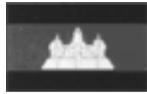


Imperial College  
London



## Development of a conservation strategy for the critically endangered Mekong giant catfish



Photo © MRC Fisheries Programme

### Project Brief

May 2005



Darwin Initiative project 14/053

## **1 Background**

Many species of freshwater fish are acutely threatened by overfishing and loss of habitat or habitat connectivity. Large and long-lived riverine species, which often migrate over long distances to complete their life cycle are particularly at risk. The Mekong giant catfish (*Pangasianodon gigas*) provides a striking case in point. Having historically supported a significant fishery, the wild population is now believed to number at best a few hundred individuals. The species has been listed as critically endangered in the 2003 IUCN Red List. Its precarious status is likely to be the result of excessive targeted and incidental harvesting over the past twenty years, and to a lesser extent habitat degradation.

A charismatic animal revered throughout the lower Mekong, the giant catfish has become the flagship species for aquatic biodiversity conservation in the Mekong river system. Given the critical state of the population, conservation and eventual recovery will require a combination of captive breeding, reduction in harvest, and conservation/restoration of critical habitat. A captive breeding programme has been instituted by the Thai Department of Fisheries, which in 2003 released 7200 juveniles into the Mekong. A buy and release scheme operated by the Mekong Fish Conservation Project (an NGO) buys a significant share of the small number of adult catfish still caught in fisheries and releases these after tagging and tissue sampling for genetic analysis. The Mekong River Fisheries Programme has been buying and releasing catfish caught in the dai fisheries in the Tonle Sap (River) in Cambodia since the late 1990s. However, significant incidental harvest of juveniles continues to be a problem. Information on giant catfish biology, habitat use and migrations has been assembled on a basin wide scale by the Mekong River Commission Fisheries Programme, and is being used to identify critical habitats. Despite of these promising initiatives, there is currently no overall conservation and recovery strategy for the giant catfish. The effectiveness of measures taken so far is largely unknown, and some measures may be conflicting or detrimental. For example, a poorly managed captive breeding programme may threaten the genetic diversity of the remnant wild stock, while the benefits of releasing wild adults caught in the fishery must be weighed against the benefits of retaining them for the captive breeding programme. The project will provide a rigorous assessment of such issues based on quantitative population assessment, and translate results into agreed management action through the development of an integrated conservation strategy.

## **2 Project purpose**

The purpose of the project is to develop an overarching conservation strategy for the Mekong giant catfish integrating, as appropriate, supportive breeding with harvest and habitat management. This will involve

- (1) quantitative assessment of population status based on existing information,
- (2) quantitative assessment of the likely effectiveness of different conservation measures such as supportive breeding, harvest restrictions and habitat conservation/restoration
- (3) review and improvement of captive breeding procedures;
- (4) promotion of appropriate adaptive policies for the further development of the strategy; and
- (5) definition of an overall conservation strategy in consultation with a broad range of target institutions.

## **3 Approach and activities**

### *3.1 Overview*

The project has three major strands: synthesis of information, quantitative assessment of population status and recovery options, and consultation to develop an overarching conservation strategy. A conservation strategy working group has been set up to guide development of the strategy. The group will meet at a series of project workshops, and maintain regular contact by electronic means throughout the project. The group will be coordinated and supported by a regional project officer.

### 3.2 Project partners

- **Imperial College London (ICL).** Imperial College London is a leading British university. Imperial College's Division of Biology at Silwood Park is an international centre for research into pure and applied population biology.
- **Network of Aquaculture Centers in Asia-Pacific (NACA).** NACA is an Asian intergovernmental organisation promoting the sustainable development of aquaculture and aquatic resource management through networking and capacity building.
- **Mekong River Commission (MRC).** MRC is a regional organisation established by the Governments of Cambodia, Thailand, Lao PDR and Viet Nam. It focuses on basin-wide issues of water and aquatic habitat management and development. Since the mid-1990s it has conducted a large fisheries programme covering all aspects of river fisheries ecology, management and development.
- **UNDP/IUCN/MRC Mekong Wetlands Biodiversity Programme (MWBP).** The Mekong Wetlands Biodiversity Programme (MWBP) is a collaborative, regional initiative between the four governments of the Lower Mekong Basin - Cambodia, Lao PDR, Thailand and Vietnam, sponsored by the GEF and implemented jointly by UNDP, IUCN and MRC. It addresses the root causes of wetland degradation throughout the Mekong basin based upon the principle that conservation of wetland biodiversity can not be achieved without addressing issues of sustainable livelihoods and poverty. It is developing Species Conservation Action Plans for four endangered flagship species including the Mekong Giant Catfish..
- **FAO Fisheries Department.** The FAO Fisheries Department is the UN lead agency for promoting sustainable use of living aquatic resources.
- **Royal Cambodian Department of Fisheries.** Line department responsible for all aspects of fisheries management in Cambodia.
- **Lao Department of Livestock and Fisheries.** Line department responsible for all aspects of fisheries management in Laos.
- **Royal Thai Department of Fisheries.** Line department responsible for all aspects of fisheries management in Thailand, also runs the main captive breeding programme for giant catfish.

