

# Fishes of the Mekong River—Conservation and Need for Aquaculture

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Until recently, capture fisheries provided most of the fish required in the Mekong region, but in recent years aquaculture is becoming an important sector of fish production in the region. Interestingly, in the Mekong region, exotic species dominate the aquaculture industry, especially tilapia and Chinese, Indian and common carp. Indigenous species include silver barb, *Puntius gonionotus*, *Clarias batrachus*, *Pangasius hypophthalmus* and *Channa micropeltes*.

Lack of adequate attention to identify and develop appropriate aquaculture techniques for suitable local species appears to have resulted in the dominance of exotics. There appear to be quite a few local candidate species for aquaculture based on the available literature. Ironically, all these potential species are also on the list of rare species. While exact causes are not known, the large-scale destruction of feeding and breeding grounds, obstructions to the regular migratory routes, indiscriminate fishing, etc, seem to have caused the decline in their number.

Three major fish of such concern are *Catlocarpio siamensis*, *Probarbus* spp. and *Pangasius gigas*. In the Mekong region, the Thailand Fisheries Department is reported to have made a good beginning in breeding of all three species by collecting mature fish from the wild, then breeding, nursing the hatchlings and releasing the seed back into the river. It is reported that appreciable numbers of seeds of these species have been released into rivers and as a result the situation of them becoming an endangered species has been averted, at least temporarily for *Pangasius gigas*.

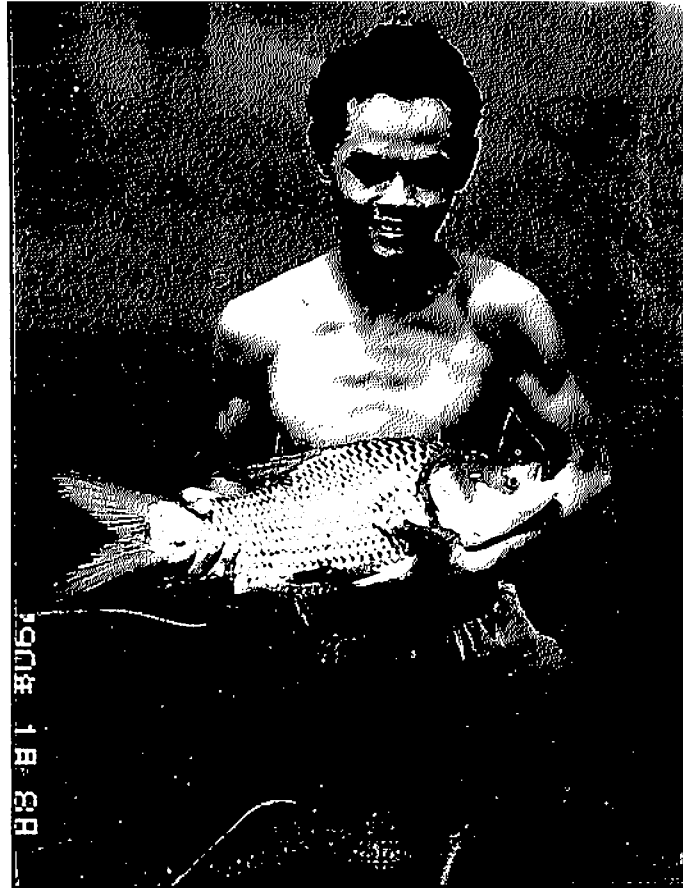
*Catlocarpio siamensis*: This indigenous species of the Mekong River is considered one of the world's largest cyprinid fish and is often confused with another species of the Indian subcontinent, *Catla catla*. *Catlocarpio* is well known to many old people as it used to form an important fishery.

It is reported to grow as big as 120 kg in Thailand and some people in Cambodia seem to have seen fishes weighing more than 200 kg! Even now, fish weighing about 50 kg are reported to be occasionally caught. In southeastern Cambodia, under composite culture with *Pangasius*, it attained a weight of 0.4 to 0.6 kg in 8 months and about 2 kg in 2 years. In another ongoing trial in the Bati Fisheries Station, a number of specimens have reached an average weight of 1.25 kg and a maximum of over 2 kg in one year with an average length of 38 cm.

