



**Capture-Based Aquaculture of  
*Pangasiid* Catfishes and Snakeheads in  
the Mekong River Basin**

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**By**

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## **Summary**

### **Introduction**

The Mekong River Basin is probably the largest and most important inland fisheries in the world. The annual yield from capture fisheries in the lower Mekong basin (encompassing Lao PDR, Thailand, Cambodia and Vietnam) is estimated at between 2.5 to 3 million tonnes, accounting for 2 % of the total annual global fisheries yield including both marine and inland fisheries. This in turn represents a direct monetary value of approximately US\$ 2,000 million annually (Barlow, 2006). The main foundations for this important fishery are:

- ? the extreme fish diversity of the Mekong (second only to the Amazon River)
- ? the ecological functioning of the riverine ecosystem, including large areas of extremely productive floodplain habitats, and conservation of connectivity between habitats; and
- ? a population of 80 million people living within the Mekong basin, a large proportion of which participate in fisheries activities directly or indirectly.

An important feature of Mekong fisheries are their extreme seasonality. The bulk of the catch is taken during the flood season from August to December, when the water-level rises and large inundated floodplains are formed in the lower sections of the basin, particularly in Cambodia and Vietnam. This seasonal cycle means that there is a large surplus of fish during the monsoon season, whereas in the dry season, yields are comparatively low.

Local peoples and communities have adapted to the seasonal fluctuations in fish supply. They have for instance developed many ways to process and preserve catches during the monsoon, so that the surplus can be kept and used during the “lean” season.

Aquaculture also originally developed as a way to convert the large bulk of low-value yields from the monsoon season into high-value products that can be harvested, marketed and/or consumed at other times of the year. Throughout the basin, specialised “juvenile” fisheries have emerged, capturing various juvenile stages of high-value species during the monsoon season for later grow-out in ponds and cages.

Traditionally, aquaculture enterprises in the Mekong Basin were capture-based. Only with the introduction of exotic aquaculture species during the second half of the 20<sup>th</sup>

century did the more conventional aquaculture set-up, based on hatchery inputs, take over. As research capacities developed within the region, hatchery-techniques for indigenous species such as *Pangasiid* catfishes were eventually developed, setting the scene for the further development of the aquaculture industry into what are now large-scale, export-oriented enterprises.

Although capture-based aquaculture of *Pangasiid* catfishes has developed into an important export industry and is now largely based on hatchery produced seed, many other capture-based aquaculture activities using wild seed (such as snakehead aquaculture) are still practiced as a way to alleviate fish shortages during lean seasons and/or converting seasonally abundant, low-value excess fish into a high-value harvest. Sustainability and management issues for *Pangasiid* catfish and snakehead fisheries and culture in the Mekong basin are very different.

The main management issues currently facing Mekong capture fisheries are habitat conversion and over-fishing. The high levels of exploitation throughout the basin leave little room for expansion of the fisheries and the main challenges will therefore be to sustain current output levels. Any future increases in fisheries yields from the Mekong will thus have to come from aquaculture. However, if increased aquaculture outputs are achieved at the expense of capture fisheries outputs, they do not represent net increases and may in some cases be counter-productive from a poverty alleviation point of view (e.g. when a resource that is important for the poor is converted to a high-value resource targeted at wealthier households).

The capture-based aquaculture systems that exist in the Mekong each have different characteristics, and management solutions will differ accordingly. Each fisheries/culture system will thus have to be assessed on a case by case basis. If appropriate management measures are taken based on valid data and information, and with the aim of ensuring sustainability, some may offer good opportunities for increased production. Sustainable catch levels may be identified (again, based on solid research information) and maintained to support the traditional ways of transferring bulk monsoon catches to off-season marketing and consumption.

This paper describes capture-based aquaculture practices of two groups of taxa in the Mekong basin, the *Pangasiid* catfishes and the snakeheads (*Channidae*). *Pangasiid* catfish juveniles are used throughout the lower Mekong basin but are particularly important in the Mekong delta in Vietnam, where their culture has shifted from a traditional small-scale activity into a million-dollar export business, largely based on hatchery seed. Snakehead juveniles from the wild are used in grow-out cages, ponds and pens throughout the basin as a way to convert low-value catches from the peak monsoon season into high-value harvest in the off-season.

The two species groups thus represent two different development scenarios for capture-based aquaculture in the Mekong basin. In one group (the catfishes), the traditional wild-seed-based aquaculture practice triggered the development of hatchery technology, allowing the aquaculture practice to shift from wild-seed based to the current hatchery-based practice. In the other group (the snakeheads), the practice has largely remained wild-seed based.



Figure 1: The Mekong River Basin