### 3.3 Conservation strategy working group

The initial composition of the conservation strategy working group is as follows:

Dr Devin Bartley (FAO): genetics, captive breeding  
Dr Zeb Hogan (University of Wisconsin/MWBP): giant catfish biology, genetics, conservation  
Mr Alvin Lopez (MWBP): giant catfish biology, conservation  
Dr Kai Lorenzen (Imperial College London): fish population dynamics, modelling, management  
Dr Niklas Mattson (MRC): giant catfish aquaculture and biology  
Dr Mike Phillips (NACA): aquaculture development  
Mr Douangkham Singhanouvong (Lao DLF): fisheries management Lao  
Mr Naruepon Sukumasavin (Thai DOF): giant catfish captive breeding and genetics  
Mr Ouk Vibol (Cambodian DOF): fisheries management Cambodia  
Project officer (to be recruited)

Further experts may be co-opted in the course of the project.

### *3.4 Details of expected outputs and activities*

#### 1. Conservation status of giant catfish assessed quantitatively

1.1 Collation of existing information from collaborating institutions

1.2 Model development and quantitative analysis of data to estimate parameters and test hypotheses about population status and threats

#### 2. Scope for supportive breeding, habitat and harvest management evaluated quantitatively

2.1 Review of existing conservation measures and the institutional framework

2.2 Participatory assessment of options to reduce incidental harvest

2.3 Development of model for captive bred/wild population interactions

2.4 Projections of population development given alternative conservation measures and scenarios of future fishing pressure and environmental state

2.5 Consolidation of scenarios, incorporation of cost-benefit information and results from captive breeding procedures study

#### 3. Opportunities to improve captive breeding and translocation practices assessed

3.1 Review of captive breeding and release strategies

3.2 Analysis of translocation strategies for conservation in semi-natural habitats such as reservoirs

#### 4. Adaptive management policies developed

4.1 Identification of key uncertainties pertaining to recovery strategy

4.2 Development of monitoring strategy

4.3 Definition of alternative pathways and decision rules for review of strategy in the light of monitoring results

#### 5. Overall strategy for conservation developed and promoted

5.1 Project workshops to develop strategy

5.2 Wider consultation with partner and other target institutions to finalise strategy

5.3 Project newsletter, consultation document and final strategy published in riparian languages

5.4 Strategy development process and outcomes documented in technical report and peer-reviewed papers

## **4 Darwin project contact**

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Appendix: Activity bar chart

Project activity	2005												2006												2007		
	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3			
1.1 Collation of information	■	■	■	■	■																						
1.2 Model development						■	■	■	■																		
2.1 Review of conservation measures				■	■	■																					
2.2 Incidental harvest study						■	■	■	■																		
2.3 Model of captive/wild interactions									■	■	■	■	■														
2.4 Population projections													■	■	■	■											
2.5 Scenario modelling													■	■	■	■	■	■									
3.1 Review of captive breeding												■	■	■													
3.2 Translocation strategies													■	■	■	■											
4.1 Uncertainties													■	■	■	■	■	■									
4.2 Monitoring strategy																	■	■	■	■	■						
4.3 Decision rules																			■	■	■						
5.1 Project workshops			■	■					■					■					■	■				■	■		
5.2 Wider consultation																					■	■	■	■	■		
5.3 Newsletter			■	■			■		■				■			■		■						■	■		
5.4 Publications																				■	■	■	■	■	■		