*Probarbus* spp. While only one species, namely *Probarbus jullieni*, was originally described, two more new species under the same genus, namely *P. labeamajor* and *P. labeaminor* from the Mekong River have been found recently. The former species is reported to attain 70-80 kg and about 1.5 m.

The first successful breeding of wild-caught *Probarbus jullieni* using hormonal injection technique took place in 1975 in Thailand. Recently, the Laos Fishery Department, sponsored by the International Development Research Centre in the "Indigenous Fishery Development Research Project", successfully attempted *in situ* spawning of *Probarbus jullieni*. This project is also reported to study catch-per-unit effort and community-based fishery management near the great waterfalls at the Lao-Cambodian border.

*Probarbus jullieni* is known to possess a number of good qualities for aquaculture, particularly its growth and consumer acceptability. It is reported to attain about 1 kg in less than six months in some farmer ponds in Laos. In the Chak Angre Fish Farm in Cambodia, two specimens of this species,



One-year old *Catlocarpio siamensis* catch, Mekong River, Cambodia. ALL PHOTOS BY M.C. NANDEESHA

weighing about 200 g stocked in 1986 in earthen ponds, attained a weight of 8.4 kg (76 cm) and 7.2 kg (74 cm) by August 1994. This indicates that under normal conditions in the pond environment, it attains a weight of about one kg in one year, a good reason to attempt its usage in aquaculture. It might be also interesting to screen the usefulness of *P. labeamajor* as a candidate species for aquaculture. Development of induced breeding technique would help in both conservation and provision of seeds for aquaculture.

*Pangasius gigas*: The giant catfish of the Mekong River is known as the Royal fish (trei reach), in Cambodia and is known to grow up to 300 kg. It has been reported to attain nearly 100 kg in three years in a large pond in Thailand! This phenomenal growth rate is one of the most rapid of any freshwater species in the world. Gluttonous feeding and exceptional expansion of the vent are known to be the factors for this exceptionally fast growth. It formed an important fishery, near Phnom Penh, Cambodia, in the early part of this century, wherein the fish was caught for both flesh as well as extraction of oil due to its rich fat content.

Collection of potential species, systematic screening for their culture potential and development of seed



**Four-year old *Probarbus jullieni*, weighing 8.25 kg, caught from the Mekong River.**

production techniques, could help the aquaculture industry to develop at a greater speed in the region based on the indigenous species. Establishment of a network among the institutions/individuals interested to pursue the studies on the indigenous species might hasten the process.

The Bati Fisheries Station, located at the Mekong River in southeastern Cambodia, is attempting to build the stocks of local species with aquaculture potential and to develop aquaculture techniques for those species. In order to assess the situation of these three rare species, as well as the status of capture fisheries production of other species in Cambodia, a meeting of the commercial-scale fishing lot owners of Prey Veng Province was organized during December 1993 at the Bati Fisheries Station. A number of interesting points emerged from this meeting: the giant catfish and *Probarbus* were reported to have never been seen during the past 3-4 years in the commercial catches of the fishing lot, and only a few *Catlocarpio* were observed by some of the fishing lot owners. While a general decline in the production of most species was noticed, it was more prominent with fish of white skin (cyprinids). Action plans suggested varied from replantation of inundated forests, education of people, changing the closed fishing season from May to August instead of June to September, provision of more sophisticated weapons to staff (since the poachers are equipped with good weapons!), etc.

An appeal issued to these fishing lot owners as well as the public to help the station

in getting stocks of giant catfish and *Probarbus* has not met with good success. After one year of effort, three juveniles of *Probarbus* of less than 100 g have been procured. It has not been possible to trace the giant catfish. The situation of *Catlocarpio* seems to be not as serious compared to the other two species. The station has already built up some good stocks of this species.

