thought to be two to five times higher than the officially reported value. River fish and fisheries only came under serious scrutiny in the 1970s and the knowledge available then was summarised and synthesised at the International Large River Symposium (LARS) held in Canada in 1985. Since then, and partly as an output from that initiative, considerable new information has been gathered on the ecology and values of rivers. Attention has especially been given to finding ways of mitigating impacts of other users, restoring damaged systems and managing the fisheries in the face of external constraints. The information accrued since the 1980s is still dispersed and there has been no major attempt to update the 1985 synthesis. In view of the importance of large rivers for food production and the current emphasis on the protection of biological diversity worldwide, it is timely that a second international symposium focussing specifically on large rivers be organised.

The Mekong River Commission and the Cambodian Department of Fisheries are convening the **International Symposium on the Management of Large Rivers for Fisheries: Sustaining Livelihoods and Biodiversity in the New Millennium, 11-14 February 2003, in Phnom Penh, Cambodia**, in collaboration with the Food and Agriculture Organisation of the United Nations, the World Wide Fund for Nature (WWF) and the World Conservation Union (IUCN). Other sponsors include the Netherlands and the International Development Research Centre of Canada (through CDRI/IDRC). It is anticipated that up to 400 participants from all over the world are expected to attend.

Objectives

The Objectives of the Symposium are to:

- Provide for people working on the management and development of rivers a forum to review and synthesise the current status of large rivers systems, covering topics such as ecology, fisheries, environmental impact assessments, multiple uses of resources and associated socio-economic considerations;

- Raise the political, public and scientific awareness of the importance of river systems, the living aquatic resources they support and the people that depend upon them; and

- Contribute to better management, conservation and restoration of the living aquatic resources of large rivers.

The Symposium will focus on the management (i.e. conservation and sustainable use) of living aquatic resources of large rivers, including the impacts of human activities on these. The Symposium will concentrate on sustaining livelihoods and biodiversity in the new millennium.
The Symposium will be conducted in seven sessions. The first will be invited presentations of case studies on major river systems.

The next four sessions will cover major topics in river fisheries science. These sessions will be conducted in a "panel discussion format".

The subsequent part of the programme will be a mini-session where institutions dealing with international or trans-boundary issues in river management can present and share their experiences.

The final session will bring together the results from the discussions in previous sessions, and synthesise these into conclusions and recommendations (relating to information needs, fishery statistics, management, research, development, etc.)

Technical Sessions

1. ***Status of Rivers*** (Invited papers reviewing the status of the world's major river systems)
2. Valuation of River Fisheries (Contributed papers and panel review and discussion of topics such as: recreational and food fisheries; catch potential; human participation; economic impacts of other users; impact assessment; irrigation systems; ecosystems)
3. Fisheries Ecology and Conservation (Contributed papers and panel review and discussion of topics such as: migration; modelling; ecosystem processes; community ecology; system dynamics; species introductions; biodiversity; reproduction)
4. Management of Inland Fisheries (Contributed papers and panel review and discussion of topics such as: options for management; co-management; rehabilitation; fish passes; enhancements, including aquaculture; traditional management systems)
5. Statistics and Information (Contributed papers and panel review and discussion of topics such as: data collection methods – biological, social and economic; novel methods; turning knowledge into policy; GIS; indices for river, habitat and sustainability evaluation; valuing fisheries and other uses of rivers)
6. International Mechanisms Dealing with Rivers (Invited presentations, sharing experiences relating to management of international rivers)
7. Synthesis (Presentation of the results from panel discussions and the development of conclusions and recommendations).

Products Generated

The Symposium will generate several products including:

1. A book of annotated abstracts available at the Symposium.
2. A fully edited book of Proceedings. A copy will be sent free of charge to all registrants.
3. The Proceedings will also be available in CD format.
4. A brochure outlining the conclusions and recommendations of the Symposium.
5. Electronic versions of key papers will be added top the LARS2 Website.

Registrations Fees and Additional Information

Early registration (US$250) closes 31 October 2002.

Late registration fee (US$325) starts on 1 November 2002.

For further information, please consult the website www.LARS2.org or

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Supplement No. 18

The genus Henicorhynchus – a common fish with identity problems in the Mekong Basin

The genus *Henicorhynchus* is probably the most important genus for the fisheries of the Lower Mekong Basin. Throughout the Lower Basin these fish are extremely abundant at certain times of the year, particularly at the end of the monsoon season, when they move out of flood plain habitats and return to the river channels.

The Tonle Sap *dai* fishery and the Khone Falls fisheries are two of the most important, conspicuous and well-documented fisheries of the Basin. In both, *Henicorhynchus* play a dominant role. The genus account for approximately 50 per cent of the catch in important trap fishery around the Khone Falls during the dry season and for 40 per cent of the catch in the Tonle Sap *dai* fishery during the same period. These fisheries, which are separated by several hundred kilometres of river, are believed to exploit the same stock of migratory species of *Henicorhynchus*, which together with a number of other species migrate from the Tonle Sap River flood plains at the end of the floods towards their dry-season habitats around and beyond the Khone Falls. The group is believed to consist mainly of the species *Henicorhynchus lobatus* (90 per cent) and *Henicorhynchus siamensis* (only 10 per cent).
Along the entire route from the Tonle Sap River to the Khone Falls, the fish are exploited by local fisherfolk. Some fishers even follow the fish for some distance, particularly along the stretch from Kratie to Stung Treng and into the Sesan tributary system.

Although the lower parts of the Basin produce by far the largest amount in terms of weight, a large and important fishery based on *Henicorhynchus* has recently been documented in the northern region of the Basin. A fisherman from Ban Done in Bokeo Province of northern Lao PDR (participating in a monitoring campaign of the MRC Fisheries Programme), reported his own daily catches to be 100-200 kg over a two-month period from October to December 2001. Interestingly, the fisherman also observed that this was the first time in three years that fishermen from that village could catch this fish – during the previous two years the fish simply did not show up! Consequently, the village conducted a big ceremony to celebrate the return of **Pba soi** and the social and economic benefits that the fish generate.

During the peak period for catching *Henicorhynchus*, the fish create the basis for large and diversified local processing industries, which ensure that the surplus is preserved for leaner periods of the year. Fish sauce and fish paste, as well as many varieties of dried fish, are just some of the products made from

Henicorhynchus. In addition, the fish is also used as feed for livestock and aquaculture – another way of "storing" the surplus.

Identity Crisis

It may come as a surprise that the taxonomy of such an important group is still in a state of confusion, not only within the genus itself but also its taxonomic relationship to closely related genera, such as *Cirrhinus*.

In the Khmer language, fish belonging to the genus share their name with the Cambodian currency, Riel (i.e. "**trey riel**"), probably as a tribute to their socio-economic value for the country. In Viet Nam, the same fish are referred to as ***ca linh***, in the Lao PDR as ***pba soi*** and in Thailand as ***pla soi***. Although the species *Henicorhynchus siamensis* is most often attributed as the equivalent scientific name for these riparian names, it is generally recognised that the names represent a **group of species** rather than one particular species. Often, an extension to the local name can accommodate a more detailed local-language taxonomy, for instance **Pba soi *houa lem*** (literally meaning: *Pba soi* with pointed head), or **Pba soi *houa po*** (*Pba soi* with big head).

The genus *Henicorhynchus* belongs to the large family of Cyprinidae, which was covered in the *Catch and Culture* Supplement No. 1 (1998). This family is so large that further sub-divisions into Sub-families, Tribes and Sub-tribes have been developed. *Henicorhynchus* thus belongs to the tribe Labeonini and the sub-tribe Labeones, which contains several other genera. The main taxonomic features of fish of this sub-tribe are that they do not have a spine in the dorsal fin and the upper lip is separated from the snout by a deep groove. Fish of the genus *Henicorhynchus* are silvery-white with few outstanding morphological features for the untrained eye.

Taxonomic Descriptions

Henicorhynchus was first described as a new genus by Dr Hugh M. Smith in his book **The Freshwater Fishes of Siam, or Thailand** in 1945. At the time, Dr Smith listed only one species in the genus, *H. lobatus*.

In 1985, a "provisory annotated check-list" for freshwater fishes of Cambodia, prepared by Dr Maurice Kottelat also listed one species, *H. siamensis*, and noted that the genus is “badly in need of a serious revision.”

In **Fishes of the Cambodian Mekong** from 1996, Dr Walter Rainboth suggested that five species of *Henicorhynchus* occur in the Mekong and lists three species from Cambodia: *H. caudimaculatus*, *H. cryptopogon* and *H. siamensis*.

Then, in 1997, Dr Tyson Roberts published a revision of the genus *Cirrhinus* in which he treats *Henicorhynchus* as a "junior synonym" of the genus *Cirrhinus*.

The reasoning behind this move was that, according to Dr Roberts, the usual distinguishing taxonomic character between the two genera (i.e. the number of rays in the dorsal fin) does not justify the division into two separate genera based on existing phologenetic data at the time. As a result, all the species mentioned above are given the genus name *Cirrhinus* instead of *Henicorhynchus*.

However, in the latest major taxonomic publication on **Fishes of Laos**, authored by Dr Maurice Kottelat in 2001, the genus *Henicorhynchus* is maintained and four species listed: *H.lineatus, H. lobatus, H. ornatipinnis* and *H. siamensis*.

Finally, in the **Mekong Fish Database (MFD)** currently under development, six species of the genus are listed: *H. caudiguttatus, H. caudimaculatus, H. lineatus, H. lobatus, H. ornatipinnis* and *H. siamensis*. In the MFD, Dr Maurice Kottelat has made the general comment that we can "expect future name changes with the genus". This appears to be one of the few things that some of the leading Mekong fish taxonomists can agree upon for the genus.

Hopefully, those "future name changes" will not be too far into the distant future. Various genetic tools are now available, which can assist the more conventional taxonomic process. Advanced genetic tools can also be applied to establish whether separate stocks occur within certain *Henicorhynchus* species, for instance a "downstream stock" and an "upstream stock". This would have important management implications for these stocks. The MRC Fisheries Programme is currently developing a proposal to carry out this research.

Such new techniques should be coordinated with further conventional taxonomic studies of *Henicorhynchus* on a basinwide scale, so that both uncertainties within the genus as well as its relationship with other cyprinid genera can be firmly established. It is time to solve the "identity problem" for these fish, which are modest in appearance but so important for the livelihoods of many people of the Mekong River Basin.

Contributed by the Assessment of Mekong Fisheries Component of the MRC Fisheries Programme