In a significant move during 1994, The Royal Government of Cambodia banned the collection of *Pangasius* seed from the Mekong River with an objective to improve the natural fish production.

*Pangasius* seed collection remained a major industry to support pangasid culture, mainly in Vietnam, worth nearly a million dollars each season. The ban is appreciated by fishers; during the collection of pangasid seed, many other species are trapped in the net and the seed of important species die due to their sensitivity. This fishery is said to be one of the causes for the reported decline in the fish catches.

In another important step, His Royal Highness Prince Norodom Ranariddh, the First Prime Minister of Cambodia, marked a new beginning in the Cambodian fisheries by releasing the wild-caught *Pangasius* seed back to the Mekong river. The seed were nursed to fingerling stage and released during August 1994 in a public meeting with an effort to increase public awareness as well as enrich the waters with the native fish fauna. It is hoped that the Royal Government will initiate studies to quantify the effects of such a ban on the increase in capture fisheries production, if any.

A point of caution is the fear expressed by some environmental scientists that any effort of artificial spawning, rearing and releasing seeds into the natural habitat may not help in the rejuvenation of the fishery since such introduced fishes may not be able to withstand the natural calamities to survive, grow and reproduce. Certainly, more studies are required on these issues to develop broader policy guidelines.

It is gratifying that the Cambodian Government has already banned the fishing of all the three rare species mentioned above. Nevertheless, it is feared that the proposed hydroelectric dams at Stung Treng or

Sambor by the Royal Government might affect the fish populations and fishery of several species. As per the latest report on the fisheries ecology and hydropower in the lower Mekong, all the proposed hydroelectric projects are located in a highly complex fish migration zone and perhaps the most productive fishery resource area of the entire Mekong. Also, proposed economic benefits from the construction of such dams are questionable since the fishery forms an important economic activity of a large section of the population in the region. It is hoped that the Royal Government would take suitable action to safeguard the biodiversity of the aquatic environment for the economic benefit of its own people. **G**

### Further Reading

- Anon. 1990. Indigenous fishes of Lao PDR. A project document prepared for the International Development Research Centre by the Fisheries Sector of Lao PDR, Department of Livestock-Veterinary, Ministry of Agriculture-Forestry, Government of Lao PDR and IDRC, Canada. 52 p.
- Bouakhamvongsa, K., P. Noraseng, K. Srisouphan and Phisnoukan. 1994. Induced breeding of Pa eun (*Probarbus jullieni*) at Don Kho, Champassak Province. Indigenous Fishery Development Project Technical Report No. 6, Division of Fisheries and small Animal Extension, Ministry of Agriculture-Forestry, Lao PDR. 7 p.
- Hill, M.T and S.A. Hill. 1994. Fisheries ecology and hydropower in the lower Mekong river: an evaluation of run-of-the-river projects. Mekong Committee Secretariat, Bangkok, Thailand. 124 p.
- Mekong Secretariat. 1992. Fisheries in the lower Mekong basin. Interim Committee for Coordination of Investigations of the Lower Mekong Region, Phnom Penh, Cambodia.
- Roberts, T.R. and C. Vidhayanon. 1991. Systematic revision of the Asian catfish family Pangasidae, with biological observations and descriptions of three new species. Proc. Acad. Nat. Sci. Philadelphia 143:97-144.
- Roberts, T.R., 1992. Revision of the Southeast Asian cyprinid fish genus *Probarbus*, with two new species threatened by proposed construction of dams on the Mekong River. Ichthyol. Explor. Freshwat. 3:37-48.
- Sritongsuk, C. and T. Yuvejwatana. 1974. Induced spawning of Pla esok, *Probarbus jullieni*, by hormone injection at Nongkha Fisheries Station. Annual report of the Department of Fisheries: 27-37.
- Tangtrongpiros, M. and Nukwan, S. 1993. The largest cyprinoid fish in Thailand. NIFI Newsletter 3(2):5.

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